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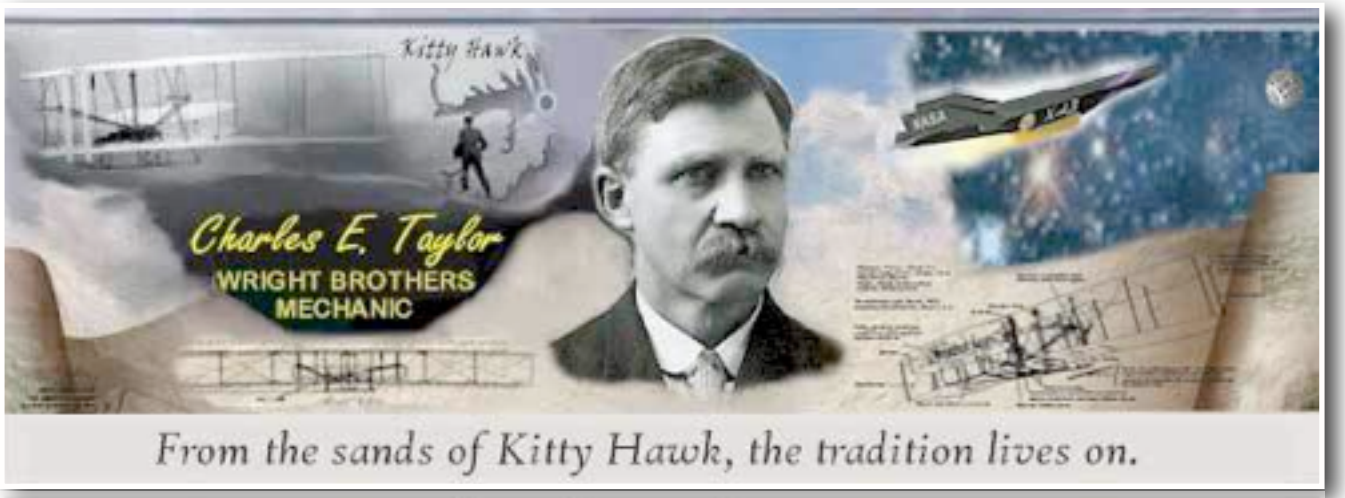

Hello all,
To subscribe send an email to: rhughes@humanfactorsedu.com
In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

FAA Revises Schedule For Safety Systems Implementation

The FAA has been forced by budget limitations to revise implementation of Safety Management Systems (SMS) procedures, as they apply to agency personnel.

The revision, issued June 1, will enable FAA personnel assigned to review proposed airport projects to apply SMS procedures and documentation requirements to projects at the nation's 29 large airport hubs. The original SMS order of last August, which defined procedures for FAA personnel to follow, had envisioned application to all hubs-36 medium-size airports and 72 small hubs-by June 1.

FAA personnel will follow formal SMS procedures, including the additional documentation, and will conduct demanding risk analyses required by SMS when reviewing large-hub projects that need FAA approval. The agency was forced to reduce the implementation schedule because it is operating at the 2010 funding level and is unable to undertake the planned workload without additional financial and staffing resources, says James White, deputy director, airport safety and standards.

Separately, the FAA has issued a notice of proposed rulemaking to amend Part 139 and require airports to develop Safety Management Systems for their application on all projects and operations. The deadline for comments on that proposal is July 5.

Blame the Pilots of Air France 447? Not So Fast

With recent data release from the Air France 447 flight data recorders, it's an easy reflex to point the finger at the pilots for failing to avoid or solve the crisis on board the Airbus 330 that crashed in the Atlantic two years ago. But aviation experts tell Popular Mechanics (PM) that people shouldn't be so quick to assign blame: The increasingly automated nature of modern aircraft may mean that pilots don't have the information they need to save the plane when flight management fail.

Last week, French accident investigators released a much-anticipated report on Air France 447—actually a dry recitation of the flight's final minutes. Many rushed to pin the blame squarely on the pilots. Indeed, as details of the document trickled out in the days after the recorder was pulled up from the depths of the Atlantic, the phrases "human error" and "pilot error" appeared frequently in headlines atop numerous news stories around the world.

It is not hard to see what's behind the finger pointing. As the released partial transcript makes clear, the chain of events that led to the crash began when the A330's autopilot and autothrust disengaged more than 3 hours into the flight, and the co-pilots took control. (Investigators already knew about the failure of airspeed indicators that caused this to happen.) "I have the controls" the co-pilot was quoted as saying in the transcript.

What he did after that is at the heart of the controversy over the crew's role. "The airplane began to roll to the right and the [co-pilot] made a left nose-up input," the report said. "The stall warning sounded twice in a row." After the stall warning was triggered again, the report said, the co-pilot continued to try to point the nose up.

The "nose-up input" is contrary to established procedure. In fact, it's the exact opposite of what every beginning pilot is taught to do. (Pointing the nose down can help pull a plane out of a stall.) Questions about the pilots' performance were compounded by the news that the captain was not in the cockpit at the time, but was on a rest break instead—a routine occurrence in the cruising phase of a long flight.

Safety experts say that it's premature and far too simplistic to assume there were no other factors involved. A major airline crash rarely has just one cause. Rather, it's a chain of multiple failures that have to line up, according to William Voss, chief executive of the Flight Safety Foundation.

"We have to be careful we don't demonize the pilots here because that is not going to help us the next time," Voss says. There had been much speculation following the crash that the investigation might also implicate the plane's automated fly-by-wire technology. Other incidents involving faulty speed readings emerged just weeks after the Air France 447 crash. Then, in late June 2009, the National Transportation Safety Board revealed details from two other near-disasters that resembled what happened aboard Air France 447. In one, a TAM Airlines flight from Miami to São Paulo lost basic speed and altitude data from its flight management system, forcing the crew to rely on backup instruments. It took them 5 minutes to reboot the main computer. Around the same time, Northwest Airlines also experienced a similar failure on a flight between Hong Kong and Tokyo. Both flights landed safely and no one was injured.

Voss takes issue with those singling out the Air France pilots for not pulling off a similar feat. "[They] seem to think that if you spend enough time behind the controls, in a situation like this you ought to just know how to point the airplane in the right direction and chill," he says. "That's unfair. They were in what must have been a rather noisy and chaotic environment... You've got multiple system failures; you've lost the air speed [indicators]; you have data computers going offline; there are beeps, bells and buzzers, all happening simultaneously." On top of that, the plane was flying through a heavy thunderstorm.

The Air France crew was experienced, Voss says. His concern is whether pilots are getting enough training on how to deal with a crisis when automated systems fail. "What may be lacking is the ability to triage a sick aircraft," he says. "We have to get back to the focus on automation as a tool to manage the aircraft. It should be serving us, not the other way around."

The NTSB is especially concerned because modern fly-by-wire technology relies on several layers of redundancy to ensure system failure doesn't happen, but on the rare occasions that it does, the pilots may not be prepared. "When there is a malfunction of these cockpit displays, pilots may be left without the critical information they need to fly the airplane," John DeLisi, the NTSB's deputy director of aviation safety, said in an earlier interview with PM.

More details about the last moments of Air France 447—and what the pilots did and why they did it—could come later this summer, when French authorities release more data from the black boxes.

Air France, for its part, released a statement Friday commending the pilots for their professionalism and claiming that the report showed they were trying to avoid the worst of the storm by turning the plane slightly—just before the systems failed.

The Final Minutes of Air France 447 >>>

http://www.popularmechanics.com/technology/aviation/crashes/the-final-minutes-of-air-france-447-5818470

Stalled AF447 did not switch to abnormal attitude law

Investigation into the accident sequence of Air France flight AF447 has revealed that the Airbus A330 did not enter the abnormal attitude law after it stalled, despite its excessive angle of attack.
The abnormal attitude law is a subset of alternate law on the aircraft and is triggered when the angle of attack exceeds 30° or when certain other inertial parameters - pitch and roll - become greater than threshold levels.

Alternate law allowed AF447's horizontal stabilizer to trim automatically 13° nose-up as the aircraft initially climbed above its assigned cruising altitude of 35,000ft.

The stabilizer remained in this nose-up trim position for the remainder of the flight, meaning that the aircraft would have had a tendency to pitch up under high engine thrust.

Crucially the abnormal attitude law - if adopted - would have inhibited the auto-trim function, requiring the crew to re-trim the aircraft manually.

After stalling, the A330's angle of attack stayed above 35°. But while this exceeded the threshold for the abnormal attitude law, the flight control computers had already rejected all three air data reference units and all air data parameters owing to discrepancy in the airspeed measurements.

Abnormal law could only have been triggered by an inertial upset, such as a 50° pitch-up or bank angle of more than 125°. "That never occurred," said French accident investigation agency Bureau d'Enquetes et d'Analyses.

The BEA is still attempting to explain why AF447's crew failed to rescue the aircraft after it climbed to 38,000ft and stalled. The pilot's control inputs were primarily nose-up, despite the stall condition.

There has been no indication that the aircraft switched into any other control law, other than alternate, during the accident - suggesting that auto-trim was available throughout the descent.

Failure to realize a need for manual re-trim was central to the loss of an Airbus A320 over the Mediterranean Sea about six months before the AF447 crash.

The auto-trim had adjusted the horizontal stabilizer fully nose-up but, during a flight envelope test involving near-stall, the aircraft switched control laws and inhibited the auto-trim.

Without manual re-trimming, the aircraft pitched up sharply as the crew applied maximum thrust. It stalled and the crew lost control.

In its conclusions over the accident the BEA highlighted the rarity of the need to trim manually, which created a "habit" of having auto-trim available made it "difficult to return to flying with manual trimming".

"One of the only circumstances in which a pilot can be confronted with the manual utilization of the trim wheel is during simulator training," it said. "However, in this case, the exercises generally start in stabilized situations."

In the wake of the A320 accident, near Perpignan in November 2008, the BEA recommended that safety regulators and manufacturers work to improve training and techniques for approach-to-stall situations, to ensure control of an aircraft in the pitch axis.

Blue Angels Commander Quits

The commander of the Blue Angels has resigned and the team is back in Pensacola for training and practice after an unspecified maneuver was at too low an altitude during a show in Lynchburg VA on May 22. Navy Cmdr Dave Koss was "voluntarily relieved of duty" as the elite team's commander and will be replaced by Capt. Greg McWherter, whom Koss replaced as the team lead. "This maneuver, combined with other instances of not meeting the airborne standard that makes the Blue Angels the exceptional organization that it is, led to my decision to step down," Koss said in the statement. The No. 1 aircraft normally leads a flight of four or six F/A-18s through formation maneuvers but the formation breaks for some parts of the show, including the solo performances and the signature cross maneuver. It's not clear whether Koss alone busted the altitude or whether he took the others with him. It's also not been stated just how much too low the aircraft got.

Clearly, the miscue got the attention of Navy brass because it led to the cancellation of at least seven shows. They won't resume the schedule until the Quad City Air Show in Davenport IA June 18-19.

Pilot error behind CAL 747 tailstrike incident

Taiwan's Aviation Safety Council has recommended for China Airlines (CAL) to improve and review its pilot training, following an investigation into a tailstrike incident involving a CAL Boeing 747-400 in 2010.
Pilot error was found to be the cause behind the incident, which took place at Anchorage on 4 March 2010. During take-off roll, the pilot received a stick shaker warning, indicating that the aircraft was flying at an airspeed which was too low to sustain lift.

The 747 continued on its flight to Taipei Taoyuan airport. After landing, inspections of the aircraft found that the belly suffered "substantial damage", said the council.

In a report on the incident, the council said that the pilot had entered the incorrect gross weight value before the flight, resulting in a lower speed than required and the aircraft's belly making contact with the runway during take-off.

While investigations found that the flight crew had sufficient rest hours required by the airline and Taiwan's civil aviation authority's regulations, pilot fatigue was identified as a contributing factor to the incident, said the council.

In its safety recommendations, the council has advised CAL to enhance its flight operations training and ensure that steps are in place for flight crew to verify input values before take-off.

It also recommended for the airline to pay greater awareness to fatigue management and to strengthen communication between pilots.

Broken Wire = Live Magneto

AN investigation into the accident that killed a young Namibian pilot on Sunday has revealed that a wire in the ignition system was broken.

"The prime suspect so far is that the left hand magneto wire was found broken," Erickson Nengola, head of the aircraft accident investigation team in the Ministry of Works and Transport, said yesterday. The investigation was launched early yesterday morning, after Tiaan Oberholzer (21), a pilot at Desert Air, died on Sunday night after he sustained a fatal head injury from a propeller.

The unconscious Oberholzer was found by a Desert Air colleague shortly after he had fallen to the ground at the Hosea Kutako International Airport at around 14h00 on Sunday afternoon.

Although there were no eyewitnesses, the question as to what Oberholzer had been doing so close to the propeller during his final round of checks after he had loaded his passengers, was on everyone's lips on Monday.

One of the investigators yesterday said it was unlikely that Oberholzer was attempting to do a "hand start", and that he was in fact doing a routine propeller test. It was for this reason that he was caught unawares when the propeller "fired" on before it switched off again.

Nengola said yesterday that the broken wire could explain why the propeller switched on for a few seconds, striking Oberholzer on the arm and head.

Nengola said the investigating team suspects, from the evidence gathered so far, that Oberholzer "wanted to check if the propeller was rotating freely" shortly before take-off. Oberholzer was unaware that the magneto wire was broken, Nengola explained.

"The magneto was still alive. The ignition was on inside the cockpit, and by turning the propeller, that triggered it to go fast and he was struck."

Witnesses say Oberholzer did not regain consciousness after the accident. He was already in a critical condition when he was rushed by ambulance to the Roman Catholic Hospital, where he was put on life support. He was declared dead just after eight on Sunday night.

Learning From Experience

TORCH LEFT IN NOSE WHEEL STEERING CABLE RUN

Maintenance errors, as we know, can take various forms from panels being miss-installed to inadequate surveillance inspections. This incident relates to the consequences of not accounting for all tooling used after a task has been completed.

During taxi-out to the runway for a return sector from Europe, the flight crew of a Boeing 737 found the aircraft difficult to control through the rudder pedals.

The steering tiller would not return to the neutral (self centre) making rudder nose wheel steering “impossible”. Inspection of the nose wheel steering mechanism found a torch stuck in the cable run, causing damage to the cable guide wheel bracket and a pulley.
Investigation identified that the nose wheel spin brake pads had been replaced the night before but why had the Engineers involved failed to remove the torch?
An Engineer and two Technicians were tasked to work the B737 but prior to starting their assigned work for the night, they were involved in clearing late evening departure snags.

The Engineer busied himself with researching a hydraulic leak on an Airbus whilst the technicians started the spin pad replacement on the B737 at approx. 3:30 am. In addition to the spin pad replacement, the B737 also had a toilet leak requiring the toilet dump valve to be replaced, so the technicians split the tasks. The technician arrived at the aircraft, which was parked remotely, in the mobile workshop and assessed the job. His original plan was to use separate lighting from the mobile workshop but when he opened the rear doors of the workshop there was a torch lying on the floor. He placed the torch on top of the nose leg and positioned it as best he could to illuminate the task in hand.

During completion of the task, the technician inadvertently kicked over a bag of spanners and only after completing the replacement of the spin pads did he pick them up. In doing so, he was momentarily dazzled by the headlamps of the mobile workshop, which was enough to distract from the fact that the torch had not been removed. The technician then assisted his colleague in changing the toilet dump valve as past experience had told him it was a tricky job.

After both technicians had completed their work on the B737, they proceeded to the Airbus and began work on a Hydraulic Pump change. They did not complete this job in the time available and eventually handed it over to the day shift.
The Engineer never visited the B737 as he considered the technicians to be proficient and the assigned tasks relatively straightforward.

The main contributory factors identified during the investigation were:

- Time pressure; The technician was aware that work was still outstanding on the Airbus and he needed to give his colleague a hand with changing the toilet dump valve.

- Tool control; There was inadequate control to ensure all tooling was accounted for.

• Inspection; The Engineer failed to inspect the replacement of the spin pads prior to signing for the task in the Technical Log. It is worth noting that the ‘safety nets’ of an engineering pre-service check and two flight crew walk-round inspections failed to identify the torch, primarily due to the restricted visibility of the nose wheel area, with doors closed, on the B737. A fundamentally mundane task could have led to a far more serious incident