PRISM

A member of the SGS Group

ROTARY WING NEWSLETTER

March 2023 | Volume XXIII | Issue III

SAFETYWIRE

NBAA Forum Answers Questions About FAA's Safety Management System Proposal

(Source: NBAA.com)

Feb. 9, 2023

The FAA's recent notice of proposed rulemaking (NPRM) to expand applicability of mandated safety management systems (SMS) in 14 CFR Part 5 was the topic at NBAA's Hot Topics in Business Aviation session held at the 2023 NBAA Regional Forum at Miami-Opa locka Executive Airport (OPF).

The presentation, hosted by NBAA Director, Flight Operations and Regulations Brian Koester, CAM, offered a broad overview of the issue, including a brief history of FAA's SMS rulemaking and some of the key provisions of the NPRM.

An SMS, according to FAA, aims "to provide a systematic approach to achieving acceptable levels of safety risk." It's made up of four functional components: safety policy, safety risk management, safety assurance and safety promotion.

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

The FAA's proposal calls for essentially expanding applicability in Part 5 beyond airlines to some Part 21 type certificate and production certificate holders, Part 135 charter operators and air tour operations under Part 91.147. Much of the regulatory impact of the NPRM has yet to be determined, which prompted questions during the NBAA session at OPF. The NPRM also proposes more than a half-dozen additions that are expected to change the rules of compliance for all involved operators

Koester reminded session attendees that the proposed rule is still in draft form and available for public comment until April 11 offering the business aviation community a chance to influence the FAA's final rule as the process moves forward.

Existing Voluntary SMS Programs

A number of general aviation operators are already taking part in voluntary SMS programs, Koester told attendees at the session.

For example, the International Standards for Business Aviation Operations (IS-BAO), established by the International Business Aviation Council, with NBAA guidance, today has more than 700 participating companies worldwide. "Under IS-BAO, a number of operators have had an SMS in place for many years," Koester said. "Those systems are actively enhancing the level of safety in their operations. So, one of the questions we have as we evaluate this is how is this rule going to affect those operators that have an existing SMS?"

FAA SMS Voluntary Program

An existing FAA mechanism aimed at recognizing a GA SMS is through the agency's Voluntary SMS Program, according to Koester. This is intended to be a scaled down version of Part 5 – basically taking the rules currently used for airlines and scaling them to general aviation. "About 250 or so GA operators have applied for this program," Koester said. "Roughly 50 have gone all the way through the requirements to receive formal recognition by the FAA for their SMS program, and that's a recent development."

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

Applicability to Part 91 Operators

During the session's questions and answers, Josh Hernandez, a pilot for a Part 91 operation based in Chicago, wanted to know if the FAA has a proposal on the table to expand Part 91 operations beyond those operators that are conducting operations for compensation.

"NTSB Chair Jennifer Homendy has indicated the board would like to see the requirement for SMS expanded to anyone conducting operations for compensation," Koester said. "So my hunch is that this means [broadening a set of SMS mandates to] Part 125 [operations] instead of expanding to additional Part 91 operators and potentially Part 91(k) [operations]. But beyond that, I wouldn't expect an expansion to all Part 91 operations. There isn't anything on the table – there's no proposal."

Koester explained that the FAA would have to release a new NPRM before they would issue new rules that would affect other regulatory segments. "They'd have to go through all the administrative procedures and acts as well as a cost benefit analysis. There are a lot of steps required when the FAA puts out new regulations. And they can't simply skip those by adding other regulatory or operating parts into the final rule that weren't included in the original NPRM."

NBAA is currently assessing the NPRM and preparing to submit comments. As FAA officials have developed the SMS proposal, NBAA has continually provided guidance to the agency. Above all, NBAA has emphasized a critical guiding principle: for any SMS to be truly effective, it must be tailored to the size and complexity of the operation.

NBAA
National Business Aviation Association

Koester encouraged attendees to email NBAA at sms@nbaa.org if they have additional questions about the FAA's NPRM.

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

Spotlight On Safety: SD, The Unforgiving Killer

By: Jill Browning & Tyson Phillips (Source: rotor.org/ ROTOR Media; September 22, 2022)

Learn how to recognize and avoid spatial disorientation.

Helicopter Safety Enhancement (H-SE) 127A, Recognizing and Training Degraded Visual Environment (DVE) Conditions Conducive to Spatial Disorientation (SD), was established in 2017 after previous US Helicopter Safety Team (USHST) research identified and categorized the leading causes of helicopter fatal accidents and developed safety enhancements to address them. A team comprising a small but dedicated group of industry professionals was formed to lead this H-SE. To tackle the challenge of recognizing and recovering from SD, the H-SE team examined related accidents and conducted an industrywide survey. Feedback to survey questions about pilot experience with spatial disorientation indicated a gap in both the fundamental understanding of the concept of SD and a pilot's ability to recognize the conditions conducive to SD. Further investigation of related accidents highlighted the complexity, confusion, and unique environment that encounters with SD cause.

Our analysis also prompted a focus on developing techniques for better decision-making, therein emphasizing research the National EMS Pilots Association had conducted with Enroute Decision Points (renamed Enroute Decision Triggers, or EDTs) to identify improved methods of training and techniques to recover from and prevent SD encounters. These techniques are summarized below.

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

Preflight Planning

Effective risk mitigation begins during the planning phase, including the planning and briefing of the flight. During the planning phase, pilots should identify and brief their EDTs.

EDTs are those conditions that, when encountered, trigger a predetermined decision (due to weather, degraded visibility, etc.). These EDTs can include airspeed, altitude, or divergence from the planned route.

The H-SE team opted to provide examples of conditions that may be used to create an EDT (depending on the situation) rather than recommend specific parameters that must be used (see Spatial Disorientation Induced by a Degraded Visual Environment: Training and Decision-Making Solutions, Helicopter Safety Enhancement No. 127A, Output No. 2). The predetermined decisions depend on pilot and equipment capabilities. Examples include:

- Land the aircraft
- Commit to instruments

Turn to KNOWN good-weather conditions.

Emergency Response

While most pilots agree that instances of decreasing visibility are cause for concern and can lead to an in-flight emergency, most pilots don't treat this emergency the same as emergencies caused by aircraft systems.

For example, a pilot experiencing a WARNING light in the event of an engine fire or a CAUTION light indicating troubling transmission pressure wouldn't second--guess the rotorcraft flying manual and contemplate alternate courses of action.

However, research is teeming with examples of pilots who continued into degraded visibility—flights that should have generated an internal CAUTION or WARNING light in the pilot's head and a corresponding in-flight emergency response.

By establishing and briefing EDTs during the preflight planning phase, pilots are more likely to make better in-flight decisions, taking early action as they would in response to any other aircraft flight manual emergency.

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

Training

Historically, aviation accident research highlights the importance of more effective training. Survey data confirmed this finding for spatial disorientation, as well, but it also indicated a general misunderstanding of the physiological impact of spatial disorientation.

Many survey respondents who believed they had experienced SD went on to describe illusions rather than spatial disorientation. This finding underscored a fundamental misunderstanding of what true spatial disorientation encompasses, making recognition of the phenomenon more challenging.

A comprehensive pilot-training program should include an academic focus on understanding the mental and physical responses to encountering spatial disorientation. Aircraft training can be conducted in simulators or in aircraft. Limitations associated with each type of training should be well understood, because they do exist, and certain outside factors (such as ops specs, simulator cost and availability, certification, and so on) may preclude one approach versus the other.

Simulators are good at re-creating low-visibility conditions and for teaching basic maneuvers and instrument flying, as well as generally representing rotorcraft handling qualities at a fairly high level. While simulators provide excellent visual illusions, however, most lack the range of motion required to create vestibular illusions. (According to the FAA, it takes 20 seconds of acceleration to create vestibular illusions.)

The importance of combining visual and vestibular illusions is critical in degraded visual environment–induced SD training. The addition of visibility simulation systems to in-aircraft training offers variable control of in-aircraft visibility, providing the critical capability of re-creating both visual and vestibular illusions.

Simulator and in-aircraft training should be scenario based and include decision--making as well as allow full spatial disorientation to develop. As with all training conducted (whether simulator or in-aircraft), safety has to be considered first and foremost.

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

Recovery

Historically, recovery from spatial disorientation is often lumped in with unusual attitude recovery. Although the techniques can be similar, the visual and vestibular disorientation experienced in SD lead to an overwhelming confusion in the brain that is not the same as the Coriolis effect, in which pilots can feel as though they're pitching, yawing, and rolling simultaneously. SD brain confusion should be introduced during the training phase, but spatial disorientation is unique for each individual, during each encounter.

Each aircraft provides a slightly different set of variables during recovery, including stability augmentation systems, trim systems, and autopilot variants. Despite the many differences in aircraft, a combination of power, attitude, and balance (PAB) can be employed. Pilots who encounter SD should:

- **Power:** set power that will allow for a normal climb rate; care must be taken not to induce a rapid climb rate that can further disrupt the pilot's vestibular system
- **Attitude:** level the wings, place the nose on the horizon
- **Balance:** place and keep the aircraft in trim.

This combination of actions minimizes the instrument scan.

In summary, better decision-making during every phase of flight is critical to avoid conditions conducive to spatial disorientation. Training should include scenarios emphasizing techniques to improve both aeronautical decision-making and the ability to recognize the onset of and recovery from visual and vestibular illusions.

H-SE 127A outlines these intervention strategies and provides a list of resources for pilots to consult to develop better knowledge and appreciation of the dangers posed by low-visibility conditions leading to spatial disorientation.

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

A Squirrel, a Moose, and Loss of Control in Helicopter Accidents

By Lee Roskop (IHST team member) *(Source: VAST.aero)*

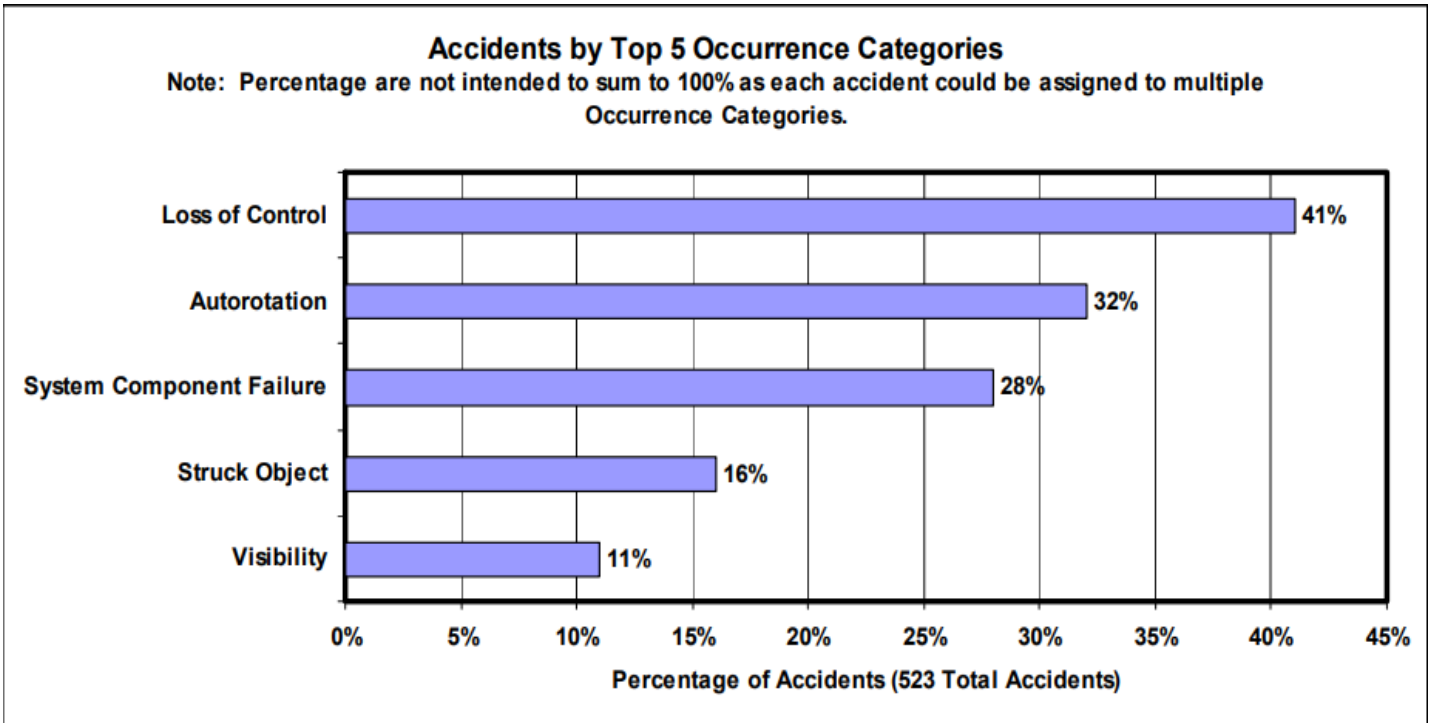
Years ago, many kids used to watch the TV cartoon Rocky and Bullwinkle. For those who have never heard of them, Rocky was a reasonable-minded squirrel and Bullwinkle a dim-witted moose. One of the running gags on the show was a scene where Bullwinkle would say, “Hey Rocky, watch me pull a rabbit out of a hat.” One of Rocky’s typical responses was “But that trick never works!” Bullwinkle was not deterred by Rocky’s comment and would respond, “Nothing up my sleeve…Presto!” as he proceeded to try the trick anyway. Inevitably, Rocky was always right. The trick never worked. Every time, Bullwinkle would end up pulling a lion, bear, or something he hadn’t planned on out of the hat instead of a rabbit. However, the unsuccessful outcome never stopped him from trying the same trick again and again.

What do Rocky and Bullwinkle have to do with helicopters? The repetition of Bullwinkle’s failed magic act reflects the data involving Loss of Control helicopter accidents due to Performance Management. The International Helicopter Safety Team (IHST) defines these accidents as events precipitated by either insufficient engine power or main rotor rpm that were NOT attributable to a mechanical failure. In each accident, the situation deteriorated as the performance demands that were required progressed beyond what the helicopter could provide. The resulting condition exceeded the pilot’s ability to control the aircraft. By that point, it would have taken nothing short of magic to stop the accident. Case after case of these accidents progressed in a similar manner, just like Bullwinkle’s act. Unfortunately, also just like his act, in the end, it never worked.

This accident data was analyzed by the Joint Helicopter Safety Analysis Team, a sub-committee of the IHST. The IHST was formed in 2005 to lead a government and industry cooperative effort to address factors that were affecting an unacceptable helicopter accident rate. The group’s mission is to reduce the international civil helicopter accident rate by 80 percent by 2016. From 2006 to 2011, the analysis team completed an analytical review of three years of U.S. helicopter accident data from 523 different accidents.

The IHST’s analysis team cited Loss of Control as an accident occurrence more frequently than any other category. The team noted Loss of Control was evident in 217 (41%) of the 523 accidents they analyzed and the following chart shows how Loss of Control compared to other occurrence categories. (Note that percentages in the chart do not add up to 100% because the team’s methodology allowed for any accident to be categorized in multiple occurrence categories. One accident may be included simultaneously in Loss of Control, Autorotation, and Abrupt Maneuver categories if each category was applicable.)

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero



There were a number of more detailed sub-occurrence categories encompassed under Loss of Control. However, Performance Management was selected more than twice as often as any other (79 out of 217 Loss of Control accidents). From the NTSB investigations for each of these cases, many of the performance management problems in the accidents involved one of three scenarios:

- Low main rotor rpm during practice autorotation
- Tailwind during hovering, takeoff, or landing
- High density altitude operations

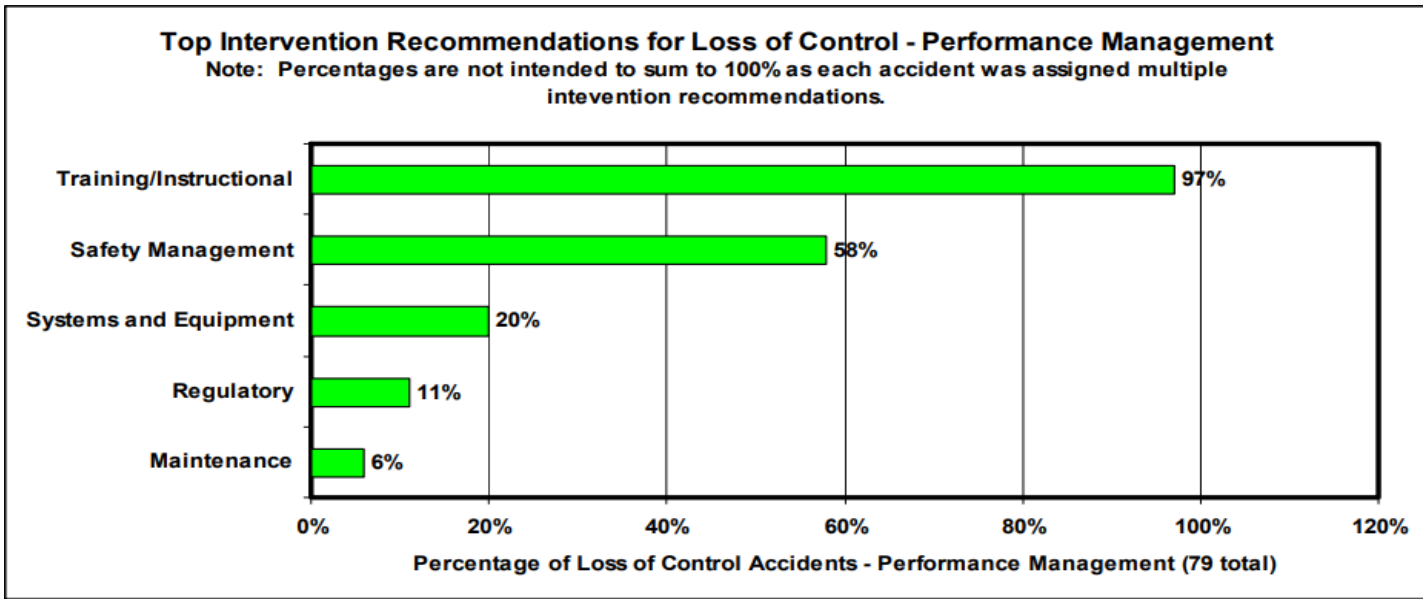
The analysis team assessed the series of problems that were evident in each event and determined that pilot judgment and actions were contributory to 99% of the accidents where Loss of Control from Performance Management occurred. For the three scenarios previously listed, a lapse in pilot judgment and actions manifested itself in the following ways:

- **<u>Practice Autorotation</u>**
  - ⇒ The instructor allowed low main rotor rpm during their demonstration of the maneuver. A power recovery was necessary, but either was not attempted or delayed until it was too late.
  - ⇒ The student allowed low main rotor rpm during the maneuver and the instructor either chose not to intervene or intervened too late.

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

- **Tailwind**
  - ⇒ The pilot either underestimated or did not consider the increased power demands of hovering, taking off, or landing with a tailwind.
- **High density altitude**
  - The pilot underestimated the effect of density altitude on power required during an approach and was unable to arrest descent rate with power available.

In perhaps the most important part of the IHST work, a number of interventions have been suggested that could have prevented the accidents. The chart shows the intervention recommendations as they applied to the 79 accidents categorized as Loss of Control from Performance Management.



The analysis team has more detailed and specific intervention recommendations that expand upon the broader, high-level recommendations shown in the chart. For the 97% of Loss of Control accidents from Performance Management where Training/Instructional methods is cited as an intervention, some of the more specific recommendations the team highlighted were:

- Inflight Power/Energy Management Training
- Simulator Training - Advanced Maneuvers
- Enhanced Aircraft Performance & Limitations Training
- CFI Training and Refresher on Advanced Handling, Cues, and Procedures

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

- Emphasis for Maintaining Cues Critical to Safe Flight

The IHST is leading an effort to get members of the helicopter community from trying the same tricks over and over again even when they don't work. If we can take some of the insight from the accident analysis and apply it to how we go about our day to day business, we can be part of a change for the better. The outcome we are pursuing doesn't involve a reasonable-minded squirrel, or a dim-witted moose, and hopefully, no attempts at bad magic - - just safer flying.

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

SAFETY MANAGER'S CORNER

Safety Manager Training:

What does it take to be a successful safety manager in a business aviation operation? That's a question with quite a detailed litany of answers so let's close up the aperture and focus on what type of training contributes to a safety manager's successful performance. There aren't many people who can learn everything at once or have an infinite amount of available time, so setting training personal priorities is really important. This month's Corner is going to focus on subject matter knowledge important to every safety manager.

First and foremost, a safety manager must thoroughly understand the safety management system; sounds obvious but there's more there than meets the eye. A safety management system is not especially complicated but it does possess abundant branches and a very wide swath, and therefore commands a breadth of subject matter surprising to many individuals. Safety management systems are comprised of four major components- policy, hazard identification and risk management, assurance, and promotion. Let's break each down individually and identify some requisite individual skills and knowledge.

Policy: An in-depth knowledge of regulations and industry guidelines. Organizational management. Process development. Excellent writing skills. Emergency response planning and coordination.

Hazard identification and risk management: Operations management. Aircraft and facilities maintenance. Incident and accident investigation. Root cause analysis.

Assurance: Analytical report writing. Quality management. Auditing and evaluation programs. Project management. Data and trend analysis. Statistical modeling.

Promotion: Excellent verbal and writing communication skills. Ability to relate to employees of all levels. Leadership skills. Coaching and teaching skills. Ability to act as a principal advisor to flight operation top management. Understand and promote model behaviors.

Knowing how to implement a system may also be a required skill, depending upon the safety management posture of your flight operation. You might start from the beginning or have to pick up the implementation mid-stream. In either case, a safety manager must have a firm grasp on project management and outstanding communication skills.

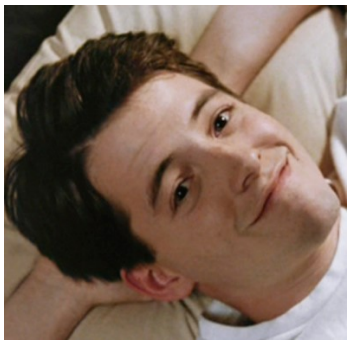
OK it's understandable to gasp at all those topics, but it's important to take the proper "Rome wasn't built in a day" approach. You may already possess several or most of those attributes and just need continuing education; other topics might be brand new subject matter and a choice between self-learning or dedicated instructional training. Managing a safety system demands skill and knowledge, as well as the dedication to attain both. Keep pushing forward on the right training path and things will fall into place quite nicely.

6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

Quote of the Month

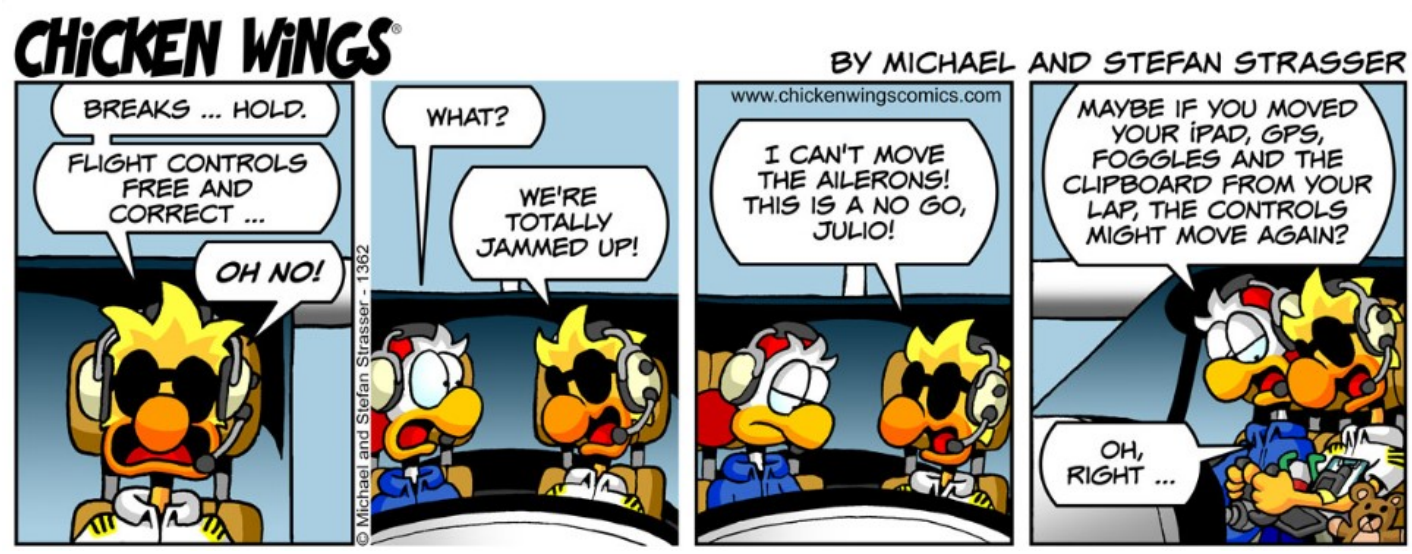
“Life moves pretty fast. If you don't stop and look around once in a while, you could miss it.”

— Ferris Bueller



Aircraft move fast, so we move slow. It is important, especially as safety managers to slow down the torrent. Information can come at you quicker than you have time to effectively manage it. This can lead to solving problems that didn’t exist, or even worse missing the obvious solution. Remember that when it comes to day to day safety, you and your department set the pace.

On Short Final...



6021 South Syracuse Way
Suite 301
Greenwood Village, CO 80111
+1 513.852.5110
+1 800.361.2216
argus.sales@argus.aero

CONTACT LIST

Susan Cadwallader
susan.cadwallader@prism.aero
VP,SMS Services

Jenna Albrecht
Jenna.albrecht@prism.aero
Program Manager, SMS Services

Wayne Ehlke
Wayne.Ehlke@prism.aero
Safety Analyst, SMS Services

Rhodri Norton-Quick
Rhodri.Norton-Quick@prism.aero
Safety Analyst, SMS Services

6021 S. Syracuse Way, Ste 302
Greenwood Village, CO 80111
 # PRISM PREFERS
www.argus.aero

UPCOMING COURSES

March 28 to March 30, 2023—PRISM Course
Safety Management System (SMS)
Denver, CO

May 15 to May 19, 2023—PROS Course
Aviation Lead Auditor Training (ALAT)
Denver, CO

Aug 21 to Aug 25, 2023—PROS Course
Aviation Lead Auditor Training (ALAT)
Denver, CO

Sept 26 to Sept 28, 2023—PRISM Course
Safety Management System (SMS)
Denver, CO

Oct 30 to Nov 3, 2023—PROS Course
Aviation Lead Auditor Training (ALAT)
Denver, CO

On Demand —PROS Course
Virtual IOSA Conformance Auditor Training
Denver, CO

On Demand —PROS Course
Recurrent ICAT Training (R-ICAT)
Online

Go to Upcoming Training Classes to register.