

Aviation Human Factors Industry News

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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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Mech Magazine - U.S. Navy Mishaps

Mishaps cost time and resources. They take our Sailors, Marines and employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. **Mishaps** ruin equipment and weapons. They diminish our readiness. This magazine's goal is to help make sure that personnel can devote their time and energy to the mission. We believe there is **only one way to do any task**: the way that **follows the rules** and **takes precautions** against hazards. Combat is hazardous; the time to learn to do a job right is **before** combat starts.



<http://safetycenter.navy.mil/MEDIA/mech/index.asp>

Developing A Safety Management System

The Helicopter Association International website has developed a 30 minute video on developing a **Safety Management System (SMS)**. Compare your knowledge on SMS to the 12 attributes discussed in the video. This SMS overview is excellent for AMT's and organizational Safety Managers to view and discuss among each other. There is also a free IHST Risk Assessment Toolkit that may be applicable to your operation.



<http://www.rotor.com/Default.aspx?tabid=2481>

<http://www.ihst.org/Default.aspx?tabid=2595&language=en-US>

Naha jet fire laid to faulty maintenance

The transport safety panel issued a safety recommendation to U.S. and aviation authorities Friday, saying a **maintenance error** caused a Boeing jet operated by China Airlines to catch fire and explode in 2007 in Okinawa, transport ministry officials said.



On Aug. 20, 2007, after arriving at Naha airport, the Boeing 737-800 burst into flames and exploded moments after all 157 passengers and eight crew members evacuated safely.

In a report released Friday, the Japan Transport Safety Board concluded the explosion was caused by a **maintenance error** that caused a **bolt to fall off the aircraft's main wing** and pierce a fuel tank, causing fuel to gush through the hole and catch fire.

Pointing the finger at the **insufficient steps** taken to prevent such an occurrence by manufacturer Boeing Co. and by the airline, which was responsible for maintenance, the board asked the Federal Aviation Administration and Taiwan's aviation authority to make sure the two firms **act to prevent a recurrence**.

It also called for improving fire services at the airport, saying firefighters were late in arriving at the scene of the explosion.

No one died or was injured in the incident because the pilot acted quickly to evacuate the aircraft after being advised by a ground mechanic of a problem, and because ground staff properly guided passengers to safety, the report said, adding that it took **only three minutes and 27 seconds** to evacuate all the passengers after the fire broke out.

The bolt installed in a support pylon of a slat on the leading edge of the right wing fell off due to vibration because **it was fixed only by a nut and not backed up by a washer**, according to the report.

The bolt then pierced the fuel tank when the slat was tucked into the wing and forced it into the tank with considerable force, it said.

The board believes China Airlines mechanics **failed to attach** a washer when they replaced the nut on July 6, 2007, about **six weeks before** the

accident, at the instruction of Boeing, which has since modified the design of the nut, enlarging it to make it more effective in preventing the bolt from detaching.

Jail for fake engineer who deceived Qantas

Timothy McCormack was caught red-handed **lying about his qualifications to perform maintenance checks** on Qantas jets, but his capacity for chutzpah was undiminished.

Facing the prospect of a lengthy jail term for falsifying his aircraft maintenance license, he tried to persuade a judge that the airline would be **less safe** as a result of his employment being terminated - because it would be bereft of his fine eye for detail.

Judge Mark Marien, who sentenced McCormack yesterday to a minimum of two years' jail, read out a **fake character reference** the former Qantas employee had forged in the name of one of his supervisors to receive a lighter punishment. "Having Tim fully certified for jets has not risked anyone's lives as has been portrayed," the reference said.

"If anything, lives are more at risk now, not only because of the constant cost-cutting of management, but they are down an excellent engineer who did not take risks or cut corners with his maintenance practices."

McCormack, 26, pleaded guilty in the District Court to 56 offenses, including making false Commonwealth documents, possessing a false license to perform aircraft maintenance and 30 counts of carrying out **unauthorized maintenance checks** on Australian passenger planes. The court heard he had been employed by Qantas as a maintenance engineer, but started wearing the uniform worn by licensed engineers and performing more senior tasks **after lying** to his managers that he had passed examinations set by the Civil Aviation Safety Authority.

When McCormack's manager became concerned that he was not getting paid enough for his work, he produced 10 fake documents that purported to be from the Civil Aviation Safety Authority certifying that he had passed his exams. His **engineer's license was forged**.



After pleading guilty to 42 charges, McCormack provided false character references to the court, each in the same font. Two were signed with the same pen and all of them were riddled with grammatical and spelling errors. Judge Marien said he was unable to believe McCormack's protestations of remorse after it became apparent that he had continued his pattern of deception by providing fake testimonials to the court.

"The offender ... set out on a deliberate and calculated course of deceit, **masquerading as a licensed aircraft engineer** and without being qualified carried out technical aircraft work of a licensed engineer, including certifying the work of others.

"The potential consequences of that course of action may have been catastrophic."

Qantas said it had since **reviewed all its engineers' qualifications**.

"We welcome today's news," the airline said in a statement.

<http://www.smh.com.au/national/jail-for-fake-engineer-who-deceived-qantas-20081217-70vw.html>

FAA Gives Southwest Airlines More Time for Repairs

Unapproved Brackets Must Be Replaced On 50 More Planes

The Federal Aviation Administration gave Southwest Airlines the green to continue flying about 50 commercial jets, or 10 percent of its fleet, allowing the carrier more time to remove **unauthorized parts** from its planes.

The brackets in question support exhaust gates on older Boeing 737s. They are designed to divert engine exhaust away from the wings when a jet's flaps are extended.



In a statement, the FAA said it would allow the airline to continue to operate the planes on the condition that each be physically inspected for wear and

tear every seven days. The agency said all the brackets must be replaced by Dec. 24.

FAA spokesman Lynn Lunsford said the maintenance company used by Southwest **improperly subcontracted work**, leading to the installation of the brackets. He said 737s flying with the **unapproved parts** pose no immediate danger. But he said the FAA's certification system is important because it allows the agency to closely track the quality of equipment on planes.

Lunsford said an FAA inspector at a Southwest repair facility noticed **discrepancies in paperwork** covering plane repairs in August. Subsequent digging by the inspector led to the discovery that a number of Southwest jets had the unapproved brackets installed. The FAA informed Southwest on Aug. 22 that it was flying at least 42 planes with unauthorized parts, and gave the airline 10 days to make changes.

Southwest, after scouring its own records, later said that 82 planes were flying with the brackets. So far, Southwest has removed the brackets from 33 planes, a company spokesman said.

Aircraft Electronics Association (AEA) slams FAA's SMS proposal

The Aircraft Electronics Association (AEA) is encouraging its members and the aviation industry to respond to the recent FAA call for public comments regarding a potential rulemaking requiring repair stations, air carriers and manufacturers to develop and implement **safety management systems SMS**).

It is the opinion of the AEA that the FAA is proposing a significant **additional burden** without any financial, administration or administrative benefit to AEA members.

You can find the FAA Advance Notice of Proposed Rulemaking (ANPRM) request for information on the last page of the July 23 Federal Register. The AEA is creating a simplified template for commenting to the FAA that will be available to AEA members prior to the comment **deadline** of October 21, 2009.



Read the entire AEA regulatory update and commentary here.

<http://www.aea.net/governmentaffairs/regulatoryupdates.asp>

<http://edocket.access.gpo.gov/2009/pdf/E9-17553.pdf>

Eight Helicopters Reportedly Grounded Since 2001

The UK Ministry of Defense is taking flack for eight Chinook helicopters that have reportedly been grounded since they were purchased due to a **software glitch**. Sky News reports that the Ministry allegedly tried to save money by



writing their own software for the aircraft. The original deal for the Chinooks was made with Boeing back in 1995, and delivery was made in 2001, according to the paper. But the MoD says it **mistakenly** did not request security codes for the flight software, and once the mistake was realized, Boeing would not turn over the codes to make the helicopters operational in order to preserve its intellectual property.

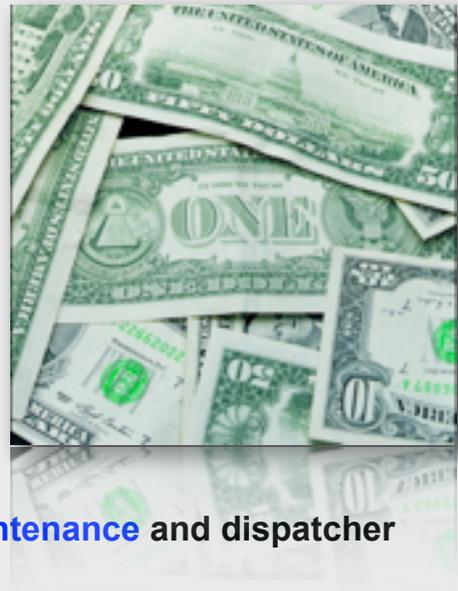
But The Times of London reports that the MoD purposely did not request the codes **under pressure** from the Treasury. The Times says the ministry thought it would save money by writing proprietary flight software for the aircraft.

The bottom line is, the 8 helicopters valued at \$483 million in 1995 have been sitting in an air-conditioned hangar in Boscombe Downe since they were delivered in 2001. A Ministry of Defense spokesman said the helicopters have been downgraded to Mk2 operations, though they were designed as Mk3 aircraft. The new estimated total cost of the aircraft is now pegged at over \$818 million.

Gulfstream Airlines Says FAA Penalty Is Too Steep

Hopes To Pay Less Than 1 Percent Of Assessed Fines

While Gulfstream Airlines admits that there are **errors in its record keeping**, and that it engaged in some other **improper practices**, company executives say they should only be liable for less than one percent of the \$1.3 million in fines levied by the FAA. In a rebuttal obtained by the South Florida Sun Sentinel through a Freedom of Information Request, Gulfstream says \$12,500 is a reasonable fine, given the scope of the problems. The FAA had fined Gulfstream for what it said were **hundreds of discrepancies** between crew logs and computer-generated schedules. The FAA also said there were problems with **aircraft maintenance** and dispatcher schedules.



"We are still in the relatively early stages of discussions with the FAA regarding their proposed fine so it would be premature to discuss how it may be resolved," airline spokesman Bruce Hicks said.

"We do an outstanding job of running a safe airline for our customers and employees," says Gulfstream CEO Dave Hackett on the company website. "The FAA identified several instances where **mistakes** had been made, **principally in record-keeping**, and we have strengthened our efforts to ensure that our records are not only accurate, but clear."

Gulfstream Airlines operates mainly out of Florida, flying to multiple destinations in the Bahamas as well as several cities in Ohio.

Super Puma crash generates maintenance recommendations

A Special Bulletin released by the UK Air Accident Investigation Branch confirms that the 1 April crash of a Bond Helicopters Eurocopter AS332L2 Super Puma G-REDL was caused by the "break-up of the epicyclic reduction] gear stages" of the main gearbox, which caused the main rotor to separate. The crew **had no useful warning** of the impending failure, says the agency, and the aircraft fell into the North Sea 15 km (9.3 miles) off Peterhead, Scotland, killing all on board.



The AAIB has issued two recommendations in addition to those published on 17 April, requiring the European Aviation Safety Agency to **strengthen maintenance procedures "to ensure that correct identification of the type of magnetic particle is maximized"**, and to review the design, operational life and **inspection processes** for planet gears in AS332L2 and EC225LP helicopters.

Human Factor Techniques to survive a downturn

News item: "In 2009, Airlines may lose up to \$9 billion" [IATA]. To everyone in the aviation industry, this means severe cost cutting . To be the one to say "we can't cut anymore!" Can be career limiting.

You and your organization can survive cost cutting in a positive way by **applying Human Factors Science** to the most common cost cutting recipes.



Here is how:

1) **Head count reductions:** The irony is that immediately following a layoff, **human errors decrease** because those who are left are more experienced, and close ranks in order to survive.

The science of Human Factors shows us that, **in the long term**, overworked and overextended personnel will commit errors through fatigue or distractions. Human factors science -Fatigue Management is a must, not just on the job but outside it.

Know not only your own limits but those of the ones who cover your back.

Discuss fatigue with others, do not be a silent hero.

If you must **multitask** at least recognize that, when you do, your chances of errors increase dramatically.

To **reduce omission errors**, use check lists and “kit as you go, clean as you go” techniques. Do not depend on your memory or your experience alone.

Stay focused during critical tasks; eliminate distractions where possible, do you really need to handle a 30 second personal text message or cell phone call?

2) **Focus on core business only:** This usually means cuts to training, error prevention and networking [No travel, no outside meetings, no conferences].

Human factors science -Training: replace traditional training by a training focused on Human factors high risk areas. One aviation maintenance facility did just that, it resulted in a significant reduction in training time and cost, and it helped improve Quality by 90% and productivity by 50%.

Error prevention: By using Human factors techniques to analyze and **classify errors**. One Hospital group completely eliminated transcriptions and prescription errors by installing and integrating a bar coding system.

Networking: Even if your travel has been slashed, you can stay in touch and **share lessons learned** through newsletters such as Roger Hughes *Aviation Human Factors Industry News*.

Remember, learning from others lived experience before you experience it yourself...priceless!

3) Cutting Non- value added activities: This makes a lot of sense but could **hurt your organization** if applied incorrectly. In many organizations, inspection and audits are considered non-value added activities. In tough times they get deferred, reduced to mere formalities or eliminated.

Human factors science - Inspection: Inspection is always added when things go wrong, and is seldom if ever removed. Many organizations carry a heavy burden of “just in case “inspection, so there is room to cut, but how? First by **using pre-verified kits and checklists** you can eliminate inspections for omissions.

Second by using **Process Failure Mode Engineering Analysis [PFMEA]** you can further reduce Inspection without any ill effects.

Third always inspect to fail, never inspect to pass.

Audits: Several types of audits focus on common activities and could be consolidated. For example, you could combine Quality, Safety and FOD audits as they all focus on the same behavior.

Audits must focus on the **detection and elimination of high risk behavior, as observed under “Normal working conditions”. Audits performed under controlled conditions” usually result in No significant findings”**

In conclusion, cost reductions will happen. However, if you apply **Human Factors science** to permanently improve your operations, you will emerge a winner.