Aviation Human Factors Industry News

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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:

787 Fire Sparks "Minor" Redesign

Boeing says it's redesigning the electrical panels and attendant power distribution software on the 787 after a program-halting fire on one of its planes in Laredo, Texas, a few weeks ago. It's also partly confirming reports last week that something that wasn't supposed to be in an electrical box caused the fire. Those reports said it was a tool left by a worker. Boeing says it doesn't think so. "It was small, it wasn't as big as a tool," Boeing spokeswoman Lori Gunter said. "A tool would leave evidence." The company characterized the work as minor.

The cause of the fire is, however, less important to Boeing engineers than its effect. Boeing has long maintained that the highly computerized systems have greater redundancy and give the pilots more options in an emergency. In the Laredo incident, the short circuit resulted in a cascade of failures that affected cockpit displays, the autothrottle and electronic flight controls.

The Wall Street reported an FAA certification pilot was at the controls at the time of the fire.

Cream and sugar with your jet fuel? Plane water tanks mistakenly filled

Three planes belonging to the airline Germanwings reportedly took off this weekend with jet fuel in their drinking water tanks, which nearly made it into passengers' coffee cups.

According to daily Bild, a 21-year-old service company employee on Saturday thought he was filling the planes at Berlin's Schönefeld airport with water, not realizing the 3,000-litre tank was contaminated with fuel.

The mistake was not discovered until after the planes to Zweibrücken, Cologne and Munich took off, Germanwings spokesman Joachim Schöttes said on Sunday. The crews all reported noticing a strange smell while preparing beverages for passengers, at which point they decided to serve juice and soft drinks instead, Bild reported.

It remains unclear how many litres of jet fuel contaminated the water tank, the paper said.

FAA proposes fine on Everett's Aviation Technical Services

Everett's Aviation Technical Services should pay at $530,250 fine for failing to follow approved procedures while maintaining 14 Southwest Airlines Boeing 737s, the Federal Aviation Administration said Friday. Specifically, the FAA alleged in proposing the fine that ATS failed to follow Southwest's Continuous Airworthiness Maintenance Program in carrying out five agency Airworthiness Directives to detect fuselage skin cracks between January 2007 and March 2008.

Even more specifically, the FAA said ATS improperly used shortened "cradles" to support the aircraft at two of three specified points while they were off their wheels and failed to install and monitor load-measuring cells to ensure the maximum loads did not exceed limits for the engines, wings and horizontal stabilizer locations while the aircraft were suspended in the cradle.

"We have the highest standards in place to ensure safety," FAA Administrator Randy Babbitt said in a news release. "Maintenance work has to meet those standards wherever it is performed."

ATS has 30 days respond before the FAA finalizes the fine. Responding Friday, company spokesman Jeff Salee said the fine "relate(s) to events that ATS disclosed to the FAA in March of 2008. In keeping with our commitment to safety and operational excellence, the issues were resolved shortly after we discovered them. We have been cooperating fully with the FAA and will respond in a timely way."

NTSB Reports Fuel Exhaustion In 2009 Greenville Accident

Ground Crews Had Run Engines 45 Minutes Prior To Takeoff

A flight that was supposed to have been a routine check of some avionics issues ended with the airplane running out of fuel, even though the pilot had visually checked the fuel levels prior to the flight. The NTSB has released its factual report in an accident which occurred November 9, 2009, on approach to Greenville Spartanburg International Airport (KGSP) at 1009 EST. A Hawker Beechcraft B200, N337MT, was substantially damaged following a loss of engine power and impact with terrain on final approach to Greenville Spartanburg International Airport (GSP), Greer, South Carolina. The airplane was registered to MDTR Holdings LLC, Virginia Beach, Virginia. The airline transport-rated pilot and two passengers were seriously injured. Day, visual meteorological conditions prevailed at the time, and no flight plan was filed for the personal flight conducted in accordance with 14 Code of Federal Regulations Part 91. The flight originated at GSP at 0938.

An inspector with the Federal Aviation Administration (FAA) reported that the accident pilot flew the airplane to Stevens Aviation on the afternoon of November 8 and turned the airplane in for a phase inspection. He returned to the airplane the next morning to evaluate some avionics issues and flew a local flight to do the same.

Air traffic control records provided by the Greer Air Traffic Control Tower (ATCT) revealed that the pilot requested taxi clearance at 0938, and the flight was cleared for takeoff at 0943. At 1007, while on final approach to

runway 4, the approach controller informed the pilot of N337MT that he was overtaking a Beech Baron, and the pilot responded that he needed to keep his speed up and that he was low on fuel. At 1009, ATC reported that the airplane had crashed.

After recovering from his injuries, the pilot was interviewed by the NTSB investigator-in-charge (IIC). The pilot reported that on the day of the accident, he arrived about 0800 and performed his preflight, accomplishing the preflight and before engine starting checklists. When he performed his preflight, there were 740 pounds of fuel on board, enough for 1 hour and 10 minutes flying time. He was going to fly the airplane to evaluate some avionics, however the avionics technicians who were to fly with him had not arrived, so he went inside the repair facility to wait. He reported that, in the meantime, and unbeknownst to him, a 45-minute ground engine run was performed on the accident airplane. After the avionics technicians arrived, they proceeded to the airplane and flew in the local area to evaluate the avionics. While on approach for landing, the right engine quit, and then the left engine quit. He thought he could make the runway, but there was a 15-knot headwind. He established best glide configuration with gear and flaps up. He saw the approach lights, and turned to avoid them. The airplane impacted the ground and came to a stop.

The pilot stated that he referred to the flight management system (FMS) fuel totalizer on the ground and in flight, and assumed that the mechanics that performed the ground run did not turn the FMS on during the engine ground run. He stated that if the FMS was not turned on during the engine run, the FMS fuel totalizer would not reflect any fuel burned during the engine run. He did not refer to the airplane fuel gauges after he returned to the airplane for the flight; he only utilized the FMS totalizer.

The two mechanics who performed the engine run prior to the accident flight reported that they checked the fuel on board at the conclusion of the engine run. The auxiliary fuel tanks were empty, and the main tanks each indicated approximately 200 pounds of fuel. They reported that the engines were operated for 30 to 35 minutes with the majority of the run at low power settings. High power settings were used for less than 5 minutes.

The Chief Inspector for Stevens Aviation reported that, prior to the accident flight, the technicians performed the ground run, moved the airplane to a hangar, and prepared to connect the airplane to a tow bar to pull it into the hangar. He was aware that the airplane had some avionics issues. He recalled that two avionics technicians went out to the airplane, and the next thing he heard was that there had been a crash.

He was not told that the airplane was going to fly and does not know how that decision was made. He reported that Stevens Aviation uses a procedure to install an external placard, or “red tag,” on the outside of the airplane before maintenance begins, but no repairs had been started on airplane. The red tag is generally installed after the engine run and the airplane has been moved into the hangar and placed on jacks.

NTSB: Delta Pilot Was 'Fatigued' During Taxiway Landing

Federal investigators report that fatigue may have played a key role when a Delta Boeing 767 landed on a taxiway at Hartsfield-Jackson Atlanta International Airport instead of the runway.
In October 2009, one of the pilots got sick on a flight from Rio to Atlanta. Officials with the National Transportation Safety Board said two other pilots finished the flight, but without their break.

According to the NTSB, the captain had been awake for more than 22 hours.
Officials said the pilot mistook the bright lights of the taxiway for the runway. NTSB investigators said the probable cause of the incident was "fatigue" and several other factors.

Delta officials said the pilots have since undergone retraining.

NTSB: Unprofessional behaviour behind PSA CRJ overrun

Non-pertinent discussions between a PSA Airlines captain and first officer were the root cause behind a runway overrun accident at the Yeager airport in Charleston, West Virginia on 19 January, says the US National Transportation Safety Board (NTSB) in a final report.

None of the 31 passengers or three crewmembers were injured when US Airways Express Flight 2495 exited the runway and came to rest 39m (128ft) into a 139m engineered material arresting system (EMAS) bed at the end of Runway 23 after a high-speed rejected take off (RTO).
The NTSB lists the probable cause as "the flight crewmembers' unprofessional behavior, including their non-adherence to sterile cockpit procedures by engaging in non-pertinent conversation, which distracted them from their primary flight-related duties and led to their failure to correctly set and verify the flaps".

Rather than reject the takeoff per PSA procedures, the captain, after noting the incorrect flap setting, had attempted to command the flaps to the correct setting as the aircraft accelerated through 120kt (222km/h). Configuration warnings sounded soon after.

The CRJ ultimately reached about 140kt, 13kt above takeoff speed (V1), before the captain initiated the RTO. According to Bombardier calculations, the aircraft would have been stoppable on the 1,920m (6,300ft) runway had the pilots initiated the rejected takeoff at the V1 speed.

The NTSB says the aircraft entered the ESCO-built engineered materials arresting system (EMAS) just past the runway end while traveling at 50kt. The EMAS was installed in 2007 to bring the runway overrun safety area up to US FAA standards. The terrain "drops off sharply about 350ft" past the runway end, the NTSB notes.

"If this incident had occurred before the installation of the EMAS, the airplane most likely would have travelled beyond the length of the original safety area and off the steep slope immediately beyond its end," says the NTSB.

Topic: SAFETY CULTURE

APPLYING THE "BROKEN WINDOW THEORY" TO SAFETY

I recently came across an old article that I first read about 10 years ago. The article highlighted the connection between the decline in violent crime in New York City during the early 1990s and the "Broken Window Theory." While the original intent of the article wasn't meant to be applied to the world of safety, I think it fits very well. What's the "Broken Window Theory"?

The "Broken Window Theory" is well known in the criminal justice world. Its basis is that the environment in which we live impacts our behavior.

For example, people will feel more inclined to break the law in an area that is run down and dirty, hence the term "broken window." Criminals feel less threatened and people seem to expect crime in this environment.

Applying the Theory to the NY City Subway System

In the early 90s, violent crime was rampant in the New York City subway system. The City hired a new subway director, who just happened to practice the "broken window" theory. The first item on his agenda was to solve the graffiti problem. To others, this priority seemed odd, to say the least. People are being mugged and killed and this guy wants to re-paint the subway cars? But every single car was cleaned and painted. And every time a car was vandalized, it was taken out of service until it was clean again.

As you can imagine, spending so much money on something that was seemingly meaningless didn't sit so well with everyone. Until crime started to rapidly decline.

Soon after, the city hired a new head of police for the subway system, who also just happened to practice this theory. (Can you see a pattern here?) With violent crimes still occurring on a regular basis, the first plan of attack was to hire more officers and crackdown on fare beaters.

Up until that point, anyone who jumped the turnstile was not really important. It took way too much time and effort to arrest someone for not paying their fare. But under the new system, mobile police stations were set up, equipped with everything that was needed to process these individuals

After a short while, crime began to decline again. It seems many of these fare beaters were also carrying a weapon or drugs or had outstanding warrants against them.

Applying the Theory to Safety

So why does this theory fit well with safety? Think of a violent crime much the same way as you think about an accident. Each of these has many causative factors involved. If we can eliminate some of the causative factors, we reduce the likelihood of the undesired result. I'm sure we'd all like to say that our safety practices are consistent, no matter what other people are doing, but the reality is that other people's actions do in fact affect our behavior. For example:

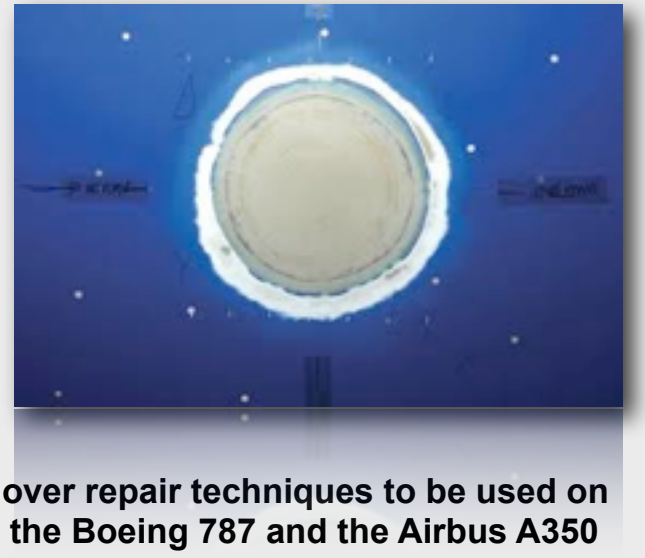
- Are you more or less likely to wear safety glasses when others around you aren't wearing them?
- How about housekeeping? Does a dirty, messy job site impact how people work?
- Do you tend to follow traffic when other cars are speeding?

Now think of a worksite where "little things" are neither addressed nor corrected. These little things add up and have a major impact on our – and our workers' – decision-making.

Conclusion

Unfortunately, when we talk about the little things, we're accused of "nitpicking." After all, there are much bigger things to worry about. That's always going to be true. But by gaining control over the little things, by proactively setting the stage – and the standard – for a safe workplace, we may actually have that much less to worry about in the long run.

U.S., Europe at odds over aerospace composite repair strategies



Aviation Week and Space Technology reports that the U.S. FAA permits bonded repairs for composite primary structures on craft like Boeing's 787 and Airbus' A350, but Europe's EASA requires a metallic bolded repair. Aviation Week and Space Technology (AWST) reported on Nov. 11 that the U.S. Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) are in disagreement over repair techniques to be used on composite structures on aircraft like the Boeing 787 and the Airbus A350 XWB.

The report notes that the FAA, lead certification authority on the 787, permits a bonded repair solution for composite primary structure, but EASA will not. This means EASA-regulated operators will need a metallic bolted repair for damage to the 787's composite primary structure. Further, the reports says it's possible that composite transports with bonded repairs cannot be brought onto the registers of European Union countries.

Andreas Pakszies, director of aircraft system engineering at Lufthansa, told AWST that "bolted metal repair methods must be available because bonding in the primary [composite] structure is not allowed" [by EASA] so specific tools and technicians will be needed, noting that bonded repairs are not permitted because there is no test to verify them.

Justin Hale, Boeing's former 787 chief mechanic and now a regional director in product marketing, told AWST that bolted repairs using titanium are a "permanent Category A damage-tolerant repair," but added that using aluminum as the repair material, while also a permanent fix, will require periodic inspection because of corrosion issues.

Hale also told AWST that Boeing has patented a technique that allows it to bond 70-plus plies in one cure, and that it would be possible for Airbus to devise a similar repair for the A350 XWB.