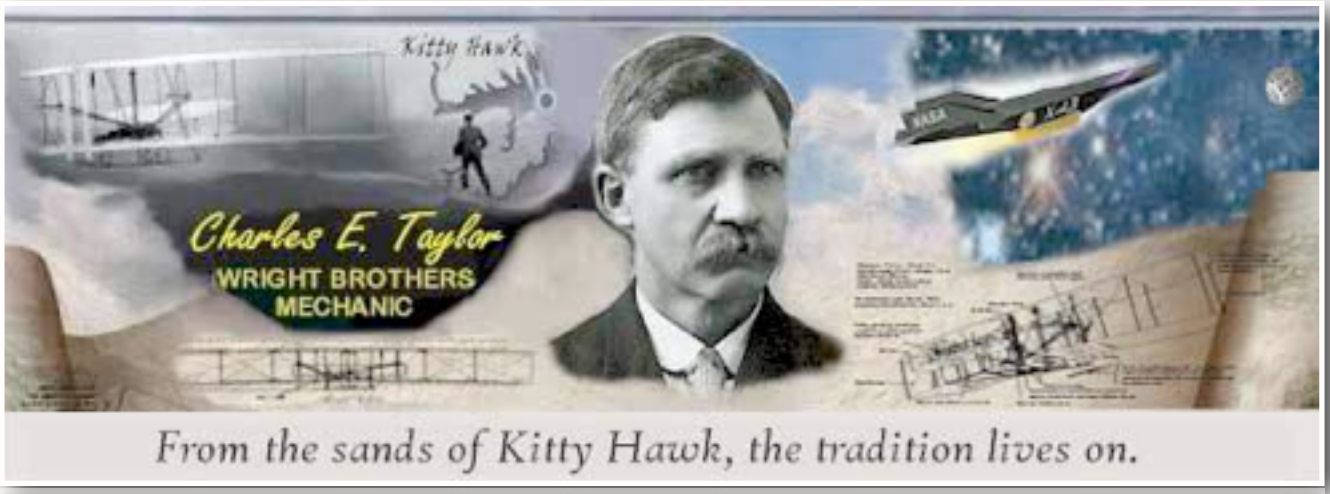
# Aviation Human Factors Industry News

***Volume XIV. Issue 14, July 08, 2018***




**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:**

# FAA Faces Challenges in Implementing and Measuring the Effectiveness of Its 2015 Runway Safety Call to Action Initiatives

## What We Looked At


Runway incursions—incidents involving unauthorized aircraft, vehicles, or people on a runway—have been a longstanding challenge for the Federal Aviation Administration (FAA). The Agency reported a nearly 83-percent rise in total incursions between fiscal years 2011 and 2017, and there have been serious incidents in which two aircraft have come within a few feet of colliding with each other. Due to the increase in runway incursions, in June 2015 FAA initiated a Call to Action forum that focused on developing short-, mid-, and long-term initiatives to mitigate runway incursions and improve safety. In November 2015, FAA published 22 initiatives developed at the forum. Our audit objective was to evaluate FAA's progress in implementing initiatives to improve runway safety. Specifically, we assessed the status of initiatives resulting from the 2015 Runway Safety Call to Action forum.

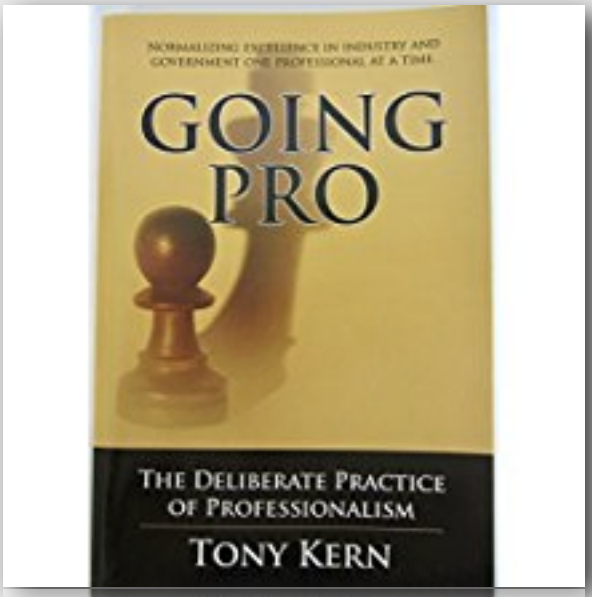
## What We Found

As of November 2017, FAA had completed 10 of the 22 initiatives, including initiatives aimed at educating pilots on signs, markings, and other visual aids at high-risk airports and updating a best practices list for airport surface and movement areas. Ten initiatives are still in progress while two initiatives were canceled. However, the Agency faces challenges in fully implementing the initiatives still in progress. These include dedicating funding to complete four initiatives and fully implementing new technologies for seven initiatives, which could take years to complete. In addition, while FAA has implemented a monitoring plan to track the status of the initiatives, the plan does not tie the initiatives to quantifiable goals or other metrics that would measure their effectiveness in reducing runway incursions.

**Our Recommendations**
We made three recommendations to the Federal Aviation Administrator regarding revisions to the 2015 Call to Action monitoring plan. FAA concurred with all three recommendations.

https://www.oig.dot.gov/sites/default/files/FAA%20Runway%20Safety%20Initiatives%5E6-27-18.pdf

## Achieving Extreme Professionalism In Aviation




Professionalism in aviation is tough to define. In a traditional sense, a professional is a skilled, well-trained individual who follows a profession for personal gain. Using this logic, if you collect a paycheck you must be a professional, right?

If this is the case, then why do professional pilots, according to NTSB reports, crash airplanes as a result of "unprofessional behavior" or "unprofessional acts?" Blowing off an SOP, intentionally skipping a preflight procedure, or continuing an unstable approach to a landing are all clearly unprofessional acts. So, if being a professional is tied to a paycheck, did these pilots momentarily "clock out" to harm themselves or others? In hindsight, it's often easier to identify a lack of professionalism than to clearly define it.

The first step—and probably not a very popular one—in better defining the term "professional" in aviation is to forget the notion that receiving a paycheck matters.

Aviators can act professionally regardless of being paid or, conversely, can get paid and not act like a professional. As an example, there are a number of owner-pilots who are every bit as professional or serious about flying as the “pro.”

Professionalism involves more of a mindset than skillset. For the sake of argument, let’s say to become a successful professional pilot it takes 90 percent attitude, 10 percent aptitude, and zero percent cash. Focusing on attitude and aptitude might help simplify our definition of professionalism. For the career pilot, maintaining this attitude and avoiding the inevitable “drift” over the span of 30 to 40 years is a challenge.

Professionalism, according to the NBAA Safety Committee, has been identified as “the cornerstone focus area of any safety management system in which professional behaviors rule and safe actions become a byproduct.” NBAA’s *Professionalism in Aviation webpage* is a great resource and focuses on both organizational and individual professionalism. According to NBAA, “Professionalism in aviation is the pursuit of excellence through discipline, ethical behavior, and continuous improvement.”

NBAA draws from Dr. Tony Kern’s book *Going Pro: the Deliberate Practice of Professionalism* to further identify three different levels of professionalism by using the Integrated Model of Professionalism.

According to Kern’s model, “Level I Professionals are little more than members of a profession. They are competent enough to earn a paycheck, but not necessarily compliant with all policies, procedures, and regulatory guidance.” Level II Pros, according to Kern, are “stagnant professionals,” they are competent, ethically sound, and compliant; however, they might never reach their potential because there is no improvement process.

Level III Professionals—the extreme professionals—“embrace and improve across all six domains”: vocational excellence (“doing the right things right”); professional ethics (“doing the right thing”); continuous improvement (“getting better at doing the right thing”); professional engagement (“sharing and learning from others”); professional image (looking and acting the part); and selflessness—the desire to mentor and give back (helping others do the right thing).

Chances are, if you're reading this, you are a professional—not in the sense that you receive a paycheck for flying, but in that you are engaged, have a strong desire to learn and continuously improve your skills. If this is the case, you're well on your way to becoming an extreme professional.

**https://www.nbaa.org/ops/safety/professionalism/**

## Psychology at Root of Procedural Lapses

The keys to improving business aviation safety and flight department performance lie in understanding human psychology and group dynamics, safety instructor Robert Gould said at the "Why Do We Fail To Follow Procedures?" session at the NBAA White Plains Regional Forum on Thursday. Gould cited several reasons why pilots and maintenance technicians commit violation errors—for example, the willful disregard of procedures, such as ignoring checklists—including excessive reliance on memory, interruptions, fatigue, poor training, and complacency."When we violate a procedure and nothing bad happens, we perceive the action to be acceptable," Gould, of Bravo Golf Aviation said, noting such behavior may be rewarded. "Time saving looks good to management; it saves money."

Additionally, well-intentioned team members may be negatively influenced by non-compliant group behavior, Gould said, citing foundational university research on obedience to authority and group conformity. "Negative norms develop," said Gould. "Normalization of deviation becomes accepted."

Gould, who teaches at the University of Southern California's Aviation Safety Program, urged attendees "not to accept that rules must sometimes be bent to get the job done, reject shortcuts, and recognize complacency. It's all about good leadership and strong personal discipline," Gould concluded. "There's a difference between leadership and management."

## Remembering the crews of Air Tankers 123 and 130

KOLO TV has a very nice four-minute video tribute to the crew that was killed June 17, 2002 when their C-130A air tanker, Tanker 130, crashed while fighting a wildfire near Walker, California killing all three on board.

It includes a short interview conducted minutes before the accident with Steve Wass, one of the pilots. The other two crew members were Craig LaBare and Mike Davis. The video has the well-known footage of the wings falling off the air tanker as it crashed just after making a drop.A month after the crash of T-130, a P4Y-2 Privateer, T-123, crashed while maneuvering over a fire near Estes Park, Colorado. Both pilots, Ricky Schwartz and Milt Stollak were killed.

The NTSB determined that the cause of both crashes was in−flight structural failure due to fatigue cracking in the wings, and that maintenance procedures had been inadequate to detect the cracking.

These accidents changed aerial firefighting. The Forest Service banned certain models of old war birds and developed new contract specifications regarding inspections and stress monitoring. During the next ten years the large air tanker fleet atrophied, shrinking from 44 on exclusive use contracts in 2002 to 9 in 2012. Not much was done to restore the program until eight days after two pilots were killed in crashes of two P2V air tankers on the same day in 2012 — the Forest Service issued contracts for seven "next generation" air tankers manufactured in the 1980s and 1990s, taking a small step toward partially rebuilding the fleet. As the fire season began in 2018, 13 large air tankers were on federal exclusive use contracts.

http://www.kolotv.com/video?vid=486082731

## Fatigue Crack Causes British Airways Engine Fire

The 2015 engine fire on a British Airways 777 was caused by a fatigue crack and the resultant uncontained engine fire, according to the NTSB final report issued on Wednesday. The crack was found in an area of one of the aircraft's GE GE90-85BG11 engines that was not required to be inspected at the time. The cause of the crack couldn't be determined and GE implemented new inspection procedures after the accident.


The engine failure occurred on the takeoff roll as the aircraft was departing from McCarran International Airport (LAS) for London. The captain aborted the takeoff and the 157 passengers and 13 crew members used the emergency slides to evacuate. One serious and nineteen minor injuries were reported.

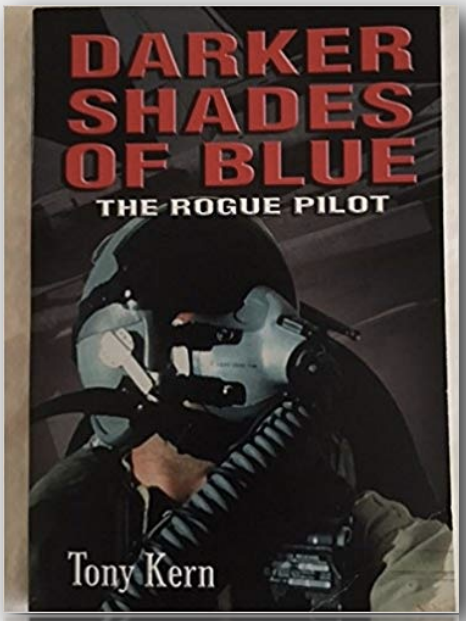
The NTSB investigation uncovered some issues with the flight crew's checklist use during the evacuation, noting that the unaffected right engine was allowed to run for 43 seconds after the order was given to evacuate on that side of the airplane. According to the report, “Because the captain did not follow standard procedures, his call for the evacuation checklist and the shutdown of the right engine were delayed.”

As related safety recommendations, the NSTB referenced two previously issued recommendations stemming from an American Airlines engine failure and fire in 2016. Safety Recommendations A-18-6 and A-18-10 call for separate checklists for engine fires on the ground and in the air and the development of “procedures for an engine fire on the ground to expeditiously address the fire hazard without unnecessarily delaying an evacuation.”

**https://app.ntsb.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20150908X35241&AKey=1&RType=HTML&IType=FA**

## Rogue Pilots or Just Bad Procedures?

Procedural noncompliance is a topic that gets a lot of attention. In most recent studies, much of the focus centers on pilots who intentionally deviate from a procedure because they are either too complacent, unprofessional, or worse, just bad apples.The “fast thinker”—those seeking cognitive ease—might buy into this notion. For them, blaming an incident or accident on a “rogue” pilot is easy. Pilots should just follow the procedures and incidents and accidents won’t occur. Their solution: remove that individual, issue a bulletin for the rest to “comply,” and the problem will go away, right?



The "slow thinker"—those wrestling with cognitive strain—will question the notion of a "rogue" pilot, understanding that complex issues don't have one single solution, nor will they simply go away. The solution in this case might begin with identifying the human-factors issues associated with noncompliance and a healthy reflection on the procedures themselves. Line operations safety assessments (LOSA) studies suggest a high prevalence of noncompliance often points to an ineffective or bad procedure.

At one time, procedural noncompliance was on the NTSB's "Most Wanted List" and currently is a top safety issue for the NBAA Safety Committee. NBAA identifies procedural noncompliance as a significant contributing factor in aircraft accidents and incidents. Furthermore, NBAA recommends, "Aviation professionals in all vocational categories must become aware of the extent that noncompliance has proliferated in business aviation, identify the causal factors for noncompliance and develop workable solutions that eliminate these events."

Universally, it's recognized that good procedures ensure standard pilot actions. Likewise, pilots adhering to good procedures enhance aviation safety. Thus, there's typically a bad outcome when pilots intentionally don't follow procedures. In fact, it's a very slippery downward slope.

The LOSA Collaborative, founded by Dr. James Klinect, has more than 20,000 observations in its archive. This data shows that, on average, "Flights that have two or more intentional noncompliance errors have two to three times as many mismanaged threats, errors, and undesired aircraft states as compared to flights with zero intentional noncompliance errors."

Intentional noncompliance by pilots might be more closely related to science than bad behavior. Some human-factors studies suggest that there are a number of issues related to a pilot becoming intentionally noncompliant. Often, these pilots, given a poorly written procedure, simply do not agree with the procedure and might believe their way is better—"an informed workaround." Others might not fully understand a procedure or the risk associated with not complying. Additional factors such as fatigue can also play a role in intentional noncompliance.

Researchers also point toward three "perceived justifications" of being noncompliant: rewarding the violator (for example, "I get home earlier if I don't go-around"); knowledge of associated risk (for example, "My risks are justified because I know better…"); or consideration of peer reaction (for example, "My reputation precedes me. I am a good pilot."). The trick is to break these perceptions.

Organizations also have some culpability when it comes to procedural noncompliance. Operators must understand that there are indeed bad procedures. When it comes to developing and writing good procedures, words and actions matter.

Advisory Circular 120-71B provides some outstanding guidance on the design, development, and implementation of SOPs and checklists. It goes into great detail about the importance of providing flight crews background information on a new procedure or a change in existing procedure. Background helps a crew "buy into" the procedure by providing context and relevance.

According to the AC, implementation of any procedure is most effective when the procedure is appropriate for the situation; the procedure is practical to use; crewmembers understand the reasons for the procedure; pilot flying and pilot monitoring duties are clearly defined; effective training is conducted; adherence to standard is emphasized; and crewmembers understand the risk and hazards of not following the procedures.

For any developer or manual writer, this AC is a must. As an example, the use of ambiguous words—such as should or may—often leads a crew to noncompliance, by simply giving them an option not to comply. The AC recommends the use of more positive words—such as do and must—since they are easier to read and less likely to be misunderstood.

Procedural noncompliance is a difficult issue to identify within an organization. LOSAs, when compared to the other voluntary safety programs, are one of the most effective tools to identify procedural noncompliance by highlighting areas where it is most prevalent. From those results, an organization can determine if it's a pilot problem or organizational problem

https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/1030486

## Southwest Airlines facing inquiries into safety and maintenance culture


In the wake of Southwest Airlines' first-ever fatal airplane accident in April, the low-fare behemoth is suddenly confronting a major federal investigation and a lawsuit that could have serious ramifications as they shine a spotlight on Southwest's safety and maintenance practices.

On Wednesday, eight passengers who were aboard the fatal Southwest Flight 1380 last April filed a lawsuit in the Supreme Court of New York.

Named as defendants in the lawsuit are Southwest (NYSE: LUV) and BoeingCo. (NYSE: BA), which manufactured the Boeing 737 plane. Also named were GE Aviation Systems, Safran USA and CFM International, which all had a hand in manufacturing the engine from which a fan blade detached.

That detached fan blade caused a catastrophic series of events that ultimately resulted in the death of one passenger aboard Flight 1380 when she was partially sucked out of a window in the depressurized plane cabin.

The major concern for Southwest in the lawsuit is the allegation that the carrier "negligently failed to reasonably monitor, >

inspect, test, service, maintain and repair the aircraft and the engine to keep its aircraft reasonably safe for its passengers and to remove from service aircraft that were not reasonably safe."

If the suit goes to trial, that issue will undoubtedly be debated in open court, with evidence presented on both sides.

But beyond the lawsuit, Southwest also must contend with an audit of the Federal Aviation Administration's (FAA) safety oversight of Southwest. The United States Department of Transportation's Office of the Inspector General is just starting the audit. The FAA is an arm of the DOT, which is why the DOT's Inspector General is doing the audit.

The FAA had this to say today about the DOT's move: "The FAA's mission is to enhance safety for the flying public. We welcome the OIG's examination of the FAA's oversight of Southwest Airlines. The FAA's oversight system is designed to identify potential risks before they become serious problems and ensure that corrective action is taken. The process is dynamic, and requires that the FAA, and the airlines we oversee, constantly strive for safety improvements."

Just weeks before the fatal Flight 1380, Bret Oestreich, the head of Southwest's own mechanics union, sent a strongly worded letter to management that laid out serious concerns about the maintenance culture at the airline. Southwest management had previously chided Oestreich for using fiery talk about safety concerns as a bargaining chip in contract negotiations that were underway at the time.

Lee Seham, attorney for the Southwest mechanics union, isn't surprised by the audit actions the DOT is now taking.

Seham, in an interview today, said that as recently as June 13 of this year, he filed a complaint with the FAA on behalf of Southwest mechanics. The complaint alleges that a Southwest mechanics supervisor based at Los Angeles International Airport "assaulted a mechanic" when he refused to install damaged aircraft parts.

The supervisor also allegedly threatened to report the mechanic in question for refusing to work. The mechanic, however, ultimately did not install the damaged parts, Seham said.

Finally, it will be up to Southwest to prove to those eight passengers aboard Flight 1380 and to the Department of Transportation that its maintenance procedures are what they need to — and should — be.

Asked to comment on the DOT audit, Southwest had this to say today: “Safety is the uncompromising priority at Southwest Airlines. As part of Southwest’s safety culture, we have a very transparent and professional relationship with the Federal Aviation Administration, which includes an FAA-approved safety management system designed to help us manage and mitigate operational risks and execute safe operating programs and practices. Our absolute goal at Southwest is to meet or exceed every requirement of our safety management system, and we believe we are held accountable to that goal by the FAA. That said, we are always seeking new ways to strengthen our practices, and any additional enhancements or oversights into our safety management system that result from this audit by the DOT are welcome additions to our safety culture.”

https://www.bizjournals.com/chicago/news/2018/04/19/southwest-airlines-mechanics-worried-about-safety.html

## Groupness

In the 1930’s the Great Atlantic & Pacific Tea Company (A&P) was the most popular grocery chain in the U.S. with nearly 16,000 stores. Its strategy was to focus on a single need: cheap groceries. By the end of WW II it was one of the biggest companies in the world. Then something strange happened: Leftover production capacity from the war created new industries.


Now people wanted more than cheap groceries. They wanted more choices, more convenience and even new exotic foods.

The man who managed A&P dedicated himself to carry on the company tradition, regardless of evidence that it was a doom strategy. He lived by the motto "You can't argue with a hundred years of success." Throughout the next three decades, A&P fell into decline and ceases to exist. The strange thing about this is that A&P had the same information that other companies had, notably Kroger. The world had changed. The old model wouldn't work any more. A&P even opened an experimental store called Golden Key that succeeded using the supermarket model known today. The information clashed with what they believed to be true, so they closed and ignored the information, while Kroger went on to become one of the largest grocery chains in America.

What A&P did is not uncommon, whether in business, science or teams. Behavior like that, seemingly contrary, stems at least in part from a phenomenon that psychologists call groupness. The term refers to the tendency of various animals, including humans, to form in-groups. When the in-group encounters individuals from outside the group, the default response is hostility. People protect their group from outside influences. For example, we will reject information, habits and culture from other groups.

The power of groupness is not to be underestimated. If a group invests a lot of effort in a goal and succeeds, its boundaries become stronger, and it tends to become more hostile to outside influences. This may not be overt hostility. It may simply be a subtle and unconscious tendency to reject anything from another group.

NASA has lost two space shuttles, costing the lives of 14 crewmembers, and groupness was at least partly to blame. The astounding effort and success of the Apollo program had created a culture like that at A&P. NASA defined itself as technically excellent – 'the perfect place,' as one researcher called it. They put a man on the moon, and it was hard to argue with success. The insidious message was: We know what we're doing. The result of that is; you can't tell me anything I don't already know.

By the time components of the space shuttle began failing (the O-rings in the case of Challenger and the foam insulation in the case of Columbia), NASA managers were so blinded by groupness that they could not recognize that those malfunctions were clear signs of impending disaster.

The official report on the crash of Columbia said, "External criticism and doubt reinforced the will to impose the party line vision on the environment, not to reconsider it…." This in turn led to flawed decision making, self-deception, introversion and diminished curiosity about the world outside the perfect place.

Groupness has been the downfall of many a good corporation over the years. Researchers at the MIT Sloan School of Management studied the relationship between how long a particular group had been together and how well it communicated with outside sources. Newly formed groups communicated much more with outsiders and also performed much better than older groups, which became more insular and dysfunctional over time.

The groupness effect, strengthened by a few chance successes, can begin to blur the line between true success in achieving a goal sensibly and a close call that simply didn't turn into disaster. Just because you get away with something doesn't mean it was a good idea. In addition, just because something worked in the past doesn't mean it will work in the future.

Whatever the pursuit, it's important to be aware of the power of the groupness, to seek good information from outside the group, and to make sure that what seems like success is not just a close call.

## Canada launches new measure to protect aircraft from laser attacks

The Government of Canada has issued an interim order to ban the possession of some battery-operated handheld lasers to protect aircraft from laser attacks.

The Interim Order prohibits the possession of laser more than 1mW outside of a private dwelling without a legitimate purpose.

It applies to municipalities situated within greater Montréal, Toronto, and Vancouver regions, as well as a 10km radius around airports and certified heliports across Canada.

Canada Transport Minister Marc Garneau said: “I take very seriously the increased risk to aviation safety and to people on the ground caused by lasers.

“That is why I am proceeding with these new safety measures which take effect immediately – to enhance the safety of aviation and the public while we work to bring into force permanent regulations.”

Transport Canada and delegated law enforcement are now authorized to issue fines to anyone caught violating the order.

Maximum fines of $3,760 and $18,801 have been decided for guilty individuals and corporations respectively.

Transport Canada is also planning to make laser attacks on aircraft subject to immediate fines under the Canadian Aviation Regulations.

Canada has been organizing various safety awareness campaigns on the impact of laser attacks on aircraft, but incidents are still occurring across the country, putting the safety of passengers and flight crew at risk.

Pointing a laser into the aircraft cockpit can distract the pilot during the most critical stages of take-off, descent and landing.

# SAFETY LEADERSHIP: TEN COMMANDMENTS

Good leadership in safety and occupational health within the Navy helps differentiate the best performing commands from the rest. Such a healthy safety culture fully supported by leadership at all levels pays great dividends for commands and the Navy as a whole. The following guidance for leadership is taken from the Army's Leader's Guide to Civilian Safety.

No one is in a better position to influence worker safety than the leader. If you provide employees with proper guidance, training, and development of good work habits, they will perform safely whether or not you are in the area. The safety culture of an organization is often described as "what people do when no one is looking." Leaders drive safety culture by setting the example, encouraging and rewarding safe performance, and by not rewarding or tolerating short cuts and unsafe acts.

**1.** Know and care for your personnel. In a sense, you have two families. Care for your personnel as you would care for your family. Be sure each worker understands and accepts his or her personal responsibility for safety. Know their training status and their qualifications. Verify knowledge and skills level of new employees, regardless of whether or not they have been previously certified in a certain area. Consider individual abilities when assigning job tasks.

**2.** Know the rules of safety that apply to the work you supervise. Never let it be said that one of your personnel was injured because you were not aware of the required safety precautions. Know your equipment, its capabilities, and its condition. Checklists and publications are available to guide you.

**3.** Anticipate the risks that may arise from changes in equipment or methods. Evaluate the impact of equipment changes or modifications, timeline and schedules changes, seasonal and weather changes and personnel assignments and skill levels.

Changes in one or more of an operation's conditions can introduce new hazards or increase risk, if not addressed. Seek and use expert safety advice that is available to help you guard against new hazards.

**4.** Encourage your personnel to discuss with you the hazards of their jobs. A Job hazard analysis is a good tool to discuss specific tasks, equipment and safe procedures at the start of an operation to ensure you and your personnel understand the requirements, procedures and equipment to perform the tasks safely and efficiently. Be receptive to the ideas of your personnel. They are a valuable source of first-hand knowledge that can help prevent mishaps.

**5.** Assign sufficient and qualified people and equipment to get the task done safely. Do not allow shortcuts. In the long run, shortcuts do not save time or money.

**6.** Follow up on your instructions consistently. Provide positive reinforcement of safe behavior by recognizing personnel that use personal protective equipment and follow safe procedures. See that your personnel use the safeguards provided. Routinely spot check their work. If necessary, enforce safety rules through disciplinary action. Left uncorrected, unsafe performance becomes the accepted standard. Frequent excuses for poor safety performance include: "We've always done it this way." "No one has gotten hurt yet."

**7.** Set a good example. Demonstrate safety in your own work habits and personal conduct. Do not appear as a hypocrite in the eyes of your personnel. Set and enforce high operating standards in every part of your operation. Safety is a by-product of professionalism, of doing the job right the first time and every time.

**8.** Investigate and analyze every mishap, however slight. Develop corrective measures to prevent similar mishaps. Corrective action following a minor mishap or near-miss may be an opportunity to avoid a major mishap. Where minor mishaps go unheeded, crippling major mishaps may strike later.

**9.** Cooperate fully with those in the organization who are involved in employee safety. The safety professional, industrial hygiene and occupational health staff work to help you identify and protect your personnel from injury and health hazards. Their purpose is to help you get your job done safely. Maintain awareness. Do not relax your vigil and become complacent when everything is running smoothly.

**10.** Remember, mishap prevention is good business and increases mission readiness.