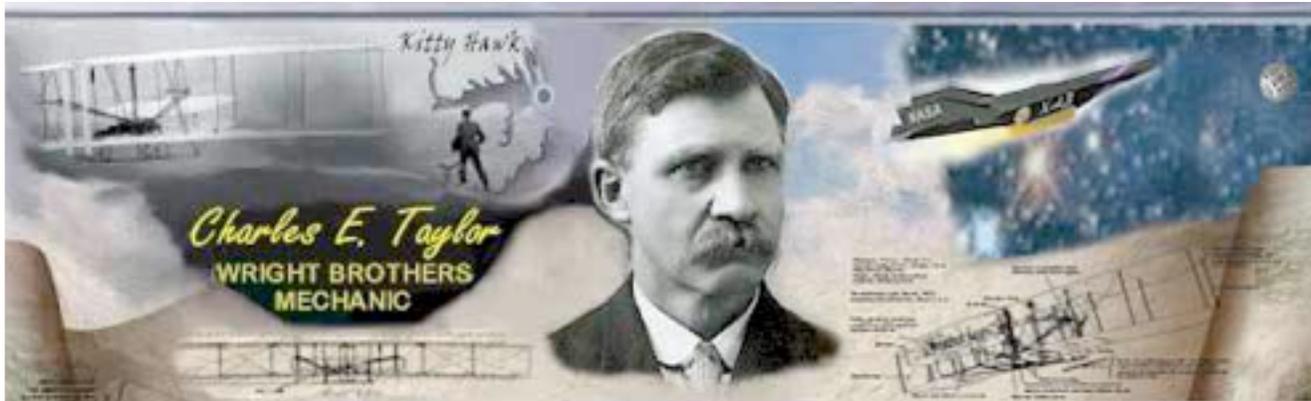


# Aviation Human Factors Industry News

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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](mailto:rhughes@humanfactorsedu.com)

In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

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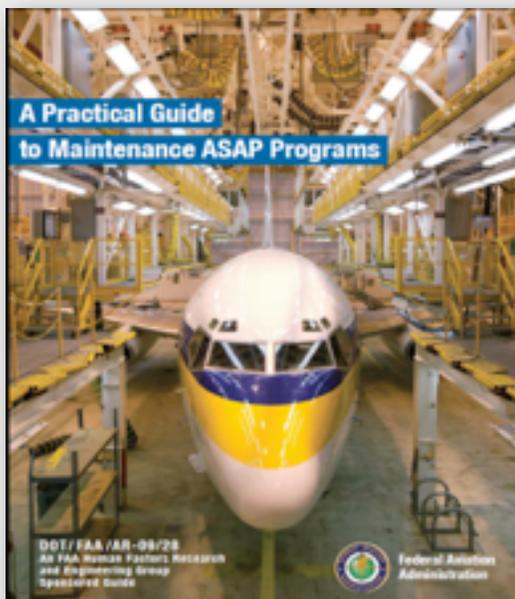
## Brilliant Work

**A word from Glen Gallaway - Maintenance Human Factors Research Program Mgr./ Scientific and Technical Advisor for Human Factors Human Factors Research and Engineering Group, ATO-P**

We have just issued a new document **"A Practical Guide to Maintenance Safety Action Program (ASAP)"** that discusses the value / need for a Maintenance Aviation Safety Action Program (ASAP). The document goes on to tell how to develop and operate a program.

The Guide was released at the **Sept. '09 ATA/FAA Maintenance Human Factors Symposium** to over 400 maintenance people and organizations representing most of the world airlines and MROs. The feedback was extremely positive that this document would be very beneficial in promoting the further development of the ASAP program. Subsequently the Guide was released at the **Sept. '09 Maintenance, Pilot, and Cabin ASAP Infoshare meeting** (over 150 people) where it was similarly heralded as an extremely important tool to **help management and maintenance personnel easily understand the ASAP program** and provide a clear roadmap for developing an ASAP program. The original printing of the document was quickly depleted and consequently there are requests for substantial additional copies for distribution. The ASAP Infoshare group is aware of many maintenance organizations with long-standing interests in initiating an ASAP programs and will find the Guide **the catalyst** for them to begin their own formal process to develop an ASAP program.

To view the document go to [hfskyway.faa.gov](http://hfskyway.faa.gov). The document is on the home page. Just click on it to open the document.



Second, we have a **maintenance personnel fatigue management research program** underway and a description of it with additional resources can be on the [hfskyway.faa.gov](http://hfskyway.faa.gov) web portal also. Once at the site, select the **"Find Info"** tab, then the **"MX Research Projects - Current"** tab, and then the **"Personnel Fatigue Management"** tab. This will take you to a main page of resources about MX personnel fatigue. You might look at the **Newsletters/Publications** section and then select the Maintenance Fatigue Focus Newsletter.



This is a very informative first edition newsletter.

<https://hfskyway.faa.gov/uploads/dmunshi/MXFatigue%20Newsletter.pdf>

(see attachment)

<https://hfskyway.faa.gov/hfskyway/index.aspx>

## **FATIGUE AWARENESS CALENDARS**

The 2010 calendar for aviation maintenance technicians is focused on **fatigue survival**. It outlines 12 issues that can influence fatigue and what **you can do both on and off the job** to protect yourself against fatigue. If you would like to request a number of calendars for your organization, please contact your local **FAA Team Program Manager (FPM)** and make your request to them.



You can identify your FPM by going to [FAASafety.gov](http://FAASafety.gov), then to the "Directory" where you can search for the appropriate person to contact. Those outside the US should send their request to Phil Randall via email at [phil.randall@faa.gov](mailto:phil.randall@faa.gov).

## If airlines read new 'human factors' guide it could just save your life

**Human factors** may well have brought down Continental Express Flight 3407.

Although it's going to be a while till the National Transportation Safety Board issues a formal Probable Cause ruling in the February 12, 2009 crash of Continental Express Flight 3407 in Buffalo, **human factors—specifically pilot fatigue and training** -- could well play prime roles in the disaster. The crash killed all 49 people on board the Bombardier Q400 propjet, and one on the ground.



That's why Flight Safety Foundation's latest life-saving initiative is so timely. The group's European Advisory Committee has just published the **Operators Guide to Human Factors in Aviation**. The idea, according to FSF, is **"to bridge the gap between theory and practice,"** with the goal of "improv[ing] the safety and efficiency of commercial aviation."

For all the official jargon, it boils down **to saving life and limb, to better educating airlines** and their pilots. "The challenge...was to gather the available scientific information and make it understandable and accessible for aviation operators," says Flight Safety Foundation President and CEO William R. Voss.

The guide is comprised of over 100 articles, and—importantly—visual aids to help drive home the message. Airlines and their flight crews will get new life-saving, cutting-edge insights into:

- **Crew action and behavior;**

- So-called “**personal influences**,” things like stress, fatigue, and awareness;
  - **Organizational and environmental influences** - factors that are beyond the control of the crew but under the control of the airline;
  - **Informational influences** – mundane, yet critical, things such as the how checklists, manuals, navigational charts and the like affect safety.
- Dry reading? Perhaps. But let’s hope airlines and the people who fly for them put it at the top of their **personal best-seller lists**.

<http://www.flightsafety.org/current-safety-initiatives/operators-guide-to-human-factors-in-aviation-oghfa>

## **Air Force Releases Results of T-38 Accident Investigation**

An Air Force accident investigation board has determined that a **failure in the rudder operating mechanism** caused the crash of a T-38 aircraft on a training mission 12 miles north of Edwards AFB, Calif., on May 21, 2009. The report states the failure was **most likely due to maintenance issues**.

Major Mark Paul Graziano, a student pilot from the U. S. Air Force Test Pilot School, died as a result of that accident. His student navigator, Major Lee Vincent Jones, sustained serious injuries for which he is still undergoing treatment.

The Test Pilot School is a unit within Air Force Flight Test Center at Edwards AFB. The aircraft, assigned to the test center, was destroyed. Dollar loss was estimated at \$6,407,808.



Maj. Gen. Curtis Bedke, president of the investigation board, said, "The loss of Major Graziano and the injuries to Major Jones are tragic. **Both were highly regarded by their peers and superiors.** Our thoughts and prayers continue to be with them and their families."

In the Air Force Materiel Command AIB report, Gen. Bedke stated, "**I find clear and convincing evidence** that the cause of this mishap was a failure of the rudder operating mechanism, which disconnected the flight controls from the rudder actuators and caused the rudder to deflect 30 degrees left. This hardover rudder induced an uncontrollable yaw and a resulting roll, causing the aircraft to depart controlled flight. This condition is unrecoverable in the T-38."

The report identified **two potential causes** for the failure of the rudder operating mechanism. The **first is a structural fatigue failure** or structural break in a critical component or bolt, **the second a maintenance error** in which a **nut or cotter pin did not properly secure a bolt connecting two critical components.** Citing two historical cases of rudder failure, the report concluded **that maintenance error was the more likely cause of the rudder failure.**

The report stated that **"insufficient supervisory oversight and a lack of discipline of the training process"** was a factor. **Significant discrepancies** were noted regarding **maintenance procedures and documentation** of training. The report said, "In the vast majority of cases, the aircraft maintenance mechanic had likely received appropriate training in the past (almost all civilian employees interviewed testified to having prior military service, most in the Air Force as upper level maintenance mechanics). However, **lack of documentation in the training process** made verification impossible."

Following approval of the report, experts at Headquarters Air Force Materiel Command traveled to Edwards AFB and are reviewing the flight test center's current processes **to identify and mitigate safety risks and improve maintenance procedures.**

## Maintenance problems caused F-16 mishap

An F-16 accident that sent two loaded external fuel tanks crashing near Italian homes **was the result of maintainers ignoring technical orders**, an accident investigation concluded in a report issued Oct. 5. An F-16 accident that sent two loaded external fuel tanks crashing near Italian homes was the result of maintainers ignoring technical orders, an accident investigation concluded in a report issued Monday.



The 370-gallon tanks struck close to several residences and buildings about 8 miles south of the F-16 Fighting Falcon's home base, Aviano Air Base in northern Italy. No one was injured.

The F-16, from the 31st Fighter Wing, was about 11 minutes into a training mission March 24 when its engine stopped, the U.S. Air Forces in Europe investigation concluded.

Following emergency procedures, the pilot turned the gliding jet toward Aviano and initiated a powerless landing. To reduce the plane's weight and wind resistance, the pilot released the fuel tanks underneath the jet's wings after his flight lead concluded there were few buildings in the farmland below.

The pilot went on to make a safe landing at Aviano.

When investigators tried to determine **why the engine failed, they found a "massive fuel leak" between the fuel/oil cooler and the main fuel line.**

An inspection of maintenance records and testimony from airmen led to the discovery that **maintenance supervisors had instructed flight line maintainers to install the fuel/oil cooler, even though the supervisors knew the job should be done by back shop maintainers and with different technical orders** than the flight line maintainers used.

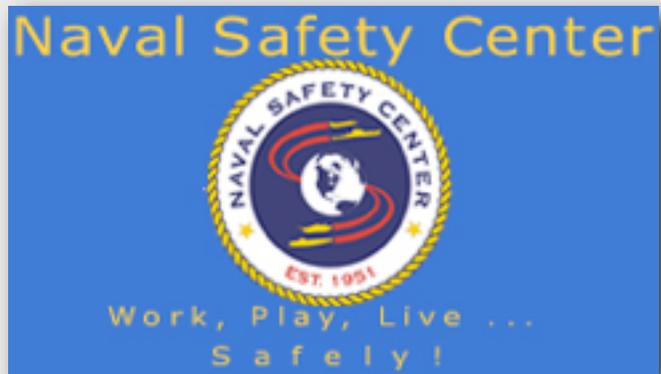
**Supervisors overruled several airmen's concerns** about the order, the report said. The report did not name the supervisors who approved the work.

“ ... Generally poor maintenance practices contributed to the accident,” accident investigation board president Col. John Hokaj concluded. “Aircraft maintenance unit supervision **encouraged a ‘make it happen’ production mindset** and failed to enforce the strict application of published procedures.”

The report did not blame the 31st’s wing and maintenance group leadership, saying they were unaware of the shortcuts.

## The School of Hard Shocks

We were 57 days into the seven-month deployment onboard USS Theodore Roosevelt (CVN-71), and things were going smoothly. I was in the AME center when we got a VIDSMAF for a **popping liquid-cooling-system (LCS) fan circuit breaker**. I checked the debrief in IETMS but **found no troubleshooting recommendations**. It was time for some old school troubleshooting: schematics.



We checked out our tools, put the MAF in work, grabbed the schematics and PEDD, and went to the AE shop with a few questions. The AEs confirmed that a symbol in the schematics was a thermal switch; we suspected it had failed and caused the LCS cooling-fan motor to short out. We knew that, when external power was applied to the aircraft, we could turn on the fan with its test switch. We pulled the cannon plug from the fan, thereby eliminating it from the system, so we could determine if it was the source of the problem.

We put one technician in the cockpit to apply power and another next to panel 10L to operate the LCS fan-test switch and watch circuit breakers. I was up on the aircraft in panel 205L to verify that the fan worked. After I removed the cannon plug from the LCS fan, we applied power and flipped the fan-test switch. No circuit breakers popped, so I decided to test the LCS cooling-air shutoff valve (SOV), which was the other possible cause of the popping breakers within the system.

Trying to troubleshoot quickly and thoroughly before an upcoming maintenance meeting, I pulled the cannon plug off of the SOV, and it unexpectedly arced, burnt the cannon plug, and shut down the system. We cut power and disconnected the power cord.

Look what I had done. I also said we now needed to change the LCS fan. After removing and replacing the bad SOV, LCS fan, and SOV cannon plug, the system op-checked 4.0.

This incident wouldn't have occurred if we had read the wires in the system we were testing and eliminated the suspect components one by one. We also should have made sure that power was secured before disconnecting any cannon plugs. Finally, we shouldn't have rushed.

The PEDD is a wonderful tool that displays notes, warnings and cautions not found in the schematics. Therefore, when troubleshooting outside the PEDD, note the pop-ups that would prevent injuries to personnel and damage to equipment. Also, brief your entire maintenance crew. Never be afraid to ask for help if you're not 100 percent sure how to complete a certain task.

"Safe and expeditious maintenance" is our squadron's motto. While striving for the expeditious, we bypassed the safe portion of our doctrine. In the end, this maintenance wasn't safe or expeditious.



## NTSB: Human Error Contributed To Fatal Hudson Crash

Another human error may have contributed to last month's fatal collision involving two aircraft over the Hudson River. The National Transportation Safety Board says in radio transmissions an air traffic controller is heard giving the radio frequency for Newark Liberty airport to the pilot of the small plane involved.

When the pilot read it back, **the frequency was incorrect**, and officials say there was **no indication** that he was ever told otherwise.

The single-engine Piper plane collided with a tour helicopter on August 8, killing nine people.

Previously, federal officials had said the controller, who they say was on the phone at the time of the collision, should have warned the pilot about other aircraft in the area.



## **Air Jamaica settles lawsuit over safety**

Air Jamaica Ltd. settled a lawsuit in which the U.S. government alleged it was **negligent about the safety of its planes**, agreeing to audit aircraft, comply with regulations and pay \$180,000 in penalties.

The terms ending the 2008 lawsuit were announced Thursday.

After one of the carrier's planes made an emergency landing in 2001 at Kennedy International Airport in New York, **it flew 58 more times** before necessary repairs were made, U.S. Attorney Benton Campbell said.

"We've put a number of issues and procedures in place to ensure it doesn't happen again," airline CEO Bruce Nobles said.



## The truth about multitasking

Modern humans have **embraced multitasking** with all four limbs. We text while walking, chat on the phone while driving, check e-mail while writing the annual report. Psychology textbooks suggest that our **brains can't process so much at once**. "But if you walk around on the street, you see lots of people multitasking," Stanford researcher Eyal Ophir tells BBCnews.com.

"So we asked ourselves, "What is it that **these multitaskers are good at** that enable them to do this?"

The surprising answer **is nothing**. Ophir and colleagues categorized subjects into two groups, high and low multitaskers, according to the amount of electronic information they typically consumed. Then they ran them through several experiments designed to test the skills that multitaskers ostensibly possess. To test their ability to ignore irrelevant information, for example, subjects were shown a screen with both red rectangles and blue rectangles; when subjects saw the screen a second time, they were asked whether any of the red rectangles had been rotated. **High multitaskers consistently scored much worse**; they were less able to **ignore distractions**, had more fallible memories, and couldn't switch to new tasks as readily. "The shocking discovery of this research" is that high multitaskers "**are lousy at everything that's necessary for multitasking**," says co-author Clifford Nass. "**They're suckers for irrelevancy. Everything distracts them.**"

Left unclear is why chronic multitaskers fail. Are they **naturally bad at focusing**, so they multitask to compensate? Or does multitasking actively degrade their ability to concentrate? Either way, the lesson is the same: if you want to get more done, **try doing less**.



## Picture This!

There's more than one way to smooth out concrete, as these photos illustrate. Of course, you've got to **put your faith** in the excavator operator, because **if something goes wrong**, you'll be tossed like a salad.

