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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Lessons Learned From Maintenance Mergers

When two airlines merge, there are some important human factors considerations for maintenance organizations. What are they? O&M put that question to Hal Heule, president of HMH Consulting, who was VP technical operations during the America West-US Airways merger.

Heule, who provided executive leadership for the operational integration of the two carriers, says there are three standout issues maintenance organizations should have a plan to address. Interestingly, two of those three issues—communication and training—are relevant to maintenance organizations every day, not just those undergoing a merger:

Communication. The announcement of a merger causes immediate distraction in any workplace. Technicians will ask themselves and each other: Will I have a job after the merger? Will my job change? Will I have to move? These are natural concerns, and Heule says it is important to address them head-on, repeatedly, with solid information. Otherwise, rumors and misinformation will take over and degrade job performance, increasing the likelihood of a maintenance error.

"We ratcheted up communications from the corporate level down to the manager level," says Heule. He says he and his team were constantly on the road, asking technicians what they were thinking and reminding them to be aware of potential distractions.

Training. Heule's biggest "lesson learned" from the America West-US Airways merger was in the area of training. "I wish we'd done more of it, and I wish we had done it better," he says. "In some cases, we moved too fast with too much information." If he had to do it all again, Heule says he would beef up the training department and slow down the training process, devoting more time, attention and resources to this critical area.

In particular, Heule says he regrets not carving out time to explain the reasons for the changes in procedures and technologies.

By neglecting the "why," those attending training often devoted as much energy to wondering why they needed to change as they put into learning the new material. When educating staff on a new way of doing things, trainers must win their buy-in into the "why" before they will engage with the "how." If employees are not 100% onboard with why the new way will be better, that limits their ability to engage with the material.

Integration workload. Not surprisingly, it takes a lot of work to integrate two major airlines. Maintenance leaders cannot expect to handle the added workload and still fully perform their jobs. "Integration happens more smoothly if you have more people," says Heule. Unfortunately, many mergers, under pressure to show quick cost synergies, eliminate personnel too swiftly. "Don't be in a big hurry to reduce staff," Heule warns. "You'll need every hand on deck during the integration."

Where there are redundancies, consider redeploying personnel to areas such as training, which need more attention. Another option is to split the workload: give one person responsibility for merger issues while another runs the day-to-day airline operations. For instance, when US Airways found itself with two heads of maintenance planning, one was made head of combined operations planning while the other was tapped to manage the maintenance operation integration.

The bottom line: every maintenance operation has its distractions, and those distractions skyrocket during a merger. Taking the time to manage communications, plan out training that addresses the "why" behind forthcoming changes, and keeping all maintenance personnel employed through the merger—even if it means assigning new, merger-related responsibilities—vastly reduces the human factors issues that can lead to error.

Language Lessons

The kind of communication at the root of human error in aviation maintenance has changed over the past several years. Where once it was predominantly a shift/task handover issue, new evidence indicates the biggest problems now exist in communications between departments and between levels of hierarchy in maintenance organizations.

“Communication is an issue, but it’s not the same issue it used to be,” says Keven Baines, managing director of Baines Simmons, an international leader in airworthiness and aviation consulting and training services. “Baines based in London , says that for a long time, Europe’s biggest communication struggle occurred at shift handover. A technician would leave mid-task at the end of his shift, and either due a to poor notes or a too-brief conversation, the next technician might misinterpret the job status. For instance, when a technician once scrawled the words “only fitted ring: before he left for the day, the incoming shift assumed he’d only had tome to fit a variable inlet guide ring. In fact, he had only attached the ring loosely with a few bolts. The second team didn’t check it, and the engine was sent to test with bolts missing.

These kinds of problems have been sharply reduced as European maintenance providers now must have in place a formal process for shift hanover. That’s the minimum. Best practices, says Baines, include providing a quiet place to accomplish that handover, a paid overlap and training in how to conduct an effective handover. One MRO has instituted a paid hour’s overlap between shift to ensure work is passed along throughly. This overlap is required at all levels, from mechanics to managers. The result? The MRO has seen a reduction both in errors and in the number of phone calls made to off-shift mechanics. Another built a ‘quiet booth’ with insulated windows and a red light on the front. The red light signals a shift handover in progress, when no one is allowed to enter.

Baines says organizations that address shift-to-shift communication problems with these kind of fixes see, on average, and 8-9% reduction in costs linked to this type of human error.

THE NEXT LAYER

Today, inter-organizational communication - a problem that always existed but was masked by the bigger issue of shift hanover communication-is to blame for the greatest percentage of communication- related errors. The problem can be found at three levels: department to department, supervisor to technician and within teams. Look around, and you’ll se it every day in poorly written work orders, absent information, interruptions during critical tasks and lack of clear instructions.

Manager at one MRO, which had successfully tackled the shift hanover communication challenge, recently examined their database of maintenance events. What they found was striking: Of the 28 investigated errors in the database, 21 listed communication as a key contributing factor-and all 21 of those implicated supervisor-to-technician communication.

A recent accident in the U.K. that resulted from an elevator trim tab being trimmed in the wring direction stemmed from poor communication between the maintenance organization and flight department.

With the spotlight on this kind of level-to-level and department-to-department communication, MROs are starting to find creative fixes. One has tackled the problem of technicians being interrupted during critical tasks by requiring them to wear orange 'Do Not Disturb" bibs when performing those tasks. Another demands technicians wear black-and-white baseball caps and post a 'Do Not Disturb' board in front of the work space.

These tangible solutions are the only way to solve human-centric communication issues. As Baines points out, awareness isn't enough. Organizations must develop clear, defined procedures to address the issues.

Of course, all this requires open communication, which may mean a cultural shift. The most important thing you can do to address communication and other human factors challenges, Baines says, is to "lift the lid off the reporting culture." Until now, many managers haven't wanted to hear bad news, and many technicians have feared repercussions. That has to change. "Get a flow of data, and then you'll know what you're dealing with and can start doing something about it," he says. Reducing errors and costs will follow.

FAA Wants To Fine American Eagle, Continental

FAA is proposing more than $600,000 in fines against Continental Airlines and American Eagle Airlines for allegedly operating aircraft that were not in compliance with the Federal Aviation Regulations (FAR) as a result of mechanics failing to follow proper procedures, Each carrier has 30 days from receipt of FAA's enforcement letter to respond to the agency.

Continental is faced with a proposed fine of $275,000 for operating two 737-900ERs on 73 revenue flights while the aircraft were out of compliance. FAA alleges that Continental mechanics failed to follow the 737 Airplane Maintenance Manual (AMM) when they installed incorrect main landing gear wheel-tire assemblies on two aircraft and released them for service on Nov. 7 and Nov. 19, 2009.

According to FAA, the AMM specifically instructs mechanics not to use wheel-tire assemblies intended for the Boeing 737-700/-800/-900 on the heavier -900ER because of the possibility of damage to the aircraft or injury to people working on and around the aircraft.

The proposed fine against American Eagle is $330,000 for operating a non-compliant Embraer ERJ-135 on 12 revenue passenger flights. FAA alleges that American Eagle mechanics failed to note broken passenger seats and armrests on two aircraft during a Dec. 18, 2008, inspections, and did not follow approved maintenance manual instructions during those inspections. FAA said its inspectors discovered seats on two aircraft that would not raise and stow into the upright and locked position for takeoffs and landings. The agency's inspectors also found damaged center arm rests that would not stow correctly.

In addition, FAA alleges that American Eagle used one of the two aircraft on 12 revenue flights between the inspection and the eventual repair of the seats and armrests. The other aircraft did not fly again until the airline completed the required work, FAA said.

Ramp errors take down three SkyWest CRJs in November

In the month of November, SkyWest Airlines sustained substantial damage to three of its Bombardier CRJ aircraft, all of which were caused by ground handling incidents, and two of which occurred on the same day.
The most recent was a 23 November incident at the Salt Lake City airport where a combination of an icy tarmac and an inoperative auxiliary power unit may have contributed to an incident that damaged a SkyWest Airlines CRJ700.

According to a preliminary report by the US National Transportation Safety Board (NTSB), N614SK sustained "substantial damage to the lower fuselage structure and multiple belly stringers" by a tug being used for a pushback.

Delta Connection flight 4543 was scheduled to depart for Oklahoma City with 69 passengers and crew, none of whom were injured in the night time incident.

Flight and ground crew statements indicate that the first attempt to push the aircraft back from the gate was unsuccessful as the tug could not gain enough traction. NTSB notes that there was 1 inch of "ice and snow" covering the ground in the ramp area, and that both of the aircraft's engines were operating at the time because the onboard auxiliary power unit was inoperative.

Ground crews brought in a larger tug which was successful in moving the airplane, "however, during the push-back both the airplane and the tug began to slip", says the NTSB. "The tug continued to lose traction and subsequently 'jack-knifed,' breaking its tow-bar and colliding with the underside of the airplane's fuselage," the report states.

On 2 November a driverless pickup truck being operated by United Airlines ground crews caused damage to a SkyWest CRJ200 at the Chicago O'Hare international airport.

According to the NTSB's preliminary report, Flight 1020 (N709BR), with 34 passengers and three crew bound for Moline, Illinois, had pushed back from the gate at 10:27 am CDT and moved out of the immediate area to allow an inbound aircraft to access the gate when the incident occurred. There were no injuries.

"As the airplane began to move the flight crew saw the pickup truck moving on the ramp, so they stopped the airplane," says the NTSB. "The Ford Ranger pickup truck backed into the left side of the nose of the plane."

The driver told the NTSB that he had left the vehicle on the ramp with the engine running. "When he returned to where he left the vehicle, it was gone," the driver told investigators.

Also on 2 November a SkyWest CRJ200 (N454SW) on the ground at the Pittsburgh international airport received significant damage to its fuselage when a ramp agent drove a cart supplying the aircraft with high pressure ground air away from the aircraft without disconnecting the hose.

According to an NTSB report, the error tore the high pressure ground air receptacle from its access door and ripped an 0.3m (1ft) gash "up the side of the fuselage".

Safety Tip - Airport Surface Deviations

As winter gets into full swing across the country we should be aware of its impact on our surface operations at the airport. Operating on a snow or ice covered surface -- either in a ground vehicle or an aircraft -- requires an degree of caution. Movement of ground equipment should be done in a manner that allows you to avoid sliding or skidding into other equipment or aircraft, or skidding across hold lines.

Extreme caution also is needed when towing an aircraft due to the added weight and the fact that most of the time you are relying solely on the braking action of the tug to stop both the aircraft and the tug. On wet, slick or icy surfaces the aircraft in tow can suddenly jack knife out of control as you turn or attempt to stop.

The same cautions must also be adhered to when taxiing an aircraft in these conditions. When diminished braking action is present, aircraft can slide off taxiways and runways if one is not careful. When approaching hold lines and turns, be sure to use minimal speed to ensure your ability to come to a stop prior to the hold line or to avoid skidding off the taxiway during a turn.

As with all ground operations, keep your eyes outside the cockpit while taxiing and adhere to all ATC instructions.

Additional information about ground operations can be found in chapter 2 of the Airplane Flying Handbook, available at www.faa.gov/library/manuals/aircraft/airplane_handbook/.

Another near-accident as planes land on wrong track at Ovda Airport

Early last week, at the height of the storm that hit Israel, an Italian and a Russian airplane landed in violation of instructions they received from the grounds crew at Ovda Airport. The cited reasons for the misunderstanding were poor visibility and a lighting error on the runway. The Italian and Russian planes both landed by mistake on the wrong runway. The Civil Aviation Authority is examining the incidents.

The State Control Committee of the Knesset visited the airport yesterday, in the wake of a scathing report regarding aviation safety published by the State Comptroller three months ago.

It was determined that Ovda Airport cannot serve as an alternative to Ben Gurion International Airport because of safety and security concerns.

Haaretz learned that on Sunday afternoon, at the height of a severe storm, a Hercules plane belonging to the Italian army received instructions from the control tower to land on Ovda's western runway. However the plane accidently landed on a different track, the central one.

About 15 minutes later, a Russian Aeroflot flight arrived and was also given instructions to land on the western track. But the pilot made the same mistake as the Italian plane and landed on the central track.

According to initial findings, both landing errors were due to poor visibility and a mistake in the lighting system. Apparently, the landing lights turned on by the control tower were for the wrong runway.

This was not the first time that a plane has landed on the wrong track at the airport. In February 2009 a similar incident involving flight safety occurred. An Arkia flight that was on its way to pick up IDF troops also accidentally landed on the wrong track, which was being used by other vehicles and army personnel.

The recent report published by State Comptroller Micha Lindenstrauss concluded that the airport was not suitable for the landing of large planes, unless a fire truck and crew were brought in from Eilat.

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 an unsafe 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.

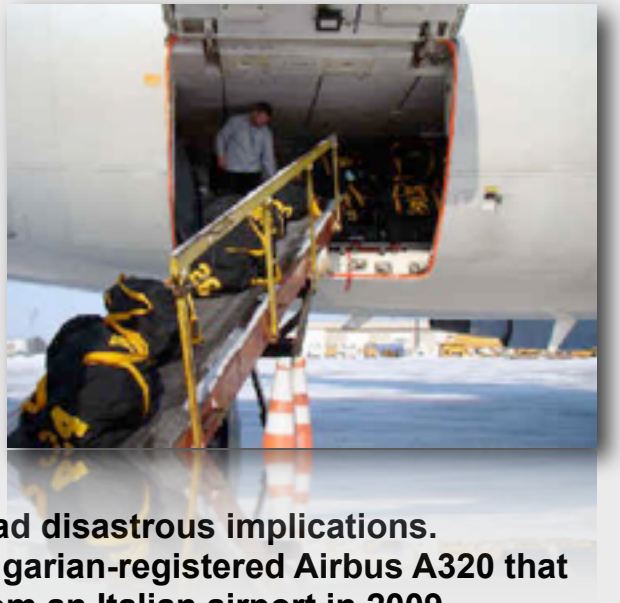
Instead, Freyholtz's supervisors merely "assumed he was within regulatory compliance," the report says, "and did not inquire or review [his] techniques or performances. Without checks and balances, the [mishap pilot's] aerial demonstration techniques evolved into an unsafe program."

http://www.youtube.com/watch?v=VBwMJUOFmlM&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 at one stopover, 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 ofa 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 February 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 Pipeline 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).

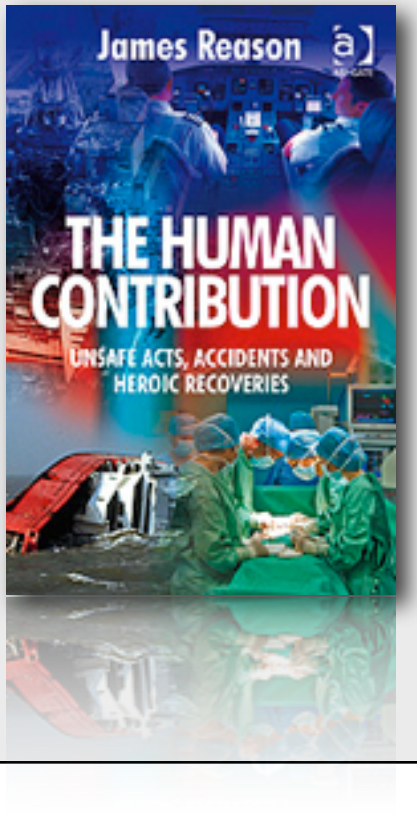
The Ten Rules for Being Human

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.

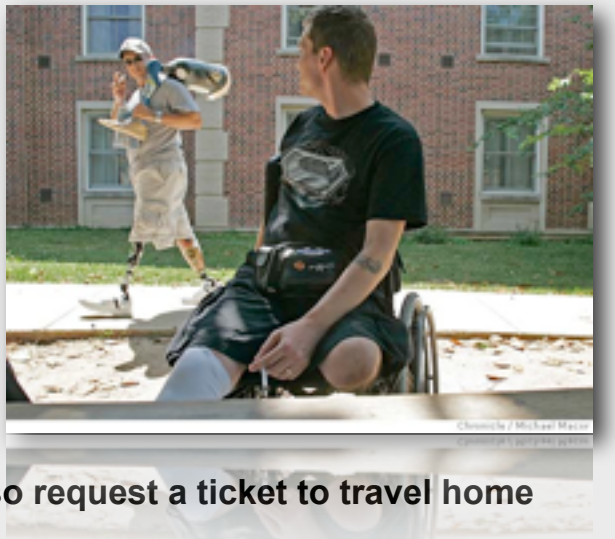


The book draws its illustrative material from a wide variety of hazardous domains, with the emphasis on healthcare reflecting the author's focus on patient safety over the last decade.

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 begin 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.

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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.

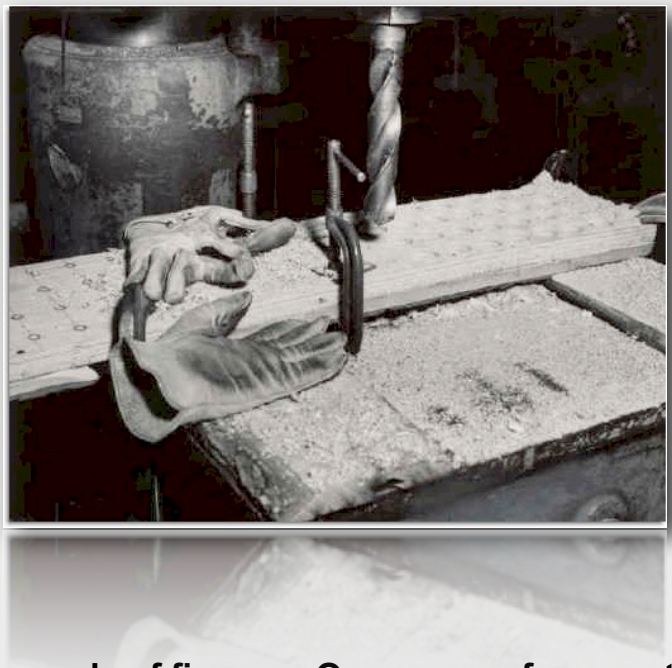
3. Develop your Center Of Balance in every activity you do. Many disciplines (certain martial arts and others) cultivate the Center Of Balance. You can do this by paying attention to what's going on inside you. When walking, carrying, or sitting, adjust your stance and posture so you can feel the weight 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