

Aviation Human Factors Industry News

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Hello all,

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C-17 crash report exposes cracks in USAF safety culture

Pilot error is the US Air Force's official cause for the first fatal crash of a Boeing C-17, but the service's investigation report has also exposed **lax oversight of an over-aggressive flier** who was allowed to repeatedly perform an airshow routine. The crash report - released by the Pacific Air Forces Command on 13 December - also



echoes the findings of a **16-year-old Boeing B-52 crash** that ranks as one of the darkest chapters in USAF history and sparked a movement to reform the service's **management and safety culture**.

Aviation safety experts have already seized on the new report detailing how the C-17, code-named Sitka 43, crashed at Joint Base Elmendorf-Richardson in Alaska within the first minute of a planned 12 min routine. Despite its brief duration, the flight was still long enough for the pilot - Maj Michael Freyholtz - to **deliberately break several safety rules despite several opportunities for his peers and commanders to stop him**.

"Here we go again," says John Nance, an ABC News aviation consultant and former Lockheed C-141 transport pilot. "This is going to put aerial demonstrations for large airplanes under scrutiny. I think they need to stop."

The crash report describes Freyholtz as a pilot who was highly respected by his peers, and who was selected as his Alaska Air National Guard unit's first air show display pilot.

But in seeking to "put on a good show", Freyholtz had developed an **unsafe flight profile** for the C-17 that he repeatedly performed over large USAF audiences in 2009 as he toured with the Thunderbirds.

On 28 July, Freyholtz and three crew members - co-pilot Capt Jeffrey Hill, safety observer Maj Aaron Malone and loadmaster Senior Master Sgt Thomas Cicardo - took off in a steep, 40° climb.

The crash report notes that Freyholtz made **two major errors** within the first 10 sec of the flight. In his steep ascent, the aircraft's airspeed never came within 33kt (61km/h) of the USAF's mandatory minimum for the C-17. Secondly, he levelled off at 850ft (260m) above ground level: barely half the minimum altitude required for the manoeuvre. But despite the mistakes, the C-17 was not yet at risk of crashing, the report says.

Freyholtz then banked the left wing by more than 60° to rapidly turn the C-17 by 80°. To reposition the transport for a high-speed pass of the runway, he then began a 2.4g, 260° right turn.

As Freyholtz then banked the right wing by more than 60° - rather than the USAF's "prescribed", 45° bank limit - the C-17 was actually travelling 6kt below stall speed, according to the report. That triggered an automatic stall warning system, including a stick-shaker and the word "stall" repeated over the intercom.

But Freyholtz initially **disregarded the warning system**, as he had trained the co-pilot and other peers that it was inaccurate during such a manoeuvre, the report claims.

It is not clear whether Freyholtz was aware that Hill had retracted the flaps before starting the 260° turn, which removed vital wing surface area for lift in such slow-speed conditions.

As the aircraft passed into a deep stall, the safety observer - Malone - swiftly repeated a phrase three times: "Watch your bank." Although the C-17 was already in a deep stall at low altitude, the aircraft may have been recoverable.

Freyholtz, however, **seemed "channelised"** on completing the turn, the report says. He reversed his stick pressure, but at the same time applied left rudder, which made the stall even worse. The C-17, already dangerously low, crashed within seconds.

Although Freyholtz has been blamed for the crash, the USAF's accident investigators also focused on the **command climate**. "Because he was an accomplished aviator, leadership allowed him to operate independently with little or no oversight," their report says.

The investigators also found evidence of **lax procedural enforcement** in the 3rd Airlift Wing. The checklist used before aerial demonstration flights was discovered to "resemble" the required document, but with major changes.

In 1994, the USAF lost a B-52 and all four officers onboard after the pilot - Lt Col Arthur Holland - stalled the bomber in a low-speed turn while practicing for an airshow. In the subsequent investigation, it was revealed that the **unit's commanders had disregarded serious warnings** about reckless flying by Holland from his peers and even junior officers.

In both cases, however, the USAF's local chain of command failed to stop a pilot from **planning and performing a deliberately unsafe** airshow routine. Instead, Freyholtz's supervisors merely "**assumed** he was within regulatory compliance," the report says, "and did not inquire or review [his] techniques or performances. **Without checks and balances**, the [mishap pilot's] aerial demonstration techniques evolved into an unsafe program."

http://www.youtube.com/watch?v=VBwMJUOFmIM&feature=player_embedded

Baggage man asleep in plane's cargo hold

Airline staff were shocked to discover a baggage handler who had **fallen asleep** inside a plane's cargo hold. They had heard a "loud thumping noise" while preparing to take-off, the Australian Transport Safety Bureau says.

In another surprising incident, a dog escaped from the cargo door of a taxiing Boeing 737 and was seen running next to the plane. The incidents were among 260 reported to the ATSB over the past seven years and detailed in a safety report focusing on **loading issues**. The majority of them - 98 per cent - involved passenger planes.



While some are "minor" events, the ATSB outlined recent examples of loading occurrences that could have had disastrous implications. Among the serious incidents was a Bulgarian-registered Airbus A320 that suffering a tail-strike during take-off from an Italian airport in 2009. The cause was found to be due to the forward cargo hold being emptied of luggage, while the rear hold remained packed with luggage, **leaving the plane unbalanced**.

The safety watchdog also detailed a serious incident in Australia where 60 additional golf bags weighing 1300 kg were loaded onto a plane, resulting in unexpected handling issues.

The ATSB is investigating two other recent incidents - one involving a plane that was one ton over its maximum take-off weight and another with about 700 kg of unlisted cargo.

It says that while there have been a comparatively small number of such incidents, **more care is needed**.

"Generally, there are a small number of loading occurrences per million movements, but **there is no room for complacency**," the ATSB said in the report.

Loading incidents in Australia have typically dealt with evidence of fire on cargo hold pallets, cargo restraint and locks, aircraft weight and balance, inadequate load documentation, cost-cutting, training and communication. Fifty-five per cent of these incidents related to the securing of cargo, **30 per cent to incorrect loading, 10 per cent to load sheet errors and five per cent to aircraft configuration**.

The **failure to raise cargo locks** was identified as the most commonly reported occurrence. This is dangerous as it could lead to cargo moving around during the flight and impacting the plane's centre of gravity and controllability.

Airline operators have improved their loading systems recently but cross-checking by crew is essential for safety, the ATSB said.

Catering Truck Grounds A380

It's been a rough couple of months for the A380 fleet and the latest incident, although far less dramatic than the uncontained engine failure of a Qantas super jumbo, could nonetheless ground an Emirates A380 **for months**. It was felled by a catering truck at Toronto's Pearson International Airport and



speculation on various forums is that it will be there until as technicians work under a temporary structure to repair damage to the leading edge of the right wing. The A380 has been moved to an unused area of the terminal and a blue tarp encloses the area of the repair.

The [mishap](#) occurred Dec. 6 at the scissor-lift catering truck was supplying the upper floor of the aircraft, which was to leave for Dubai that night. The [scissor mechanism failed](#) and the truck body fell onto the leading edge of the right wing. There were no injuries. The on-the-spot repairs outside in the Canadian winter suggest the damage was severe enough to prevent a ferry flight and that hangar space was not available at Pearson.

No Change in 2011 FAA, PHMSA Testing Rates

Both agencies are telling employers their [minimum random drug testing percentage rates](#) will stay at 25 percent.

Two more DOT agencies, the Federal Aviation Administration and the and Hazardous Materials Safety Administration, announced Tuesday that their minimum random drug testing percentage rates will stay at 25 percent during 2011 [because positives rates on administered tests remained low in 2009](#). FAA also said its required rate for randomly testing [safety-sensitive employees for alcohol](#) will stay at 10 percent.

The positives rate must remain below 1 percent to continue the testing rates at these low levels, and this is usually the case. FAA said the 2009 reported random drug test positive rate was 0.534 percent, while the random alcohol test positive rate was 0.088 percent.

PHMSA said the reported positive rate in 2009 from operators of gas, hazardous liquid, and carbon dioxide pipelines and operators of liquefied natural gas facilities was below 1 percent, so its testing rate for 2011 remained low.

The FAA regulations are found in [14 CFR 120.109\(b\)](#) for drug testing and [120.217\(c\)](#) for alcohol testing. PHMSA's are in 49 CFR 99.119 (drug testing) and 199.229 (alcohol testing).



The Ten Rules for Being Human

1. You will receive a body.
2. You will be presented with lessons.
3. There are no mistakes, only lessons.
4. Lessons are repeated until learned.
5. Learning does not end.
6. "There" is no better than "here".
7. Others are only mirrors of you.
8. What you make of your life is up to you.
9. All the answers lie inside of you.
10. You will forget all of this at birth.

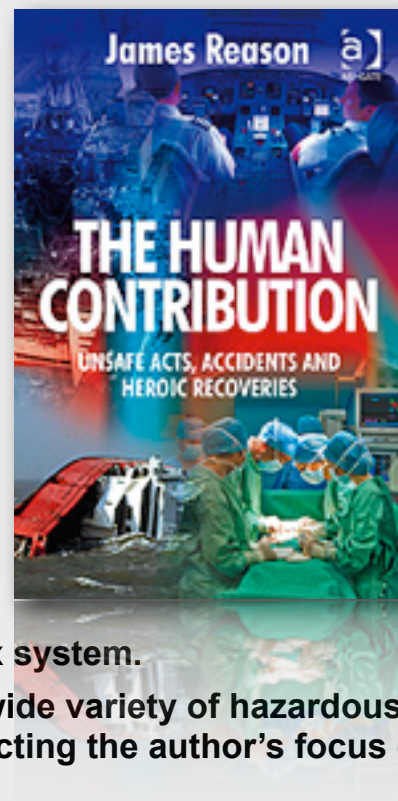


From the book "If Life is a Game, These are the Rules."

The Human Contribution

This book explores the **human contribution** to the reliability and resilience of complex, well-defended systems. Usually the human is considered a hazard – a system component whose unsafe acts are implicated in the majority of catastrophic breakdowns. However there is **another perspective** that has been relatively little studied in its own right – the human as hero, whose adaptations and compensations bring troubled systems back from the brink of disaster time and again. What, if anything, did these situations have in common? Can these human abilities be 'bottled' and passed on to others? The Human Contribution is vital reading for all professionals in **high-consequence environments** and for managers of any complex system.

The book draws its illustrative material from a wide variety of hazardous domains, with the emphasis on healthcare reflecting the author's focus on patient safety over the last decade.



All students of human factors – however seasoned – will also find it an invaluable and thought-provoking read.

Donating unused frequent flyer miles can help families of injured troops

Have a few unused frequent flyer miles hanging around?

Donate them to help the families of troops injured in Iraq or Afghanistan visit them in military hospitals around the world. Unused frequent flyer miles can be donated to **Operation Hero Miles**, which are used to provide airline tickets to military families for travel related to a service member's medical condition.

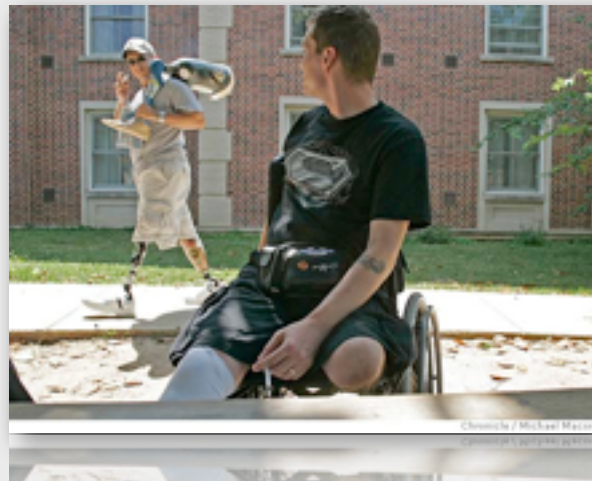
Service members being treated as a result of an injury can also request a ticket to travel home while on medical leave. The program, administered by the **Fisher House Foundation**, has issued more than 20,000 donated tickets, saving military families nearly \$27 million since its inception.

"Operation Hero Miles is such an important program that allows military families to be together -- something that is especially important during the holidays," said Illinois Gov. Pat Quinn. "I encourage people throughout our state to celebrate the holidays by donating unused frequent flyer miles to our military families."

Operation Hero Miles partners with the following air carriers: AirTran Airways, Alaska Airlines, American Airlines, Continental Airlines, Frontier Airlines, Midwest Airlines, United Airlines and US Airways.

Illinois residents can help Illinois veterans through the Veterans Cash lottery, a scratch-off lottery ticket that sends all proceeds from sales of the tickets to fund rehabilitative programs and other services for veterans.

Since the program began in 2006, more than \$8.4 million has been raised for veterans organizations statewide.



For more information about programs that benefit veterans, visit OperationHomefront.org or call the Illinois Department of Veterans' Affairs at (217) 782-6641 or (312)814-2460.

For more information or to donate airline miles, visit www.fisherhouse.org.

Professional Stunt Drivers, Closed Course, Do not Attempt

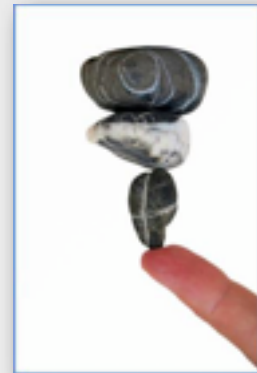
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Balancing Safety

Being "**well-balanced**" is not only a good way of living, it's also critical for high-level safety performance. Balance is an interesting word. On one level, a physical state where your skeletal structure predominantly keeps you upright and your muscles minimally work/tense to "fight" gravity.



Have you also noticed how also associates balance with someone's frame of mind/emotions (balanced vs. unbalanced personality, mentally stable/ even-tempered vs. easily swayed, flighty vs. well-grounded, pushover vs. solid as a rock)?

So what does being well-balanced really do for you?

- Gives you greater control and readiness for the unexpected. This applies to **mental as well as physical pressures**. The more balanced you are, the more likely you'll be able to respond to and recover from unexpected forces coming from any direction. So you're autopilot "ready", rather than braced, stuck with heels dug in.
- More relaxed, less tension, less wear down. Balance is a state of lower physical energy (compared to being tense). Just as a balanced tire wears better/longer, **personal balance reduces wear and tear on the body**, lowering incidents of cumulative trauma soft-tissue injuries. Also, the more balanced you are, the more the shoulders will be "seated" down and relaxed. This translates into less likely being startled by unexpected forces (physical or even verbal). Hence, improved control. Further, lowered/"dropped" shoulders typically reduce neck and shoulder tension buildup.
- **More alert**. Relaxed shoulders results in deeper breathing. Try this: Raise your shoulders and notice how it's more difficult to inhale deeply into your abdomen. When you're not fully in-taking oxygen, the first part of your body affected is your brain (your decision-making, "Safety" organ). So, more balanced = lowered shoulders = deeper breathing = more alert.
- **More usable strength**. Balance is inversely proportional to available strength. The more balanced you are, the less you're having to squander extra muscle tension; if someone is 10 percent off balance, he's tapping about 10 percent additional muscle tension to prevent himself from toppling over. This means he has approximately 10 percent less available muscle strength to do whatever he wants (breaking down a nut, lifting, pulling a heavy cart, hitting a ball, etc.).

Ever wonder why people are off balance in the first place?

- **They're "in their heads,"** "top heavy," barraged by thoughts and emotions, perhaps related to feeling overwhelmed by fears or concerns. Ever notice when people feel "down" or depressed, they often hang their heads -- which immediately unbalances them forward?

- **They habitually carry too much physical tension** (poor balance habit patterns? trauma from previous injuries? less than ideal physical structure issues? etc.)
- **They're distracted** and so don't re-calibrate their balance (due to high workloads or time pressures?). Simple self-monitoring of certain internal cues makes it easy to rebalance, just by taking a few moments during the day.
- **They mistakenly believe** they'll save energy by overreaching (from overextending to pick up a light tool to turning on a light switch). They don't realize how small actions, such as merely reaching out empty-handed, can compromise their balance, add extra cumulative tension, and set unbalanced work styles.
- They haven't learned how to maintain balance while on the move or when operating in tight spaces. Or they default toward "muscling" work with upper body strength, rather than **enlisting full, balanced body power**.

Strengthening Workers' Balance

The good news is balance is an easily improved skill, at any age or condition. While you can't heighten balance just by reading about it (no more than you can learn to balance on a bicycle by "reading" the Tour de France), there are **some simple things you can do** to become more stable, moving away from being a pushover or easily uprooted. Look for several opportunities to practice your balance:

1. When walking on wet or muddy surfaces, leaves, ice, or snow, remember to **put extra bend in your knees** and feel the heels, balls, and under arches of your feet making good contact with the ground. Feel yourself "beginning to sit" as you walk. In addition, 45-degree stepping is effective on ladders, coming off escalators, moving walkways in airports, or crossing wet or slippery ground.
2. **Maintain your natural alignment** (with your upper body over your lower body; don't lean forward or back) so you can better push and pull carts, etc.
3. Develop your Center Of Balance in every activity you do. Many disciplines (certain martial arts and others) cultivate the Center Of Balance. You can do this by paying attention to what's going on inside you. When walking, carrying, or sitting, **adjust your stance and posture** so you can feel the weight of your upper body transferring through the center of your hips, then down through the legs.

4. **Practice moving slowly, with precise balance** (a principle from T'ai Chi Ch'uan).

5. **Breathe** into and out from your lower abdomen.

Of course, there's much more to being more mentally and physically balanced than this. And for many people, being shown what to do can make a dramatic difference. At the very least, be sure to remind yourself and others that, with the right attention, techniques, and practice, **you can live and work with greater balance, control, and Safety.**

Give this guy a hand ...



...or at least a couple of fingers. One cause of occupational injuries is **complacency**. When you perform the same task over and over, it can become so routine that your mind begins to wander... "Cool movie last night", "What's for dinner?", "Wonder if the 'Skins will win their next game?" Who knows.

That's why we try to **drill it in to people** that safety requires more than just protective equipment. You have to bring your brain with you, too, and keep it turned on while you're working.

Always be alert to your surroundings, even if you are drilling your hundredth hole, or screwing in your millionth light bulb