

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

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General Aviation Accident, Fatality Rates Drop in 2010

General aviation accidents and fatalities declined in 2010 for the [fourth consecutive year](#), according to new National Transportation Safety Board (NTSB) data.

In total number, the 1,435 GA accidents marked a 20-year low, even as estimated total flight hours began to climb for the first time since the Great Recession began. There were 450 GA accident fatalities in 2010, down from 478 in 2009. The Aircraft Owners and Pilots Association Foundation's Air Safety Institute is analyzing the data in detail for the upcoming twenty-second edition of the Joseph T. Nall Report, a comprehensive analysis of accidents that has helped to shape pilot training and safety education. AOPA Foundation President Bruce Landsberg said 2010 was a record year for outreach—more than 1.9 million safety products and courses were used by AOPA members and non-members alike.



[“Complacency remains the enemy of safety,”](#) and we continue to develop new programs for 2012 that dig deeper into the causes of accidents,” Landsberg said. “Most accidents result from causes that have plagued aviation for years. That story, unfortunately, is little changed.”

In 2010, the Air Safety Institute introduced new products, and pilots responded. The institute's online ASI Flight Risk Evaluator drew 64,000 visits in 2010, and more than [40,000 pilots attended safety seminars](#) held around the country and available through online webinars. The Air Safety Institute will continue to work in partnership with the NTSB, the Federal Aviation Administration, AOPA and other aviation organizations to spread the message that education, including ongoing training for active pilots, saves lives.

Airlines run up a safety debt

Over the last eight years the system of counting airline accidents annually has ceased to be a useful predictor of future safety performance, because nothing significant has happened to the numbers. A projection would show more of the same. That is to ignore, however, stresses that have been building in the industry gradually over the last two or three decades and which, if they are not mitigated, will lead to a world in which airlines from the mature economies will face a



return to the accident numbers - if not rates - experienced in the 1970s and 1980s. This would be a shock for the traveling public, because air travel in the developed world has become routine in people's minds, and safety has stopped being a real consideration for those who would purchase an airline ticket.

Meanwhile, all the predictions for future air transport demand are for solid growth. Indeed demand for air travel today, even despite the dire economic situation in the mature Western economies, remains fairly buoyant. This continual expansion has, however, not been accompanied by industry investment in suitable specialist training for skilled personnel, either in terms of quantity or quality, **creating the single biggest source of stress** the system faces: **a shortage of pilots, maintenance engineers and instructors for both specialization's.**

Combine the system stress caused by lack of expert staff with the continued pressure on airline profits caused by excess capacity, plus high oil prices, and something has to give.

In the last 20 years, almost all the business, technical and operational ground rules governing commercial aviation have radically altered, forced by changes in the market, the air traffic management and navigation environment and aircraft and avionics technology. Logically, these demand a change in training - but that change has not been delivered.

What has most affected the nature of pilots' work is the influence of low-cost carriers, which has brought radical change in many airlines' relationships with flight-crew. But what has most changed an airline's crew recruiting and management is the decline of the military as a provider of pilot skills.

Meanwhile, there has been a loss of pilot exposure to anything other than pre-packaged flight planning, followed by automated flight on the line. When circumstances are **unusual, non-standard, or not automated, a resulting lack of pilot resilience has been leading to fatal loss of control (LOC) accidents**, making LOC the biggest killer accident category this century - taking over from controlled flight into terrain in the last.

This fact is acknowledged by industry bodies like the International Air Transport Association (IATA) and the International Civil Aviation Organizations (ICAO), respectively IATA's training and qualification initiative (ITQI) and ICAO's next generation aviation professionals (NGAP). So the carriers cannot say they have not been warned, but these efforts have not been translating into action at airline level.

Just as a reminder, the number of fatalities caused by airline accidents in the 1980s was about 1,100 annually, whereas the numbers now are less than 800 a year despite the fact that the revenue passenger kilometers flown now are three times what they were then. The industry could revert to the bad old days, but for a different reason: **now the aircraft are better, but the skills to operate them are degrading.**

Origin of the Checklist

On October 30, 1935, at Wright Air Field in Dayton , Ohio , the U.S. Army Air Corps held a flight competition for airplane manufacturers vying to build its next-generation long-range bomber. It wasn't supposed to be much of a competition. In early evaluations, the Boeing Corporation's gleaming aluminum-alloy Model 299 had trounced the designs of Martin and Douglas. Boeing's plane could carry five times as many bombs as the Army had requested; it could fly faster than bombers, and almost twice as far.

A Seattle newspaperman who had glimpsed the plane called it the **"flying fortress,"** and the name stuck. The flight "competition," according to the military historian Phillip Meilinger, was regarded as a mere formality. The Army planned to order at least sixty-five of the aircraft.

A small crowd of Army brass and manufacturing executives watched as the Model 299 test plane taxied onto the runway. It was sleek and impressive, with a hundred-and-three-foot wingspan and four engines jutting out from the wings, rather than the usual two. The plane roared down the tarmac, lifted off smoothly and climbed sharply to three hundred feet. Then it stalled, turned on one wing and crashed in a fiery explosion. Two of the five crew members died, including the pilot, Major Ployer P. Hill (thus Hill AFB , Ogden , UT).

An investigation revealed that nothing mechanical had gone wrong. The crash had been due to "pilot error," the report said. Substantially more complex than previous aircraft, the new plane required the pilot to attend to the four engines, a retractable landing gear, new wing flaps, electric trim tabs that needed adjustment to maintain control at different airspeeds, and constant-speed propellers whose pitch had to be regulated with hydraulic controls, among other features.

While doing all this, Hill had forgotten to release a new locking mechanism on the elevator and rudder controls. The Boeing model was deemed, as a newspaper put it, "too much airplane for one man to fly." The Army Air Corps declared Douglas's smaller design the winner. Boeing nearly went bankrupt. Still, the Army purchased a few aircraft from Boeing as test planes, and some insiders remained convinced that the aircraft was flyable. So a group of test pilots got together and considered what to do.

They could have required Model 299 pilots to undergo more training. But it was hard to imagine having more experience and expertise than Major Hill, who had been the U.S. Army Air Corps' Chief of Flight Testing. Instead, they came up with an ingeniously simple approach: they created a pilot's checklist, with step-by-step checks for takeoff, flight, landing, and taxiing. Its mere existence indicated how far aeronautics had advanced.

In the early years of flight, getting an aircraft into the air might have been nerve-racking, but it was hardly complex. Using a checklist for takeoff would no more have occurred to a pilot than to a driver backing a car out of the garage...

But this new plane was too complicated to be left to the memory of any pilot, however expert.

With the checklist in hand, the pilots went on to fly the Model 299 a total of 18 million miles without one accident. The Army ultimately ordered almost thirteen thousand of the aircraft, which it dubbed the B-17. And, because flying the behemoth was now possible, the Army gained a decisive air advantage in the Second World War which enabled its devastating bombing campaign across Nazi Germany.



It's Time to Renew Our Commitment to Safety

With the holiday season well behind us, I took some time recently to reflect on the year that's passed, appreciating especially the times spent with family and friends. But as I was thinking about how much I enjoyed the holidays, I also thought about my friends and colleagues not so fortunate. Unfortunately, we all know someone who didn't get to experience the joy of the season.

Some have paid with the ultimate, **losing their lives while at work; others have been injured**. Of those who were injured, some have recovered fully, but others suffered life-changing harm. The implications of these incidents are far reaching. It made me appreciate my good fortune and realize that my health truly is my wealth. And it made me renew my commitment to safety. The Relentless Pursuit of Safety

A great deal has been achieved with respect to the health and safety of workers. But there is much more that needs to be done.

The history of occupational Health and Safety demonstrates periods of rapid progress, sadly followed by periods of reversal. Fortunately, we have witnessed impressive gains with the establishment of policies and procedures and a great transfer of knowledge about Health and Safety amongst organizations and workers.

A United Effort

We must always remember **not to sacrifice safety at any junction** of our workday. Safety is the responsibility of every worker, every minute of every day.

As we progress into a new year, we should not solely rely on our organizations to furnish more stringent safety standards. It is our job to **execute our work in accordance with all existing rules and to voice our opinion openly**. It is our job to NOT be afraid to speak up and try every angle possible to change everyone's view of, and attitude towards safety.



We are the backbone that our colleagues need to rely on, doing everything in our power to continue to [change attitudes and improve health and safety](#). Don't look for your fellow employee to take the first step. Never give up. The change starts with each of us.

Always Worth the Effort

The steps we have to take are very often small. Changing safety attitudes and behaviors is an ongoing effort. You have to keep at it constantly. Remember that lives depend on you. Be persistent. Our behaviors, words, actions and processes must consistently reinforce the principle of safety first. We want to continue to build a workplace environment that is healthy for the mind and the body.

Conclusion

Just having a tomorrow to look forward to [should not be taken for granted](#). It would be wonderful to think that next year's family holiday plans will include all of our colleagues who are working today!

Flexible Work Schedules Promote Better Health, Study Says

Researchers based their findings on data from surveys of more than 600 employees and company records from Best Buy before and after the implementation of a "Results Only Work Environment" (ROWE) workplace initiative. New research from the University of Minnesota finds that a workplace environment that allows employees to change when and where they work based on their individual needs and job responsibilities [may promote better health](#).



Led by University of Minnesota sociology professors Erin Kelly and Phyllis Moen, the study appears in the December issue of the Journal of Health and Social Behavior.

Kelly and Moen based their findings on data from surveys of more than 600 employees and company records from Best Buy before and after the implementation of a “Results Only Work Environment” (ROWE) workplace initiative. Best Buy introduced the ROWE initiative at its Richfield, Minn., headquarters in 2005.

ROWE redirected the focus of employees and managers toward measurable results and away from a set work schedule and location. Employees could routinely change when and where they worked without seeking permission from a manager or even notifying one. Moen and Kelly examined whether the initiative affected work-family conflict, whether schedule control played a role in these effects, and whether work demands (including long hours) moderated the initiative’s effects on work-family outcomes.

“With these changes in the workplace, [employees gained control over the time and timing of their work in ways that benefitted them and, by extension, their families and communities](#),” Kelly said.

“It is feasible to broaden access to schedule control and thereby relieve work-family conflicts and improve work-family fit for more workers,” Moen said.

The researchers said that ROWE [reduced turnover by 45 percent](#)—after controlling for multiple factors like job level, organizational tenure, job satisfaction, income adequacy, job security, and other turnover intentions. Specifically, six percent of ROWE participants left the company during the eight-month study period while 11 percent of the comparison group left.

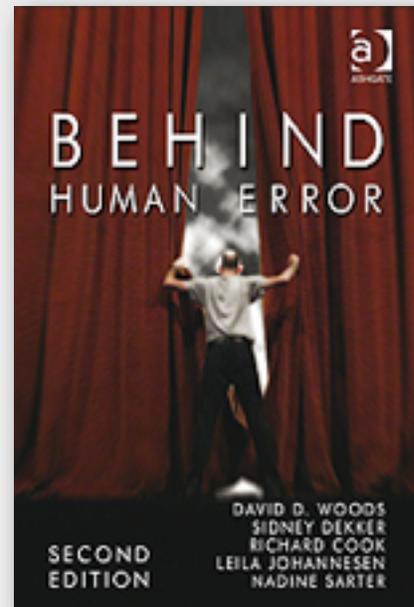
“By showing that a policy initiative like ROWE can reduce turnover, this research moves the ‘opting out’ argument—whether one chooses family over work—from a private issue to an issue of how employers can change the workplace to better meet the needs of employees,” Moen said.

[Additional findings:](#)

- [Workers reported getting 52 extra minutes of sleep on nights before work.](#)
- Workers were less likely to feel obligated to work when sick and more likely to go to a doctor when necessary, even when busy.
- Participants reported an increased sense of schedule control and a reduction in work-family conflict which, in turn, improved their sleep quality, energy levels, self-reported health, and sense of personal mastery while decreasing their emotional exhaustion and psychological distress.

Behind Human Error

Human error is cited over and over as a cause of incidents and accidents. The result is a widespread perception of a 'human error problem,' and solutions are thought to lie in changing the people or their role in the system. For example, we should reduce the human role with more automation, or regiment human by stricter monitoring, rules or procedures. But in practice, **things have proved not to be this simple**. The label "human error" is **prejudicial and unspecific**, and any serious examination of the human contribution to safety and to system failure shows that the story of human error is markedly complex. This book takes you behind the human error label. Divided into five parts, it begins by summarizing the most significant research results. Part 2 explores how a changing of accidents and an embracing of systems thinking has radically impacted ideas about human error. Part 3 explains the role of normal cognitive system factors (knowledge, mindset, and goals) in operating safely at the sharp end. Part 4 studies how the clumsy use of computer technology can increase the potential for erroneous actions and assessments in all kinds of fields of practice. And Part 5 tells how the hindsight bias always enters into attributions of error, and that human error is a mere label, the result of a social and psychological judgment process rather than a matter of objective fact that we can count, tabulate, punish or eliminate. If you think you have a human error problem, recognize that the label itself is no explanation and **no guide to countermeasures**. The potential for constructive change, for progress on safety, lies behind the human error label.



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74 Year old Aviation Magazine Relunched as Online Journal

Air Facts, first published for private pilots in 1938, [has new life](#) and has been reinvented as an online journal at www.AirFactsJournal.com. This important aviation magazine was among the first publications to address the growing number of pilots as aircraft became more accessible to the general population. When the first issue of Air Facts appeared in 1938, there was no FAA. In fact, the Civil Aeronautics Administration was formed that year to regulate air traffic. Pam Am flying boats – what the airline called its "Clippers" were flying worldwide and Howard Hughes set a new around-the-world record in an airplane – just under four days. It was in this fledgling industry that aviation visionary Leighton Collins launched his magazine for the everyday pilot – those individuals who were flying their own airplanes to get from Point A to Point B. Leighton wanted these pilots to [share their knowledge](#) with one another in order to fly in the safest way possible.



"No aviation magazine had previously put the emphasis on safety and accidents and many thought this would cause consternation in the aviation industry," says Leighton's son Richard, who later took over as editor of Air Facts before he went on to a career of his own at other aviation magazines.

"When Air Facts ran a study about the safety record in Piper Cubs, everyone thought Mr. Piper would be quite unhappy. To the contrary, he ordered an Air Facts subscription for everyone who bought a new Cub."

When Leighton retired, he sold the magazine, which did not survive without Leighton's guidance. Now Air Facts has been reborn [online](#), with Richard Collins back at the controls as its editor. Just like the original, Air Facts concentrates on providing analysis and opinion about important general aviation topics. Much of the content is reader-provided by pilots and aircraft owners.

"We've put a twist on citizen-journalists and created journalist-pilots," says Richard Collins. "[Pilots form a unique community](#) and Air Facts provides a means for pilots to tap into their shared experiences in order to make their own flying safer."

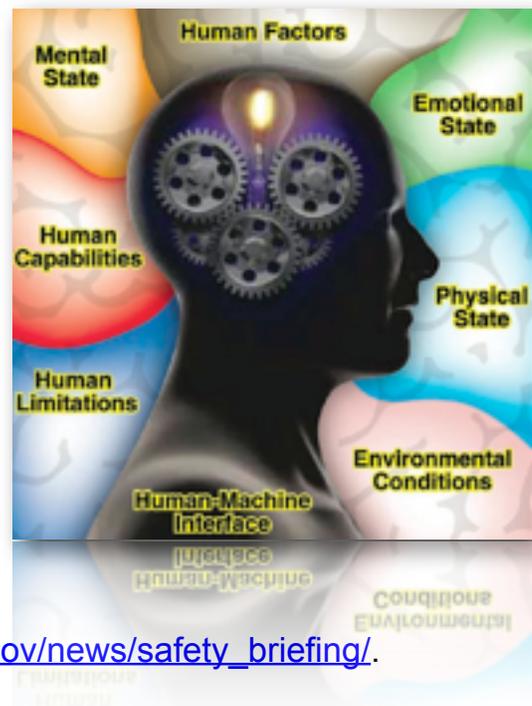
Another difference with the new Air Facts is that it's free. There is no subscription cost, and pilots and those interested in aviation don't have to wait for the next monthly issue as content is continually added.

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

January/February 2012 Issue of FAA Safety Briefing

Articles include Finding the Right College to Study Aviation and The [Human Factors Zone](#).

This first issue of 2012 explores some of the resources available to help you in your initial quest for pilot certification, as well as the lifelong quest to improve your aeronautical knowledge. Feature articles show you how to leverage the power of aviation regulations and handbooks as well as provide tips to help prepare for your next checkride and find an aviation school that's right for you. Check it out today!



The link to the online edition is: http://www.faa.gov/news/safety_briefing/.