Aviation Human Factors Industry News

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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:

Captain Fantastic

"Proud to be in command of that aircraft"

In November of last year a Qantas A380 number 2 engine exploded in midair. A lot of things went wrong that day. In fact the flight crew had to deal with more than 60 separate system failures. But as you will see in this video also many things went right. Thanks largely to the man at the controls. Only the cool hand and keen instincts got that plane down safely. And when you hear the full story you will be amazed at how he did it.

http://video.au.msn.com/watch/video/captain-fantastic/xacqc84

Mathematical Modeling of Crew Alertness

Alertness is a key aspect of fitness for duty for airline flight deck and cabin crews. Alertness and fatigue have become increasingly important issues as airplane capabilities have increased, and the complexity of flight operations have grown. Understanding how humans function in a complex 24/7 world has been a focus for scientists, regulators, and airline safety officers all over the world.

As part of a joint safety initiative, Boeing and Jeppesen have been developing tools for allowing better management of alertness and fatigue. CrewAlert is the first iPhone application designed specifically to help airlines and their crews manage alertness and fatigue.

Built on the Boeing Alertness Model (BAM), a mathematical model of alertness, the CrewAlert application puts scientific knowledge in the palm of your hands.

CrewAlert and the Boeing Alertness Model are evolving tools. As new science is added to BAM and new functions are made available in CrewAlert, updates will be posted to the App Store. Check back often to ensure you have the latest version.

Please note: *This application is designed for professional pilots and the airlines that they work for. Before you purchase, please read this description in full as well as the Application License Agreement on iTunes to see if CrewAlert is for you.*

For more information, please contact the CrewAlert team at crewalert_support@jeppesen.com.

Download the application (iTunes App Store) Download the tutorial (pdf)

Rest Rules Could Create Pilot Shortage?

American Airlines says proposed rules intended to reduce pilot fatigue would require it to hire an additional 2,325 pilots at a cost of $514 million annually, and seemed to suggest the industry-wide effect could be crippling. The rules would effectively decrease maximum time on duty for pilots. In November, American public comments on the rules, saying "if AA needs 2,300 more pilots to meet the proposed rules, other certificate holders will need many additional pilots, too." Stakeholders also claim that the regulation's cost will be substantially higher than the FAA's estimate of $1.25 billion over 10 years. The Air Transport Association says the rule would cost more than 15 times that figure. As for the total number of pilots needed to meet the requirements of the bill, American said, "The industry figure will be so large as to raise the question of from where they all will come." American wasn't the only carrier to express concern.

Southwest commented on the proposal, saying "we feel than many of the rule changes will impact our operation as dramatically, if not more so, than the impact on any other carrier."

The proposed rules call for nine hours rest between shifts and 30 consecutive hours away from work, each week. The proposal arose with support of people who lost family members in the crash of Continental Connection Flight 3407.

There were no survivors of that flight, so the exact role of fatigue is unknown. However, the investigation found that neither member of the cockpit crew had slept in a bed the night before the crash, both had long commutes, and fatigue may have affected crew performance.

In February 2010, NTSB Chairman Deborah Hersman called the crash "an opportunity to reexamine fatigue in aviation."

Fatigue in aviation has been on the NTSB's Most Wanted List of Transportation Safety Improvements since 1990. The FAA accepted comments on the proposed rules (PDF) through Nov. 15, 2010.

Baffled engineers left A320 to fly on after severe landing

Failure by ground engineers to understand data confirming an Airbus A320 had suffered a severe hard landing in the Azores allowed the aircraft to be cleared to continue flying despite sustaining structural damage.
After the landing at Ponta Delgada, the captain of the SATA International flight told a ground engineer that he suspected a hard touchdown. But while they analyzed a load report from the data management unit, they were "unable to clarify" the information, says Portuguese investigation agency GPIAA, and "suspected it might be inconsistent".

In its final report into the incident GPIAA says the aircraft - which was barely two months old, with only 533h - had experienced a 2.13g touchdown on Runway 30 after a high descent rate. It then bounced to a height of 12ft (3.6m), before dropping and hitting at 4.86g. An impact above 2.6g is categorized as hard.

Two figures were given on the load report, identifying the extent of the impact and the limiting vertical acceleration threshold.

But because the engineering department was closed, owing to the late hour, the ground staff could not reach anyone to help interpret the report. The pilots and engineer visually inspected the A320, but could not see anything irregular, and the event was not written up in the technical log.

"As they were unable to understand the load report, they concluded that the displayed data might be erroneous," says GPIAA. The aircraft was flown back to Lisbon, but a second attempt by engineers there to decode the load report was also unsuccessful.

Time pressures meant the aircraft was prepared and cleared for its next flight without the report being decoded, and the A320 flew six sectors after the landing before an A-check revealed damage to the wing shroud box on both sides, as well as compression damage to the main-gear tires.

The aircraft subsequently underwent a dedicated full inspection program. Both main-gear legs and their tires were eventually replaced, for tests to be conducted on the originals, and the aircraft was returned to flight on 30 November 2009, nearly four months after the 4 August incident.

While the ground engineers were qualified, they did not carry out the actions required by the aircraft maintenance manual, says GPIAA, which adds that SATA has retrained all ground engineers to ensure they can correctly read load report data.

Flight-control logic in the A320 led the aircraft computer to deploy the spoilers as the thrust levers were retarded in mid-bounce, destroying lift and causing the heavy second impact.

While Airbus recommends executing a go-around during a high bounce, the airframer in 2010 began to introduce a change to its spoiler control logic to aid pilots.

The modification, SEC 120, enables a 10° spoiler extension on initial touchdown without retardation of the thrust levers, partly counteracting lifting forces and dampening any bounce.

Introduction of this partial lift-dumping logic to the A320 line started from airframe 4472 having already been developed for the A330 and A340. GPIAA says that, had the SATA aircraft been similarly modified, the force of the second impact would have been reduced to 1.7g.

PRESSURE

A wise word from another high risk high consequence industry

Pressure is an important factor in the safe operation of pipelines and process industries. Pressure is necessary for flow. Pipeliners want to achieve optimal flow. This requires the right amount of pressure and on the pressure so it does not exceed maximum limits. A pipeline system has devices that transmit, monitor, control, and adjust pressure. There are even devices that are designed to shut down the system and relieve pressure if it gets above the safe settings. These safety devices are often called “fail-safe” devices. People are learning, from the Gulf of Mexico Deepwater Oil Spill, what happens when a device fails. The pressure is difficult to control and can cause significant damage.

Pressure on people can also cause damage. The effects of pressure on people differ. Pressure to perform can be good and bad. The correct amount and the right types of pressure help people achieve optimal performance. It is when we reach our limits that pressure can have negative effects. Although the brain and body provide warning signals, people will ignore the signals for many reasons. Our systems may not shut down until there is a catastrophic failure. The results could negatively affect our health.

Therefore, it is important to understand both the causes and effects of pressure. We need to avoid this insidious “Dirty Dozen” factor.

Pressure may be self-imposed or imposed by others. I always think about the saying of the cartoon possum, Pogo, who famously said, “We have met the enemy and he is us.” Think about the different types of pressure you might impose on yourself. In my family life, I desire to be an excellent husband, father, grandfather, son, father-in-law, son-in-law, nephew, cousin. In my personal life, I want to be an excellent disciple, citizen, friend,and the list can go on and on. We all have professional, financial, social, educational, and physical goals that are important to us. It is beneficial to challenge our limits, but we need to recognize that limits exist.

When I work shiftwork and neglect sleep for an event important to me, this decision can cause me to be less alert. This personal pressure, even if it is based on good intent, can harm us. Don't be your own worst enemy. Discuss with your family the importance of setting priorities, based on what is truly valuable. It is easier to recognize pressure imposed by others. The responsibilities of work come with inherent pressures. Look at
actual job postings for pipeline controllers.

People who want to work in this position know that they will be expected to:

☒ Must possess the ability to handle multiple tasks and stress in a fast-paced business environment.
☒ Flawless operation of automated systems and the ability to remain focused in highly stressful situations.
☒ Must have the ability to work in a fast paced environment, process work rapidly, set priorities, work under pressure.

Consider these ways to avoid the effects on pressure:

☒ Prioritize. When we are faced with several tasks, choose the most critical and delay others.
☒ Plan ahead. Use planning and time management skills on each shift and for each set of work days.
☒ Learn your limits. Our mental and physical limits are real. These will affect how we act and react to pressure.
☒ Set realistic goals and expectations for yourself and others. Safety should be the ultimate concern.
☒ Do not pressure others or yourself to exceed safe limits.
☒ Do not create a false sense of urgency.
☒ Communicate your concerns, early in the process when pressure is not a concern.
☒ Ask for help. There is no reason why a person should feel bad about requesting help.

Another -200 Retires

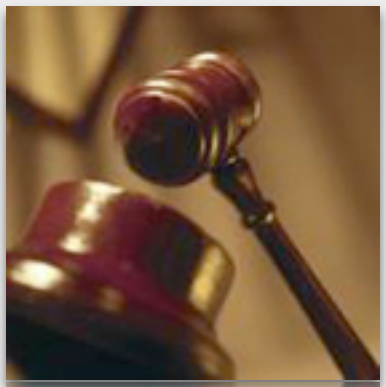
Africa-Air Charter flight. 737-200.

The pilot of this 737 had a night departure from Hoedspruit, South Africa, to Johannesburg. He proceeded to take the wrong taxiway. arrived at a dead end. He then attempted to turn around by reversing (using reverse thrust). He misjudged and put the main gear off the taxiway. The aircraft then rolled back down the bank. He then tried to climb out using full power. With the engines that close to the ground grass and stones were ingested.

If it wasn't raining the jet blast would probably have set fire to the surrounding bush.

FAA proposes $585,725 fine against charter airline

Federal officials on Thursday hit a charter and air-taxi company with a proposed civil penalty of $585,725 for allegedly failing to properly maintain a cargo plane.



The Federal Aviation Administration said Corporate Air of Billings, Mont., flew the plane at least 81 times while failing to conduct daily inspections for corrosion on the exterior skin. The FAA said the company also failed to conduct required structural inspections on the Shorts SD-3-30 twin-turboprop plane between March 2006 and February 2010.

Companies have 30 days to respond to proposed FAA penalties.

Foam accident soaks aircraft at Guard facility

The hanger floor and eight aircraft were covered with 7 feet of foam

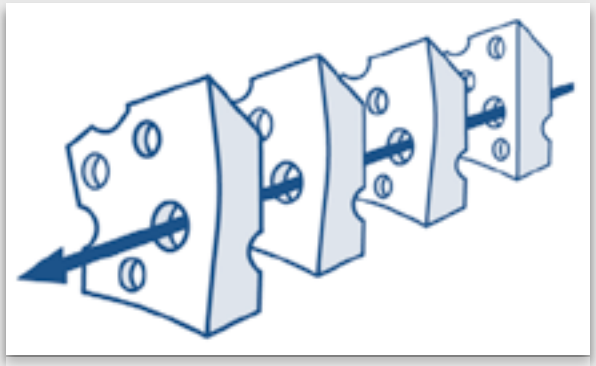
Minnesota National Guard was left with a mess last Friday after the foam fire-suppression system accidentally went off at the Aviation Support Facility in St..

A contractor was performing maintenance on the system when it went off, according to the Guard.
The hanger floor, including eight aircraft, was covered with 7 feet of foam.

The foam is soap-based and didn't damage the aircraft, according to the Guard. Once it dissipated, all the aircraft and equipment in the hanger received a detailed wash.

The foam is biodegradable and was washed down the drain. It took about two days to clean it up, according to the Guard.

2010 an average year for aviation safety



In 2010, a total of 816 people worldwide lost their lives in accidents involving aircraft, which is a slightly lower number than the annual average of 830 deaths, according to the NLR-Air Transport Safety Institute (NLR-ATSI).
2010 was an average year regarding aviation safety, with 152 accidents involving commercial aircraft reported worldwide, of which 26 had fatal consequences for the people on board.

Over the past ten years there has been an average of 135 accidents per year, of which 28 resulted in fatalities. These figures pertain to commercial aircraft weighing more than 5.7 tons. Of the 26 fatalities recorded in 2010, only one was in Europe.

The probability of a fatal crash occurring in 2010 was comparable to the average probability for the previous three years (approximately 1 fatal crash per 1.5 million flights). There has only been marginal improvement in aviation safety since 2006, and in Europe, the United States and other regions a similar trend has occurred. This trend has seemingly continued in 2010.

In 2010, the largest aviation disaster happened in India, where an Air India Express Boeing 737-800 overran a runway at Mangalore-Bajpe airport, killing 158 people. In 2010 a total of 85 runways excursions were reported worldwide, with half of these incidents resulting in damage to the aircraft and three resulting in fatalities. At Amsterdam Airport Schiphol a Boeing 737 was unable to stop during landing, but this runway excursion did not result in fatalities or damage to the aircraft.

A major crash in 2010 was that of an Afriqiyah Airways A330, which killed 103 people, the majority of whom were Dutch. The aircraft crashed short of the runway during a landing at Tripoli airport.

Bird strikes continued to present safety problems. Approximately 20,000 bird strikes occurred worldwide in 2010, but only a relatively limited number of these resulted in major incidents. In the Netherlands such an incident occurred involving a Royal Air Morocco B737 that struck a flock of geese upon takeoff from Amsterdam Airport Schiphol.

In 2010, cargo planes were once again involved in a relatively large number of accidents. Of the 26 fatal accidents worldwide, 6 involved cargo planes. The probability of a cargo plane being involved in an accident is more than 10 times greater than for a passenger plane.