

Aviation Human Factors Industry News

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From the sands of Kitty Hawk, the tradition lives on.

Hello all,

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Human Factors Challenges - Part I

From the FAA

Dr. William Johnson has spent more than 30 years as senior executive and scientist for engineering companies specializing in technical training and human factors before joining the FAA in 2004. He is also an aviation maintenance technician and has been a pilot for more than 45 years.



Airline maintenance organizations, of all sizes, have many programs to help manage human error. Organizations with European Aviation Safety Agency (EASA) repair station certificates have mandatory human factors requirements. Other airlines and MROs, without such regulations, choose to implement human factors programs to reduce human error, ensure continuing safety, and control cost. Addressing human performance is simply, good business. This article looks at eight maintenance human factors challenges and solutions that are working in general aviation (GA) and airline maintenance organizations.

Airline maintenance/MRO organizations and regulations

One might envision airline maintenance organizations (14 CFR Part 121 or 135) or maintenance and repair organizations (MROs) (14 CFR Part 145) as large factories with hundreds, if not thousands, of maintenance workers. Well, that vision is not correct. Aviation maintenance is comprised of a lot of small businesses. Here are some interesting facts:

- Thirty of the 4,100 repair stations that hold a U.S. Part 145 certificate have more than 2,000 employees.
- Fifty percent of the repair stations have less than 10 employees.
- More than 80 percent have less than 50 employees.
- Thirty percent of U.S. repair stations hold EASA certificates.
- Since the larger repair stations have the EASA certificates, one can estimate that more than half of U.S. airline and airline MRO mechanics work both EASA rules and FAA rules.

General aviation maintenance organizations

Some may have an inaccurate vision of general aviation maintenance organizations. They are seldom merely small hangars working at a slow pace. Like airlines and MROs, GA shops are mostly small businesses. They are geographically dispersed and serve considerably more owner-customers than the big guys. GA shops service diverse aircraft types and have more individuals/owners telling them not only to hurry up but also to keep the cost low. These small shops do not have the economy-of-scale, like airlines and MROs, when it comes to investing in equipment, documentation systems, and other business processes.

Similar challenges

Although we have highlighted the differences, when you compare GA to air carrier maintenance there are likely more similarities than differences. Both groups have the challenge of finding, training, and keeping qualified personnel. Both struggle with the challenge of maintaining aging aircraft while staying abreast with the evolving aircraft, systems, avionics, and test equipment technology. Both groups feel the pinch of providing fair wages and benefits while trying to control the cost of every person-hour involved in maintenance. Both struggle to minimize the cost of mistakes and maximize the continuing aircraft and worker safety. Finally, both groups cope with the human factors that affect nearly every challenge listed above.

Shared human factors challenges

In 2010 FAA sponsored a small invited workshop to identify the critical human factors challenges in maintenance. All segments of aviation maintenance personnel assembled to create a list of the “top eight” human factors challenges (See Table 1). By the way, a European group also created a list of maintenance human factors challenges with considerable overlap with the U.S. list. Let’s look at airline and general aviation maintenance approaches to these U.S. challenges.

1. Documentation and procedures

Technical documentation and procedures are a big challenge for everyone! It is the No. 1 reason that the FAA takes actions against aviation maintenance technicians, that mechanics complete the NASA Aviation Safety Reports, and that MROs run into errors and reworks. Airlines and MROs work from a combination of manufacturers’ publications and company work cards. The challenge is to keep things up to date and to continuously ensure that instructions are compatible. For the MROs it is especially tough because they must use the work cards for each airline customer. There are as many ways to complete a specific task as there are customers.

GA maintenance organizations work on hundreds of aircraft types and models. Each aircraft often has a 30+ year collection of modifications and supplemental type certificates that may need checking. A sign-off for an annual inspection essentially certifies the aircraft and its component documentation for all work since the aircraft was new. One saving grace for GA paperwork is companies like ATP. Such technical publishers assemble the documents from government and manufacturers to streamline the search for proper requirements and procedures. However such companies can only provide the documents. Companies and AMTs must make the commitment to follow the procedures.

Airlines, MROs, and GA maintenance service suppliers must ensure logistical access to readable/usable documents. Availability of documents must be matched with a culture that values following procedures. Individual managers and AMTs can make a difference by always identifying procedures that are difficult or incorrect. Organizations and manufacturers must amend procedures as soon as possible. That action can help ensure that technical documentation is not only high value but also perceived as high value by the maintenance workers that use them.

Five Mistakes Companies Make with Ergonomics.

Walt Rostykus, vice president at Humantech, advises clients to [integrate ergonomics into their safety management systems](#) and to make ergonomics a component in the process they use to manage quality or continuous improvement. Rostykus is author of the eBook [Five Mistakes Companies Make with Ergonomics](#). Here's a preview.



- Mistake #1: [The wrong goal](#). Despite the preponderance of articles and blogs on the need to look at leading, not lagging, indicators, CEOs are still most interested in injury and illness rates. However, says Rostykus, that is like "predicting the outcome of a baseball game after it's been played, which is too late!"
- Mistake #2: [An unsustainable approach](#). Good ergonomics is not about a laundry list of technical requirements. That's an antiquated approach that is not sustainable long term. Rostykus recommends managing ergonomics using familiar systems such as continuous improvement, which have been used to achieve other improvements.

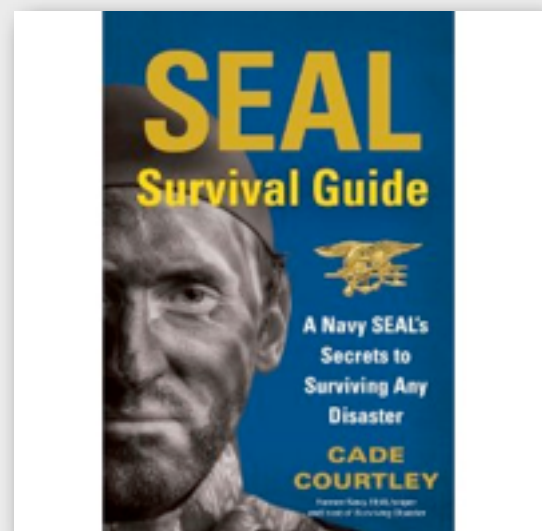
- Mistake #3: **A narrow view.** Viewing ergonomics strictly as a safety discipline stops companies from achieving the full benefit of incorporating workplace improvements. For a long time ergonomics has been associated strictly with safety. It can, however, lead to valuable changes like eliminating unnecessary motion that slows down cycle time, improving the quality of products, and reducing quality defects, which leads to fewer shipping delays.
- Mistake #4: **Ineffective and inconsistent tools.** "It's amazing how organizations focus on comparing their exposure to a known threshold like TLVs for chemicals," says Rostykus. "But when it comes to ergonomics, they are subjective." He recommends using tools based on valid data.
- Mistake #5: **Failure to check.** Humantech research found that many companies make ergonomic improvements and check them off a list without any effort to assess their impact. Comparing conditions before and after the change is essential, whether it's tactical or system-based improvement.

The 16-page publication can be downloaded at no cost from the Humantech website at www.Humantech.com.

SEAL Survival Guide

A Navy SEAL's Secrets to Surviving Any Disaster

Think and act like a Navy SEAL, and you can survive anything. The world is a dangerous place. **You can live scared—or be prepared.** "We never thought it would happen to us." From random shootings to deadly wildfires to terrorist attacks, the reality is that modern life is unpredictable and dangerous. Don't live in fear or rely on luck. **Learn the SEAL mindset:** Be prepared, feel confident, step up, and know exactly how to survive any life-threatening situation.



Former Navy SEAL and preeminent American survivalist Cade Courtley delivers step-by-step instructions anyone can master in this illustrated, user-friendly guide. You'll learn to think like a SEAL and how to:

* treat injuries at the scene subdue a hijacker * survive extreme climates * travel safely abroad defend against animal attacks * survive pandemic * and much more

Don't be taken by surprise. Don't be a target. Fight back, protect yourself, and beat the odds with the essential manual no one in the twenty-first century should be without.

BE A SURVIVOR, NOT A STATISTIC!

Safe Attitudes Make All the Difference

When employees have a **safe attitude**, they have a genuine concern for their own safety and well-being as well as that of co-workers. They feel it is **their** responsibility to help maintain a safe work environment for all. Good for them, and good for you."Safety is our number 1 priority," say a lot of companies. But when the chips are down and production needs to be increased, **safety may suddenly become number 2**. Having a good safety attitude means that **both the company and employees have to make safety a core value**. Values don't change every time priorities do. Values become part of the way you and your workers operate every day on the job. They are part of your organization's:

- Core
- Culture
- Policies
- Actions

Time and again, award-winning health and safety programs prove to be those in which the employer places a **high priority on worker safety**, and employees readily participate in activities that advance safety objectives.



In other words, everyone from the CEO to the newest, lowest level employee takes safety seriously and always makes it priority number 1.

What It Takes

What does it take to develop good safety attitudes among employees?

- **Encourage employees** to think about safety 24/7, not only when they're at work.
- **Talk about safety all the time.** It has to be something people are always discussing, thinking about, and improving.
- **Make sure employees work safely.** This job falls largely to your supervisors, who have to have good safety attitudes, too.
- And you and your staff have to be checking up, monitoring performance, and being visible.
- **Encourage employee** participation, suggestions, questions, and even complaints about unsafe conditions.
- **Set an example for your workers.** If they see you and your safety staff wearing PPE, following rules, eliminating hazards, and investigating incidents, they'll follow your lead take safety seriously, too.
- **Provide positive feedback** for safe performance and attitudes. People love to be recognized and praised for doing the right thing.
- **Correct reported safety hazards right away.** Nothing says that you and management also have a good safety attitude more than demonstrating that you care and are looking out for your workers.

Prescription Drugs and Sleep Aids May Hurt Sleep

Some prescription medicines, as well as some prescription and over-the-counter sleep aids, can cause problems with sleep. The fix may be to **adjust** the type or dose of medication or **seek sleep behavior therapy**. Prescription sleep aids and other prescription medications can interfere with much-needed sleep, reports the December 2012 Harvard Health Letter.



Sleep is essential to good health, and a lack of it can lead to heart disease, high blood pressure, stroke, weight gain, and diabetes. Yet [one in five Americans](#) struggle with insomnia every night, according to the National Sleep Foundation. "Prescription drugs can be a serious problem," says sleep expert Dr Lawrence Epstein, an instructor in medicine at Harvard Medical School.

Some prescription sleep aids, when taken for long periods of time, become less effective and actually [interfere with sleep](#).

Other types of prescription medications may also interfere with sleep. Some contain stimulants that make it difficult to fall asleep. Others—like steroids, antidepressants, and some medicines for migraine, heart disease, and allergies—can wake you with nausea, night sweats, or needing to go to the bathroom.

http://www.health.harvard.edu/newsletters/Harvard_Health_Letter/2012/December/better-sleep-means-better-health-?utm_source=health&utm_medium=pressrelease&utm_campaign=health1212

Helicopter in 2011 East River Crash Was Too Heavy: NTSB



where's the truth?

The helicopter that crashed into the East River in October of 2011, killing three people on board, [was too heavy to be in the air](#), according to a report released Thursday by the National Transportation Safety Board.

The NTSB report released the facts of the crash, but did not conclude the crash. A probable cause will likely be determined in two months.

The Bell206B helicopter carrying the pilot and four passengers crashed into the river shortly after takeoff from East 34th Street Heliport on the afternoon of Oct. 4, 2011. One passenger was found dead in the wreckage and two others died later of injuries related to the crash.

The pilot and one other passenger survived the crash.

In its report issued Dec. 20, the NTSB said the estimated takeoff weight of the helicopter at the time of the accident was calculated to be 3,228. The manufacturer's maximum allowable gross weight at takeoff was 3,200 pounds.

The pilot, Paul Dudley, told investigators after the crash that the passengers reported their weights to him after boarding the helicopter and that he estimated the total load at takeoff, including passengers and fuel, to be 1,131 pounds.

But the surviving front-seat passenger, a friend of Dudley, told investigators the pilot did not ask for anyone's weight and never filled out any paperwork or performed any calculations before takeoff.

The passenger also said he brought along his daughter and her friend at the last minute, and "he believed the pilot may not have anticipated the two additional passengers beyond him and his wife."

Dudley is the same pilot who safely landed a Cessna 172 in Calvert Vaux Park near Coney Island in November 2006. In that case, the plane's engine failed and Dudley was forced to make an emergency landing.

<http://www.nbcnewyork.com/video/#!/news/local/Video:-Helicopter-Crash-in-East-River/131102113>

Boeing Assigned Patent for Onboard Aircraft Weight and Balance System

Boeing, Chicago, has been assigned a patent (8,340,892) developed by Michael A. Long, Freeland, Wash., and Geoffrey E. Gouette, Stanwood, Wash., for an "onboard aircraft weight and balance system." The abstract of the patent published by the U.S. Patent and Trademark Office states: "An onboard system and method for determining the instantaneous weight and balance of an aircraft simply, reliably, accurately, and requiring a minimum amount of calibration includes a memory for storing previously determined breakout



