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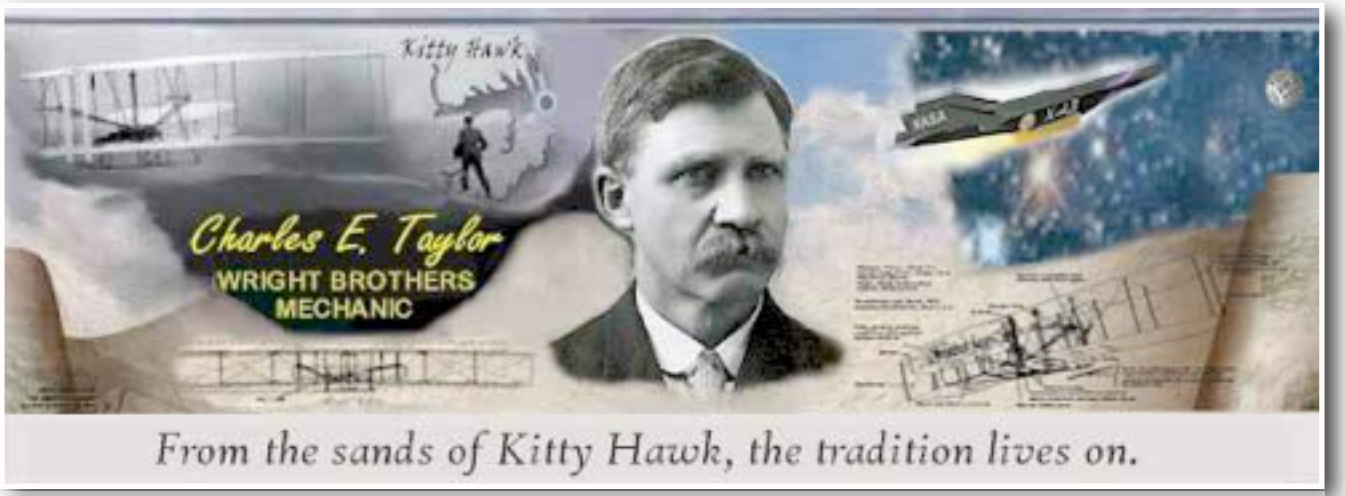

Hello all,

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

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NTSB investigation finds that small plane crash off Kodiak runway was because of missing part

Though pilots probably don't need any more proof, when it comes to aircraft, every little piece counts. That's what a pilot and mechanic learned on an Island Air post maintenance flight in August, when a single missing nut caused the plane to crash into the waters near Kodiak Island, according to a new report from the National Transportation Safety Board.

The crash occurred on Aug. 12, when the pilot and mechanic of the Piper Cherokee were taking the plane on a test flight following maintenance to the aircraft. Upon approach to the runway, the pilot reported that the throttle control became unresponsive, resulting in a partial loss of power, according to the report.

The pilot tried to reach a nearby beach, but came up short and landed in shallow water, damaging the fuselage and wings of the aircraft. The Coast Guard responded to the crash, but the plane's two occupants were able to exit the aircraft and swim to the nearby shore.

According to the final accident report, the mechanic -- director of maintenance for Island Air -- had been troubleshooting a problem with low engine manifold pressure when he tightened a nut related to the throttle control. The NTSB investigation found that another nut, located two inches from the one that the mechanic had tightened, was missing following the accident, and had resulted in the disconnection of the throttle cable.

"The (mechanic) noted that he should have checked the security of the hexagon self-locking nut, but he did not," the report said.

Tool forgotten inside, JetLite engine fails mid-flight

An aircraft maintenance engineer forgot to remove a tool from the engine of a JetLite plane that was flying from Ranchi to Mumbai last month, causing it to lose an engine and make an emergency landing in Nagpur. The incident occurred on November 13. There were more than 130 passengers on board flight S2-722 at the time.The engineer has been suspended pending inquiry by the Directorate General of Civil Aviation.

Official documents accessed by The Indian Express reveal that the engineer and a technician, while conducting ground maintenance work, left behind a tool in the engine cavity. The technician fitted the bolts but failed to notice a gap that was created after the covering didn't sit on the engine properly. Friction during the flight created a hole in the covering through which oil leaked and the engine failed.

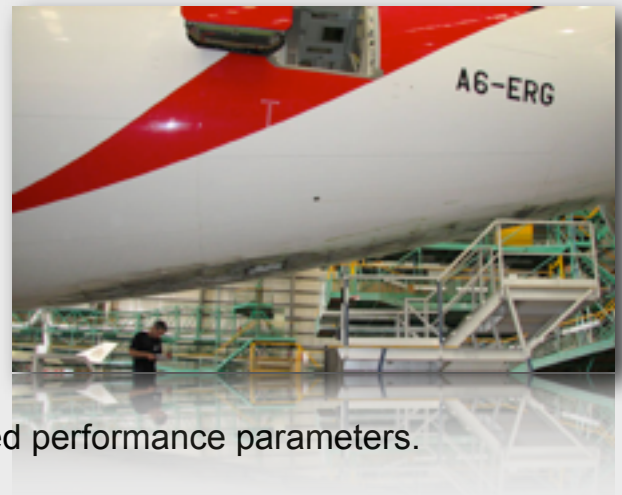
On December 14, the airline finalized a Permanent Investigation Board. It was found that the oil leak and low-oil pressure warning from the No. 2 engine was caused due to oil leaking from a hole in the N2 drive pad. "The hole in the N2 drive pad was caused by rubbing action of an expander tool which was left in the cavity of N2 drive during maintenance action on the engine during the previous night," states one of the documents.

Emirates tail-strike crew missed chances to catch weight error

Australian investigators have catalogued a series of missed opportunities to catch the weight data error which led to the serious Emirates Airbus A340-500 tail-strike at Melbourne.

During the flight preparations, the base weight from the flight-management system, 361.9t, was augmented with a 1t allowance for last-minute changes, to produce a figure of 362.9t.

Probably through a simple miskeying, the first officer inadvertently entered the incorrect take-off weight for the aircraft - using the figure 262.9t rather than 362.9t - when calculating the take-off performance data through the A340's electronic flight bag.



This incorrect weight, 100t below the actual figure, was transcribed onto the flight plan, along with the associated performance parameters.

While the single electronic flight bag was handed to the captain, so he could check the figures, the Australian Transport Safety Bureau said: "There was a lot of activity in the cockpit at that time and it is likely that the associated distractions degraded the captain's checks, and the weight error remained undetected."

The pilots' procedures were also supposed to include a verbal check between them which compared the take-off weight in the flight-management system with that entered into the electronic flight bag. But the "various distractions", including the first officer's discussing departure clearance with air traffic control, meant this check was "omitted", said the ATSB.

The loadsheet confirmation procedure provided two more chances to pick up the error, the first when the first officer read the take-off weight from the flight-management system and then from the calculations on the flight plan.
But having correctly read the former as 361.9t, the first officer initially misread the flight plan as 326.9t, then re-read it as 362.9t - the correct figure, even though this was not the one written on the plan. The first officer thought he had simply miswritten the figure, and corrected it, but this left the miscalculated performance data unchanged.

The second chance to capture the error came with a check of the 'green dot' speed from the flight-management system and electronic flight bag.
While the check is intended to ensure that these speeds are within 2kt, the pilots failed to notice that the two systems were displaying 'green dot' speeds differing by 40kt.

The flight-management system read 265kt and the flight bag 225kt, and the ATSB said: "Because they both ended in a '5', the captain may not have noticed the difference in the values."

During the take-off roll on 20 March 2009, the aircraft failed to accelerate sufficiently, using up almost the entire runway before over-rotating and suffering a tail-strike 265m from the runway end, followed by two more strikes at 173m and 110m. The A340 overran, hitting infrastructure, before becoming airborne and eventually returning to land safely.

Investigators pointed out that the variations in parameters experienced by the crew during normal mixed-fleet operations "increased the difficulty" of the pilots to recognize suspect outputs from the electronic flight bag.

In the two months prior to the accident the crew had been exposed to take-off weights varying from 150-370t, and the erroneous take-off weight of 262.9t, said the ATSB, "would not have been sufficiently conspicuous" to alert them.
"This problem is not unique to this accident," it stated. "Previous investigations into similar data entry error and tail-strike occurrences have highlighted the inability of flight crew to conduct a 'rule of thumb' or reasonableness check of speeds when moving between aircraft types.

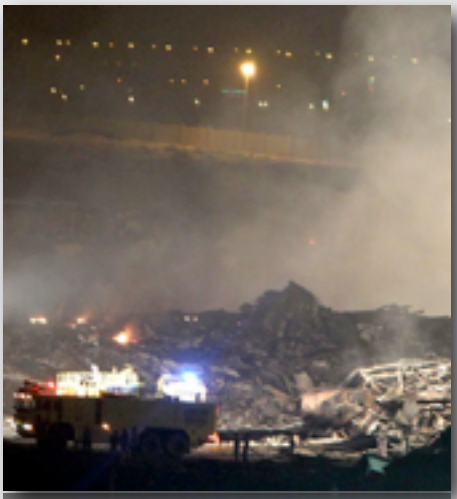
"An unintended consequence of mixed fleet flying appears to be a reduction in a flight crew's ability to build a model in long-term memory to facilitate recognition of 'orders of magnitude', or a 'rule of thumb', in respect of take-off performance data."

UPS pilot lost steering control before plane crash

Dubai report details events leading up to the 2010 crash which killed both crew

The pilot of the UPS plane that crashed in Dubai killing two people may not have been able to steer due to a fire that caused the control cables to loosen, an report by Dubai's General Civil Aviation Authority (GCAA) has said.

Smoke from a fire caused by lithium-ion batteries reduced the pilot's visibility as he tried to conduct an emergency landing on Sept 3, 2010, the report said. The pilot also struggled with low emergency oxygen before crashing into Nad Al Sheba military camp.



“The consequential effects of the fire regarding the compromised flight controls, flight crew supplemental oxygen system, the environmental control system, fire suppression and cockpit visibility are understood, however, further detailed investigation is ongoing to determine the requisite safety recommendations to address the findings,” noted GCAA.

GCAA’s interim investigation into the accident, which took place less than an hour after taking off Dubai International Airport, follows sheds further light on the incident. The earlier report said the lithium batteries onboard the plane should have been declared hazardous cargo. The Boeing 747 was carrying flammable batteries that were “distributed throughout the cargo decks” while “lithium ion battery packs” should have been singled out and handled as hazardous cargo, an April report by the aviation authority said.

GCAA also noted that the two shipments of lithium-ion batteries were tested “in accordance with [UN] standards, no UN test report was provided to verify that such tests were completed.”

The interim report details the pilot’s request for emergency landing following the outbreak of a fire on board shortly after take-off. It details a conversation between the two pilots in which Captain Doug Lampe tells First Officer Matthew Bell he no longer has control of the airplane.

“The DFDR [digital flight data recorder] indicates that there was a control column movement anomaly between the input by the crew on the control column and the travel of the elevators,” said the report.

The Yemen wing of the terrorist group Al Qaeda had previously claimed it was behind the plane crash following initial reports of an explosion on board.

The use of rechargeable lithium-ion batteries, used in laptops and mobile phones, has soared since the late 1990s. The transportation of the batteries has become increasing contentious following a fire onboard a UPS plane in the US five years ago. Much of the investigation into the Dubai plane crash has centered on its lithium-ion cargo.

The Obama administration has attempted to impose regulations requiring that air shipments of the batteries be treated as hazardous cargo because of the danger of fires during flight. But US lawmakers last week tentatively blocked the administration.

“We’re very concerned that unless this issue is addressed we’ll continue to see accidents and we’ll continue to see fatalities,” Mark Rogers, from the Air Line Pilots Association’s committee on hazardous cargo, told AP.

U.S. ordered to pay $4.4 million for Weston air traffic controller's negligence in fatal crash

Cessna P337H Skymaster

A deadly mix of pilot error and an air traffic controller's negligence has led a federal judge to order the United States to pay $4.4 million to the family of a wealthy Boca Raton businessman who crashed his private plane in bad weather six years ago.The National Transportation Safety Board determined in 2007 that Michael Zinn, 52, lost control of his Cessna P337H while flying alone through, rather than around, stormy conditions.

Miami U.S. Magistrate Judge Edwin G. Torres, after presiding over a multi-day bench trial, ruled two weeks ago that Zinn was primarily – 60 percent – responsible for his own death, but that failures at Miami's Air Route Traffic Control Center also contributed significantly to the accident.

"Neither the air traffic controllers nor Michael Zinn were bad actors in this tragic accident," he wrote in his 97-page findings of fact. "History shows us that a pilot's greatest enemy, more often than not, is nature's challenges."

The ruling supports the NTSB's determination that the probable cause of the Oct. 19, 2005 accident was Zinn's poor flight decisions and controller Harvey Pake's failure to provide Zinn with weather conditions and assist him in navigation.

"Pake breached his duty of care in providing complete and accurate weather briefings when it was possible to do so and highly pertinent to Zinn's route of flight," the judge wrote.

Pake did not warn Zinn that he was flying into hazardous weather and allowed Zinn to fly closer to it, Torres said. "Compounding that breach of the duty of care, he then failed to provide any navigational assistance when the pilot requested," Torres wrote.

"I'M GOING TO DIE"

Zinn lost control in a severe thunderstorm. As he plunged to earth, controllers and pilots heard him shout "Help!" and "I'm going to die!" over a period of two minutes.

Then, at 6:59 p.m., an American Airlines pilot radioed, “He’s not yelling ‘help’ any more by the way.” The plane crashed into a house in Port St. Lucie. A young man living there escaped without injury.

Pake, a Weston resident, declined to comment. He still works at the FAA’s Miami traffic control center, currently as a front line manager, according to the FAA Employee Directory.

FAA spokesman Jim Peters, based in New York, declined to comment, stating that the U.S. Department of Justice represented the FAA in the lawsuit. The Department of Justice did not respond to requests for comment.

Steven C. Marks, a lawyer for Zinn’s estate, likewise did not respond to requests for comment. Marks, of Miami’s Podhurst Orseck, had sought damages in excess of $54 million.

Zinn departed Boca Raton Airport en route to Myrtle Beach, S.C. to play a round of golf. Although he obtained his pilot’s license in 1982, he had not flown for about four months.

Zinn “set in motion the chain of events that led to the crash” by initially abandoning his intended route to Myrtle Beach in favor of a more direct route where he knew he would encounter thunderstorms, the judge said. Then, he added, Zinn approached thunderstorm-like conditions even though the FAA’s Aeronautical Information Manual states that flying within 20 miles of a thunderstorm “should be approached with great caution, as the severity of turbulence can be markedly greater than the precipitation intensity might indicate.”

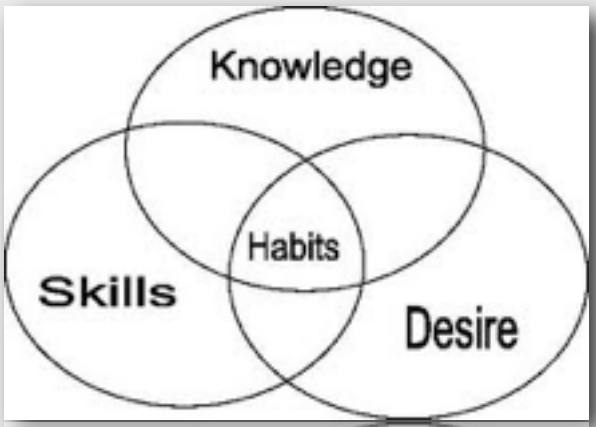
CONTROLLER’S FAILURE

For his part, Pake provided weather readings “directly in front of Zinn – at his twelve o’clock,” the judge found. But navigation rules required that he also indicate weather conditions to the west.

“With knowledge that Zinn was flying (using instruments) in a small plane with limited weather capability, this controller failed to provide sufficient accurate weather information to allow Zinn to make informed decisions,” Torres wrote.

Once in the storm, court records say, Zinn reduced power in response to turbulence even though pilots are trained not to do so in such situations. He quickly lost control and plummeted almost 10,000 feet before crashing. Zinn, 52, was killed on impact.

FL Technics Training: aviation accident prevention largely depends on technical personnel readiness



According to the data collected by the International Civil Aviation Organization (ICAO), since 1960 the number of aircraft accidents resulting from a human error has increased from 20% to a staggering 80%. Up to 15% of these accidents are attributed to mechanical or engineering faults.

Airlines are updating their fleets and adding new aircraft as rapidly as ever and the number of passengers and flights is on a steep increase. Needless to say, it keeps increasing the already heavy workload for the aviation technical personnel even further and, according to FL Technics Training, will continue to do so in the nearest future. Therefore, highly qualified technical personnel have become an imperative for airlines seeking to avoid human errors negatively affecting the aviation industry.

“Highly qualified specialists are essential for maintaining safe and reliable aviation services. A single faulty part, a missing component or an unperformed necessary check may lead to an irreversible outcome. Not only do technical maintenance errors affect aviation safety but they may also bring considerable financial losses to airlines. A single Boeing 747-400 flight cancellation, for instance, may cost up to USD 140 000 while a delay of the same aircraft flight may knock an airline back by USD 17 000 per hour,” explained the Deputy Head of FL Technics Training Dainius Sakalauskas.

Most of aviation errors occur due to a lack of elementary technical knowledge. For instance, in 2003 an Air Midwest aircraft crashed shortly after the takeoff. Pilots were simply unable to control the pitch of the aircraft. There were two reasons for this. Firstly, the aircraft was overloaded and had an aft centre of gravity that exceeded limits. Secondly, the elevator control system did not have the full range of nose-down travel, due to incorrect rigging that had occurred during a maintenance visit just over 24 hours prior to the accident. As many as a third of all similar technical personnel mistakes can be explained by the lack of technical training.

"In any case, in the world of rapidly developing technologies the aviation industry would be simply incapable of functioning without a considerable input from technical personnel. According to Boeing forecast, in the next twenty years, due to aircraft fleet expansion and increasing passenger flows, the industry will require more than half a million aircraft technical maintenance personnel. The qualification and professional readiness of aircraft mechanics and engineers must meet the requirements of both today's and tomorrow's aviation. Therefore, adequate basic training is only the first step towards shaping a highly qualified specialist," commented D.Sakalauskas.

According to D.Sakalauskas, investments in new technologies and specialized labour force development would play a big role in minimizing errors arising from human factor and ensuring a decreasing number of accidents resulting from faults made by technical personnel.

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 a 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.

But what is the correct training?

We believe that by providing training that each participant believes in, can understand and easily apply to his work, to be the correct training. There are some terrible training courses out there. Courses that pilots call "Charm School" and maintenance call "Hug a Tree 101". These courses are simply a waste of time and money.

Human factors training for everyone (maintenance and pilots included) center around the "Dirty Dozen." The Dirty Dozen consist of 12 contributing factors that can set you up to make an error.

While human factors (HF) training will help lower human error we must also provide a work environment that is resistant to human error. This is the role of a Safety Management System (SMS) of which HF training is a part of. HF training will help ensure the success of any SMS and is an integral part of any SMS seeking to lower human error to as low as reasonable.