

Aviation Human Factors Industry News

Volume VIII. Issue 26, June 29, 2012



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:

★**What A Character!**

★**Flight 255 survivor to speak in documentary (video)**

★**Free Engine Analysis Coming**

★**Motion Induced Blindness**

★**Fixed Versus Rotating Shifts**

★**Long Commutes Can Kill You**

★**The Power of Habit: Why We Do What We Do in Life and Business**

★**NTSB: Deadly 2011 Bus Crash Caused By Fatigue, Speed, Poor Oversight**

What A Character!

Consider these two real situations:

.Two technicians were discussing last night's basketball game while a third was wrestled to maneuver a piece of heavy equipment. Although within 10 ft. of each other, the taking pair never volunteered to help and the technician handling the load never asked for it.

. When a large MRO switched its safety reporting initiative from a phone-based system to an Internet-based system, input from technicians skyrocketed from six calls in eight years to more than 800 reports in the first year alone.



What do these two seemingly disparate points have in common? They both [highlight character traits of mechanics](#) that exacerbate the challenge of improving safety in the maintenance hangar. As organizations grapple with [how to address human factors](#), it is important to consider the innate personality of most mechanics.

Admittedly, no group can be painted entirely with the same brush. However, there's no denying that [every profession tends to attract certain types of people](#), and maintenance is no different. Dale Forton, president of the Professional Aviation Maintenance Association (PAMA), once served as the director of maintenance for a repair station that conducted the DISC psychological assessment on its employees in the mid-1990s. All but two of the organization's 40 technicians, or 95%, were Ds and Cs, or "Dominance" and "Caution/Compliance," he recalls. Ds are "active in dealing with problems and challenges." Cs are precise; they "adhere to rules, regulations and structure. They like to do quality work and do it right the first time," according to one description of the assessment.

While a survey of 40 AMT's isn't solid science, Forton says when he discussed these findings with an audience of maintenance directors at a professional symposium this past spring, ["they all started nodding their heads."](#)

The late psychologist Giselle Richardson, founder of Richardson Management Associates, once wrote an article titled "Cinderella in the Flight Department." In it, she remarked that after 10 years of working with aviation organizations, she found several traits dominant in maintenance departments. [Among them:](#) self-sufficiency, the tendency to be a loner, distrust of words, a reluctance to ask for help, (preferring instead to think things through alone) and a disinclination to share thoughts frequently or thoroughly. She also noted a commitment to excellence; technicians are generally confident in their ability to fix things and fix them right.

All these traits have enormous implications for organizations' efforts to improve safety: if the mechanisms by which you are trying to improve run counter to a technician's innate characteristics, success will be limited. For instance, the telephonic hotline for reporting potential safety problems that went nearly unused for eight years likely failed because it was in conflict with several basic tenets of AMT personalities-self-sufficiency, a reluctance to seek help, the disinclination to share thoughts and confidence in one's personal ability to fix anything.

Similarly, an organization with an unspoken expectation that its technicians will ask for help if they need it will find themselves experiencing higher levels of risk, as in the case of the technician wrestling solo with that heavy piece of equipment. [Gordon Dupont, CEO of System Safety Services](#), witnessed that scene. There was clearly a potential for injury to the AME or damage to the equipment, yet no one spoke up due to all the usual suspects: self-sufficiency, reluctance to ask for help and confidence in abilities.

Technicians "love the challenge of fixing something themselves but they won't go get help," says Dupont.

He is trying to change that. In his training programs, Dupont hangs posters covering each of the [Dirty Dozen, or the 12 most common root causes of human error in maintenance](#), around the training room. He puts the "Assertiveness" poster [upside down](#) to see if anyone says anything. "in a class of 25, we are lucky if we get one person who speaks up," he observes. "We try to show that if you break a link in the chain, you prevent an accident. Speaking up is breaking a link."

Create an environment where input isn't just encouraged, it is considered an essential part of the job. Thanks to AMTs for highlighting a potential problem, and then do something about it. Regularly show how the organization is making changes based on employee input. Make sure feedback is sought in a way that aligns with AMT personalities. By considering prevailing character traits in initiatives aimed at reducing risk and improving safety, maintenance directors will experience sharply increased cooperation and, ultimately, better results.

[Flight 255 survivor to speak in documentary \(video\)](#)

Cecelia Cichan, the lone survivor of Northwest Flight 255, which crashed shortly after takeoff Aug. 16, 1987, has broken her silence.

Cichan, who lost both parents and her brother in the crash, spoke to filmmakers last year for "Sole Survivor," a documentary that seeks out the 14 known living people who were the only survivors of major airliner crashes.

She was 4 years old at the time of the crash and kept in seclusion by family in Birmingham, Ala., after recovering from injuries sustained during the mishap, including a fractured skull, collar bone and leg, as well as third-degree burns over 30 percent of her body.

Flight 255, the worst airline disaster in state history, exploded at the intersection of I-94 and Middlebelt Road after pilots were unable to control the plane. Investigators later found the crew did not follow preflight protocols.



The film, directed by Ky Dickens, should be completed by August, according to its website www.solesurvivorfilm.com.

<http://www.thenewsherald.com/articles/2012/06/12/news/doc4fd660d5a1452908235972.txt>

Free Engine Analysis Coming

A web-based platform will be rolled out this July to help diagnose and troubleshoot engine problems, and it will be available, **free of charge** (and ad-free) at SavvyAnalysis.com. The system has been developed by [Mike Busch](#) A&P/IA, and CEO of Savvy Aircraft Maintenance Management, Inc and . It works to graph and analyze piston engine data collected from "virtually all" existing engine monitors, according to Busch. The system is currently in Beta testing by a select group of end-users and Busch says the final product aims to be intuitive to navigate, easy for novices to use, and capable of serious analysis work. There is a way to receive notification when the platform opens. Busch has set up an online registration that allows interested parties to **sign up for email notification** when the platform goes live. Users will then have access to the platform from any internet-enabled device using a standard web browser. The list of monitors that work with the platform includes those produced by J.P. Instruments, Electronics International, Insight Instruments, Garmin, Avidyne, and Ultar-FEI/AuRACLE. Busch is creator of the [Savvy Owner Seminar](#), which offers aircraft owners a 17-hour "total-immersion" course in how to best maintain their aircraft. In 2008, the FAA presented him with its National Aviation Maintenance Technician of the Year award. He is also co-founder of AVweb.com.



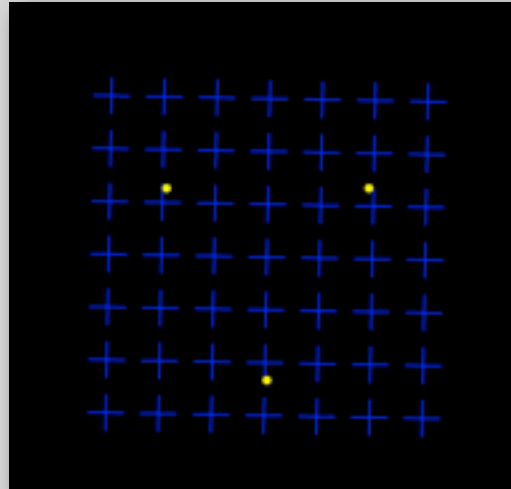
Find him at his current home, SavvyAviator.com.

<http://www.savvyaviator.com/>

Motion Induced Blindness

Lack of motion Induced Blindness (pilots and drivers too)

Lack of motion Induced Blindness was presented as a flying issue, but one can also miss things (pedestrians, motorcycles, other cars) while driving, so, **keep your heads and eyes moving**. The below link is a great illustration of what was taught about scanning outside the cockpit when military pilots went through training. Shipboard lookouts were also given the same training. They were told to scan the horizon for a short distance, stop momentarily, and repeat the.



This was the most effective technique to locate other ships and aircraft. It was emphasized repeatedly **to not fix one's gaze for more than a couple of seconds on any single object**. The instructors, some of whom were combat veterans with years of experience, instructed pilots to continually "keep your eyes moving and head on a swivel" because this was the best way to survive, not only in combat, but from peacetime hazards (**like a midair collision**) as well.

The most dangerous target is the one that has **NO** apparent motion. This is the one you will hit without evasive action and also the one you will NOT see - as presented below.

<http://www.msf-usa.org/motion.html>

Fixed Versus Rotating Shifts

One of the most challenging questions in shiftwork schedule design is whether to rotate crews or keep them fixed. With a rotating schedule, employees' scheduled shifts change periodically. Under a fixed schedule, employees' work hours are the same every workday. From an [employer's point of view](#), rotation provides the advantages of balancing skills and experience across all shifts, and of providing all employees with equal exposure to daytime management, training, HR support, suppliers, and other key daytime personnel. From the [employees' point of view](#), fixed schedules provide stable work hours, making it easier for them to organize their lives. Fixed shifts may also be related to [less](#) sleep disruption and fatigue, at least for the day shift personnel.



However, workers on fixed night shifts [may end up even more fatigued](#) than workers on rotating shifts because they almost invariably switch back to a daytime schedule on their days off to pursue social activities with their families and friends. This essentially creates a fast, defacto rotation. Fixed evening shifts may also have a substantial negative impact on family and social life. All of these factors create difficulties in balancing the mix of skills, qualifications, and experience across each of the crews and thus imbalances in productivity. They also pose [significant communication challenges](#) for management.

There is still a lack of conclusive data on the effects of fixed versus rotating shifts on alertness, performance, and accidents. Studies comparing workers on fixed and rotating shifts often find that the groups are not similar regarding age, marital status, freedom to choose the shift, or type of task performed or sleep management. Some studies have found that permanent night workers sleep less and have a higher prevalence of fatigue than rotating shiftworkers (Tepas and Carvalhais 1990, Alfredsson et al. 1991). However, some researchers have described a lower accident rate, a higher rate of performance, and a lower rating of effort in permanent night workers as compared to rotating shiftworkers (Gold et al. 1992, Totterdell et al. 1995). Certainly, the type of shift pattern also presents a confounding effect on these studies.

Other authors have noted that individuals who are "owls" (i.e. night types, who tend to go to bed late and get up late) adjust more easily to night work. There are a number of studies evaluating methods, such as bright light, to improve the adjustment to night work, but there is still much work needed (Rosa et al. 1990). In the final analysis, the decision on rotating vs. fixed shifts may best be left to the [employees themselves](#), since "ownership" may again be the key factor to adaptation and thus optimal performance.

Long Commutes Can Kill You

Long, daily car commutes can put you in [an early grave](#). Researchers tracked the daily travels of more than 4,000 people for roughly three months while logging their physical activity and analyzing their medical records. They found that those who commuted more than [15 miles](#) to the office every day were significantly likely to be obese and to



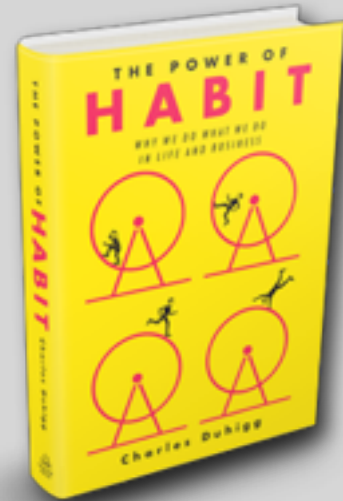
exercise less than those who lived within 5 miles of their jobs; were also more likely to carry their extra weight around their waistline, which can be especially damaging to the heart. Traveling at least 10 miles each way was also found to be enough to raise blood pressure levels. "Part of it is that people with longer commutes aren't exercising as much," Washington University public health professor Christine M. Hoehner tells *MSNBC.com*. "[But there could be other factors.](#)" Drivers with farther to go may be more likely to cut short their sleep, and to gobble fast food behind the wheel. And "being exposed to the daily hassles of traffic can lead to higher chronic stress and higher blood pressure," Hoehner says. The results: Car commuters have an elevated risk of heart disease, diabetes, and cancer.

The Power of Habit: Why We Do What We Do in Life and Business

A young woman walks into a laboratory. Over the past two years, she has **transformed almost every aspect of her life**. She has quit smoking, run a marathon, and been promoted at work. The patterns inside her brain, neurologists discover, have fundamentally changed.

Marketers at Procter & Gamble study videos of people making their beds. They are desperately trying to figure out how to sell a new product called Febreze, on track to be one of the biggest flops in company history. Suddenly, one of them detects a nearly imperceptible pattern—and with a slight shift in advertising, Febreze goes on to earn a billion dollars a year.

An untested CEO takes over one of the largest companies in America. His first order of business is attacking a single pattern among his employees—**how they approach worker safety**—and soon the firm, Alcoa, becomes the top performer in the Dow Jones.



<http://charlesduhigg.com/the-power-of-habit/>

Tales of Mishaps Beyond Aviation

NTSB: Deadly 2011 Bus Crash Caused By Fatigue, Speed, Poor Oversight

A bus crash that killed 15 people and injured 18 others was caused by a "**perfect storm**" of **sleep deprivation**, speed and lack of oversight, the National Transportation Safety Board said Tuesday.

The World Wide Travel motor coach was returning to New York City on March 12, 2011, with 32 passengers onboard after visiting the Mohegan Sun Casino in Connecticut. At **5:38 a.m.** the bus was on I-95 near the Bronx Westchester

County Line, when it crossed a 10-foot-wide paved shoulder, hit a guard rail, skidded 500 feet on its side and slammed into two 8 inch wide signposts that tore off almost the entire top of the bus, according to investigators. The driver, Ophadell Williams, "[was impaired by fatigue](#) at the time of the accident due to sleep deprivation, poor sleep quality and circadian factors," according to the report. "His lack of evasive braking or corrective steering action as the bus drifted off the roadway was consistent with fatigue-induced performance impairment."



Williams had [little rest in the three days](#) before the accident, only taking short naps inside the bus while passengers were in the casino gambling, investigators said.

He was also speeding, driving 78 mph in the 50 mph zone in the minute before the accident, according to the NTSB examination of the bus data recorder.

Investigators said if the bus had been driving at the speed limit it may not have overturned.

At the time of the accident, police said Williams told them the accident occurred after he swerved to avoid a tractor-trailer that might have clipped the bus; however, the NTSB found no other vehicles were factors in the crash.

The report says, "Contributing to the accident was [inadequate safety oversight](#) of the accident driver by World Wide Travel's management."

The company has since shut down.

Last year, Williams pleaded not guilty to charges of manslaughter and criminally negligent homicide for his role in the accident, according to court records.

"Fatigue and speed are an especially lethal combination," NTSB Chairman Deborah Hersman said in a statement. "Unfortunately, in investigation after investigation, we are seeing the tragic results of [fatigue, which can degrade every aspect of human performance.](#)"