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:

Incorrect Maintenance Manual Procedures

FAASTeam Maintenance Safety Tip
January 2011

FAASTeam - FAASafety.gov

How many times have you done a job and realized the maintenance manual was incomplete or incorrect? Do you just put a note in the margin or in the sleeve of the DVD? Do you just KNOW how to perform the task correctly? What happens to the mechanic who may not be as familiar with the product or may be fatigued and/or pressured? Will he or she also recognize this maintenance manual error and come to the proper conclusion? The answer is, not always.

It is everyone's responsibility to identify errors in the maintenance manual and bring them to the attention of the manufacturer. It is suggested to put it in writing and to accept nothing but a written response. If the error still exists, you should forward your correspondence to your local Flight Standards District Office for an Airworthiness evaluation. They may be able to assist you by contacting the Aircraft Certification Office and working with engineering and technical publications to obtain a safe result.

If you compare the latest revision to a particular maintenance manual you will often find the reason for the revision may have been for clarification, procedural change, lubricant alternatives and a host of other changes brought about by professionals like you. Be diligent and share your knowledge.

Density Altitude: The Nine Deadly Sins

What Pilots Don't Know That Will Kill Them

This training is extracted from a presentation by Orrin "Kurt" Anderson, an Air Safety Investigator with the National Transportation Safety Board. The presentation was given in the Puget Sound area, sometime around 2003 (my best guess).

Mr. Anderson has investigated a very large number of general aviation accidents that involved density altitude as one of the causal factors. This presentation describes a number of things, all involving to some degree density altitude, that pilots should, but often don't know.

Although most of his examples involve flying in the mountainous areas of the Pacific Northwest, the lessons are certainly applicable to pilots across the country.

The Nine Deadly Sins.

1. Turn diameter
2. Induced power requirement
3. Best position in a canyon
4. Landing ground speed
5. How to figure real takeoff performance
6. How to adjust Vy and Vx
7. What flap position to use
8. Climb gradient
9. When to use short/soft/obstacle clearance takeoffs

http://www.avhf.com/html/Training/Density_Altitude/page1.asp

FAA Mandates CRM Training For 135 Operations

The Federal Aviation Administration (FAA) has finalized a rule that requires non-scheduled charter airlines and air taxis to train pilots and flight attendants in Crew Resource Management (CRM), a well-established concept that helps human error in commercial aviation by teaching pilots, flight attendants and other aviation workers to act as a team. Air carriers affected by the final rule must establish initial and recurrent CRM training for crewmembers within two years of the effective date of the rule.

The training must address the captain's authority; intra-crew communications; teamwork; managing workload, time, fatigue and stress; and decision-making skills.

"This type of training is critical for the safety of flight crews and passengers," said U.S. Secretary of Transportation Ray LaHood. The FAA has required CRM training for air carriers operating larger airplanes since December 1995. "I know the value of making Crew Resource Management part of the safety culture from my days as an airline pilot," said FAA Administrator Randy Babbitt. "A crew that works as a team is a better crew, regardless of the size of the plane or the size of the airline."

CRM training focuses on the interactions among personnel including pilots, flight attendants, operations personnel, mechanics, air traffic controllers and flight service stations. This training in communications and teamwork can help prevent errors such as runway incursions, misinterpreting information from air traffic controllers, crewmembers' loss of situational awareness, and failure to fully prepare for takeoff or landing.

This final rule responds to a 2003 National Transportation Safety Board recommendation that is currently on the Board's "Most Wanted" list of safety improvements. Crew Resource Management (CRM) training is the incorporation of team management concepts in flight operations.

This training focuses on communication and interactions among pilots, flight attendants, operations personnel, maintenance personnel, air traffic controllers, flight service stations, and others.

CRM also focuses on single pilot communications, decision making and situational awareness. On May 1, 2009, the FAA published an NPRM proposing to require all part 135 certificate holders required to have training programs under 14 CFR 135.341 to implement CRM training for pilots and flight attendants in part 135 operations.

The intent of the NPRM was to create uniform standards for CRM training in part 135 operations by codifying existing guidance material in Advisory Circular (AC) 120-51E, Crew Resource Management Training, (Jan. 22, 2004), and AC 00-64, Air Medical Resource Management, (Jan. 22, 2005). The FAA determined this was necessary following a review of 268 **accidents in part 135 operations that** occurred between 1998 and 2008. Of these 268 accidents, 24 were directly related to ineffective CRM and resulted in 83 fatalities and 12 serious injuries.

Challenger's Crew Remembered, 25 Years After Disaster

Friday's memorial ceremony at the Kennedy Space Center honored the seven who died Jan. 28, 1986, and other astronauts, including the Apollo 1 crew.

Friday morning at 9 a.m. EST, a memorial ceremony was held at the KennedySpace Center in Florida to honor the seven astronauts who died 25 years ago to the day aboard space shuttle Challenger. The ceremony by the Astronauts Memorial Foundation will remember all U.S. astronauts who have died during the history of the space program, including the three Apollo 1 crewmen who died Jan. 27, 1967, in a fire in their capsule during a test. The Challenger disaster occurred only 73 seconds after the shuttle launched that morning with Mike Smith, Dick Scobee, Ron McNair, Ellison Onizuka, Christa McAuliffe, Greg Jarvis, and Judith Resnik aboard. An o-ring failure in the right solid rocket booster caused the explosion, with investigators determining that cold weather at launch was a contributing factor. But the federally appointed commission that investigated the loss also faulted NASA's "silent safety program," as the commission's report described it.

Its lengthy report said the Commission was "concerned about the symptoms that it sees. The unrelenting pressure to meet the demands of an accelerating flight schedule might have been adequately handled by NASA if it had insisted upon the exactingly thorough procedures that were its hallmark during the Apollo program. An extensive and redundant safety program comprising interdependent safety, reliability and quality assurance functions existed during and after the lunar program to discover any potential safety problems. Between that period and 1986, however, the program became ineffective. This loss of effectiveness seriously degraded the checks and balances essential for maintaining flight safety."

The commission cited April 3, 1986, testimony by space shuttle program manager Arnold Aldrich at a public hearing in Washington, D.C., where Aldrich described five communication or organization failures that affected the decision to launch the Challenger that day. "Four of those failures relate directly to faults within the safety program," the report stated. "These faults include a lack of

problem reporting requirements, inadequate trend analysis, misrepresentation of criticality and lack of involvement in critical discussions. A properly staffed, supported, and robust safety organization might well have avoided these faults and thus eliminated the communication failures."

‘Smart’ sensors could help find broken airplane wiring quickly

University of Dayton researchers say a “smart” sensor they have adapted for use in clamps that hold wiring in airplanes could help maintenance personnel quickly find broken wires that could pose a safety hazard. The researchers hope to the technology, which uses a radio frequency identification (RFID) tag to send a signal to a hand-held electronic reader to report broken wiring in a clamp. RFID allows objects or people to be identified via wireless signal.

Commercial market uses could encourage mass production that would bring down per-unit costs and demonstrate reliability to aircraft makers that could become customers, said Bob Kauffman, a University of Dayton Research Institute research chemist creating and testing the prototype RFID sensors.

The technology could reduce aircraft maintenance costs by improving the capability to find and replace broken wires amid miles of wiring secured by thousands of clamps in an airplane, said Mike Heil, a retired Air Force colonel who now heads the Ohio Aerospace Institute.

“It could contribute to greater safety, greater reliability and lower operating costs,” Heil said.

Other potential uses include signaling unsafe tire tread wear; protecting against hand-held reader theft of information from a person’s electronic passport; finding corrosion in bridges, or helping athletic personnel determine whether a football player’s helmet was hit hard enough to cause a concussion, Kauffman said.

He and UDRI research physicist Doug Wolf modified RFID tags with a bypass so that they would communicate with a hand-held reader only if the aircraft wiring was broken, rather than send out a constant signal. That would simplify pinpointing the broken wires, Kauffman said.

Broken wires could cause an explosion by igniting fuel. Kauffman and other investigators of the 1996 crash of TWA flight 800 near New York City **suspected** that such accidental fuel ignition may have caused the TWA disaster, which killed all 230 people on board.

UDRI researchers are working with the Dayton RFID Convergence Center, a business incubation organization, to find a company to produce the sensors for commercial uses, Kauffman said.

The Federal Aviation Administration provided $1.6 million in funding over five years for UDRI's research.

FAA-Meted Penalties Hit Record High In 2010

The FAA was unusually busy in 2010 when it came to meting out proposed civil penalties, particularly for maintenance-related issues. By our calculations, FAA proposed at least $39.4 million in maintenance-related civil penalties, and what likely is a record $50 million overall. FAA usually issues press releases about penalties of at least $50,000. In 2010, there were more than 30 such involving dozens of airlines and other operators, as well as a handful of maintenance, repair and overhaul operators and flight schools.

The biggest penalty announced last year, indeed the largest civil penalty ever proposed by the FAA, was the $24.2-million proposed fine of American Airlines for allegedly failing to correctly follow an airworthiness directive (AD) involving the maintenance of the carrier's MD-80s. "It's probably safe to say this year is a record year" in terms of civil penalties because of the fine proposed against American, an FAA spokesman said.

The other maintenance-related penalties ranged widely in size and scope. For example, FAA in July proposed a $50,000 penalty against Spirit Airlines for failing to replace a faulty elevator aileron computer—in violation of its own maintenance program—on an Airbus A321 after the aircraft experienced an uncommanded pitch down of the nose. The aircraft experienced another uncommanded pitch down on a revenue flight the next day.

On the other end of the monetary spectrum, FAA in February proposed a $2.9-million fine against American Eagle Airlines for conducting at least 1,178 passenger-carrying flights between February and May 2008 using four Bombardier CRJs with landing gear doors that had not been repaired in accordance with an AD that became effective in August 2006. FAA proposed five maintenance-related penalties of $1 million or more in 2010.

In looking at the size of the proposed penalties in relation to the alleged violations and at factors, such as the number and type of aircraft involved, the number of flights operated with aircraft said not to be in compliance with Federal Aviation Regulations, and the time periods involved, it's difficult to detect a pattern.

"We don't really get into spelling out how we arrive at penalties," an FAA spokesman said. He did allow, however, that there is a range set by regulation, and there is leeway that takes into account factors such as if an alleged violation is intentional and whether a carrier or other operator continues to fly the aircraft in question after being made aware of a violation.

After receiving a civil penalty letter from FAA, an organization has 30 days to respond. Working out how much money, if any, will be paid takes significantly longer.

Jeppesen Tackles Fatigue Risk Management

Jeppesen added fatigue risk management (FRM) functionality to its Crew Management System suite, furthering its work to prevent and mitigate fatigue risk in crew planning and operation. According to the company, the FRM solution into consideration crewmembers' predicted levels of when generating and maintaining crew schedules. Predictions of crew alertness and fatigue risk are based on the Boeing alertness model, a bio-mathematical model developed jointly by Jeppesen and parent company Boeing. Jeppesen also recently released CrewAlert, an iPhone app that shows how sleep science applies to crew schedules. CrewAlert allows for data, collected in actual operations, to be fed back into an operator's fatigue risk management system for purposes of correlation with other pilot data and further refinement of the FRM model.

Data generated by an FRM assessment, including alertness and risk information, is processed by Jeppesen crew planning optimization software when generating crew pairings and rosters for operators.

This data is also available to crew planners to control and monitor fatigue risk during manual roster maintenance and day-of-operation changes.

Boeing says 'immature' technology behind 787 delay

Boeing said on Sunday that the use of "immature" technology caused delays in the delivery of its 787 Dreamliner passenger jet, a project almost three years behind schedule.

"Some of the technology was not as mature as it should have been and we put a global supply chain together without thinking through some of the," Jim Albaugh, president and chief executive of Boeing Commercial Airplanes, said at a forum in the Saudi capital.

"When you put immature technology in your supply chain and don't supply adequate oversight, you have issues and that is what we had," he added at the annual Global Competitiveness Forum.

But he expressed confidence in the aircraft even if production is nearly three years behind schedule.

"It is going to be a magnificent airplane and will be 20 percent more efficient than the airplanes it is replacing," he said.

Boeing said last week it would delay the delivery of its first 787 unit from February to the third quarter of 2011.

The postponement came after a string of technical mishaps and delays slowed the testing programme for the jets, heralded as a new generation of highly fuel-efficient, mid-sized aircraft.

Automatic Behavior

Automatic behavior refers to a period of several minutes or more during which a person is barely awake and able to continue performing routine duties, but loses the ability to make quick decision. For example, if you automatic behavior while driving home, you might be driving on the highway, when you suddenly realize missed your exit by several stops. Automatic behavior tends to sneak up on you and many people have no memory of having one. If you've feeling tired while performing a monotonous task, be sure to check yourself for automatic behavior.

CHC Safety & Quality Summit Reveal Theme: Corporate Responsibility vs. Personal Accountability

When it comes to safety, where does corporate responsibility end and personal accountability begin?

It's a question that aviation companies around the world struggle with daily. It's also the theme of one of the world's largest aviation safety conference, being held March 28-30 in Vancouver, BC. "Because aviation is so highly regulated, most companies live up to the responsibility they have to provide a safe environment and proper training," said Greg Wyght, VP Safety and Quality for CHC Helicopter. "But it's the safest companies that ensure their staff understand how they are personally accountable for working within their company's safety management system."

The CHC Safety and Quality Summit will feature approximately 70 sessions examining this theme from many different angles and perspectives. An impressive array of experts, including Tony Kern, a world-renowned expert on reducing human error in aircraft operations, will deliver the sessions.

Now in its seventh consecutive year, the Summit is an internationally recognized, non-profit aviation safety conference aimed at improving safety in aviation globally through excellence in human factors. The Summit is hosted by CHC Helicopter, one of the world's largest providers of civilian search and rescue services and transportation for the global offshore oil gas industry. CHC has over 250 aircraft operating in some 30 countries worldwide.

The Summit is sponsored by Sikorsky, AgustaWestland, Eurocopter, Willis, Chartis Swiss Re and Bell Helicopter, allowing organizers to continue bringing together the best minds in aviation safety to present and share best practices with delegates from around the globe.