PRISM

A member of the SGS Group

NEWSLETTER

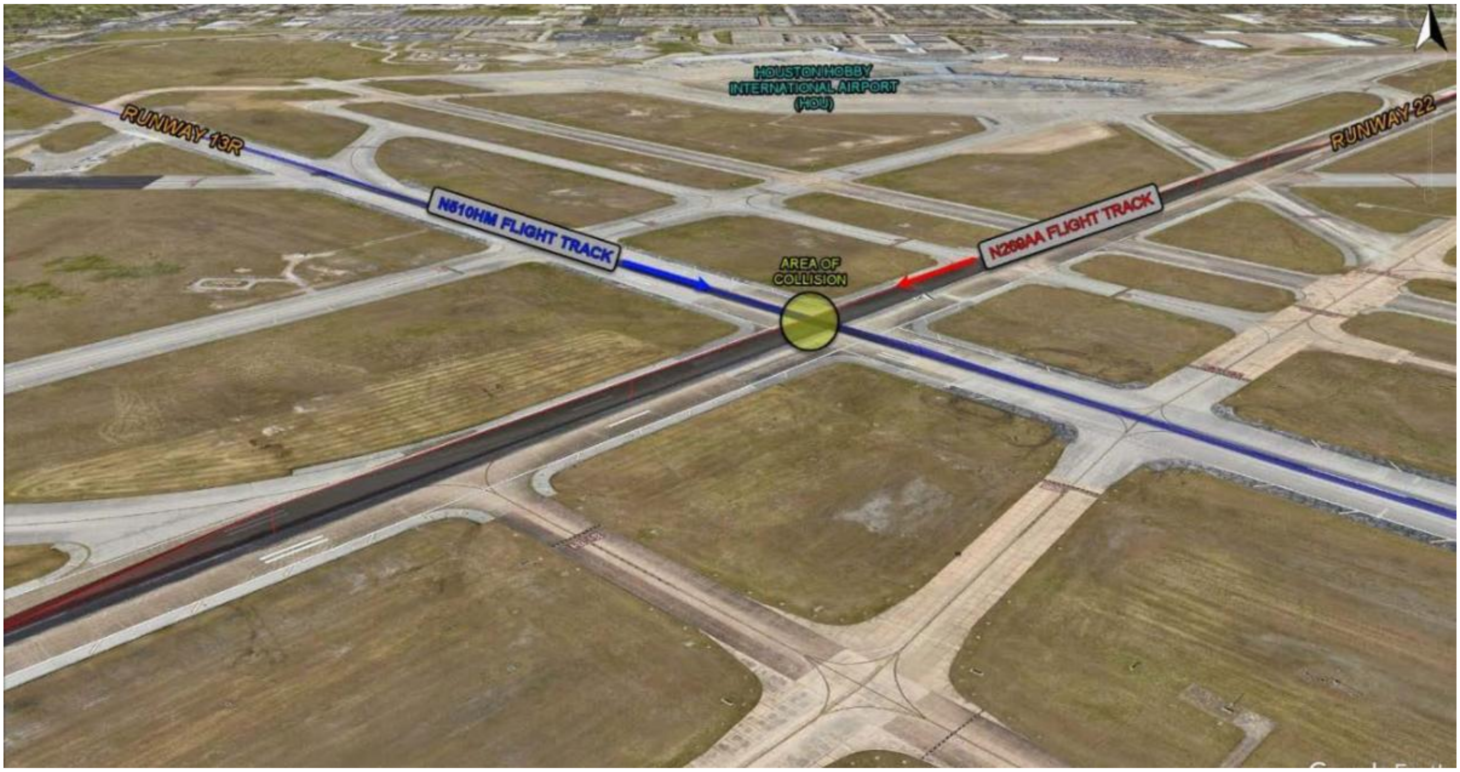
February 2025 | Volume XXV | Issue II

SAFETYWIRE

AINsight: Recent Bizav Accidents Are Head-scratchers

(Source: Stuart "Kipp" Lau, AIN, January 24, 2025)

Mishaps started with flight crews not responding correctly to flight control warnings on takeoff



View of both airplanes flight tracks in the Oct. 24, 2023 accident. The ground collision occurred in the area highlighted in yellow. The blue line represents N510HM, and the red line represents N269AA. © Google Earth/NTSB

Two recently published accident reports have left me scratching my head. In both cases, the pilots of business jets attempted to troubleshoot maintenance issues "on the fly." One was literally on the takeoff roll without consulting approved aircraft quick reference handbooks or manuals or seeking guidance from maintenance personnel.

The first accident led to an in-flight upset that killed a passenger, while the second resulted in a serious runway incursion where two aircraft collided at a runway intersection.

As a pilot and safety investigator, "Monday morning quarterbacking" is not my forte (I hate it!). But in this case, after digging through the two NTSB reports, I'm a bit perplexed as to why these professional pilots would attempt to take off and go fly with cockpit alerts related to flight control issues. All I can say, at this point, is, "C'mon Man!"

Unlike ESPN's widely popular "C'mon Man"—a humorous segment on *Monday Night Countdown* featuring bloopers from professional football players—these two accidents were much more serious. The outcome of these events was tragic: one passenger was killed, three aircraft were damaged, and there was a potential to cause harm to many others.

Below are excerpts from the applicable NTSB reports.

Fatal Inflight Upset

In December, the NTSB published its final report on the fatal March 3, 2023 in-flight upset accident of a Bombardier Challenger 300. This event occurred on a Part 91 flight from Keene, New Hampshire, to Leesburg, Virginia.

According to the NTSB report, on the day of the accident, the second-in-command (SIC) of the flight was distracted and failed to remove the pitot probe cover on the right side of the aircraft.

During the takeoff roll, the SIC reported that the airplane accelerated normally, but he observed that the right primary flight display (PFD) airspeed indicator did not agree with the left-side airspeed indicator. This prompted the pilot-in-command (PIC) to reject the takeoff.

Following the rejected takeoff, the PIC exited the runway onto a taxiway. The left engine was then shut down, and the SIC opened the main cabin door and walked to the front of the airplane, where he found a “red pitot probe cover” installed on the right-side pitot probe. He then removed the cover, noticing no damage, and returned to the cockpit.

The PIC then restarted the left engine and resumed the taxi for another takeoff attempt. Shortly after the engine started, the crew reported that a “RUDDER LIMIT FAULT” advisory message was annunciated on the crew alerting system (CAS). The PIC attempted to clear the message using an avionics “stall test” switch, which failed to work. At this point, the crew discussed calling maintenance control but decided to continue the flight since it was an advisory message and not a caution or warning message.

The flight crew did not consult the airplane’s guide in the quick reference handbook (QRH). On Bombardier business aircraft, the go/no-go guide is a table that provides guidance for non-normal advisory messages—either go with minimum equipment list relief or a no-go outcome. The “RUDDER LIMIT FAULT” advisory message is listed as a no-go item and would have grounded the flight.

During the second takeoff, the SIC noticed that the V-speeds were not set, but the acceleration was normal. From memory, the SIC called V1 and go/no-go rotate. During the subsequent climb, at 400 feet agl on the radar altimeter, flight data indicated a “MACH TRIM FAIL” caution message. Afterward, the PIC engaged the autopilot, and the “AP STAB TRIM FAIL” caution message was displayed.

The PIC would disengage and re-engage the autopilot several times—without advising the SIC—causing the autopilot caution messages to clear and then reappear as the autopilot was engaged. As the airspeed and altitude increased, the “AP HOLDING NOSE DOWN” caution message illuminated.

After receiving the amber caution messages, the PIC called for the SIC to “get the checklist” but did not call for a specific checklist by name. According to the report, the crew then became fixated on reprogramming the V-speeds in the FMS, believing that the caution messages were related to problems encountered following the rejected takeoff.

Approximately eight minutes later, the flight crew agreed to execute the “PRI STAB TRIM FAIL” checklist located on the quick reference card (QRC)—a CAS message that was not displayed. The SIC chose that checklist since it was the only trim-related checklist on the QRC, and he did not consider using any other checklist.

However, the correct checklist was available in the QRH and would have warned of the possible abrupt change in control force upon autopilot disconnect. It also would have ensured that passengers were seated with seat belts fastened.

According to the NTSB report, the first step in the “PRI STAB TRIM FAIL” checklist is to move the primary trim switch from primary to off. As the Challenger 300 crew switched this to off, removing power from the primary stab trim and disconnecting the autopilot, the aircraft abruptly pitched up to 11 degrees aircraft nose up, resulting in a load of four gs. Then the pitch decreased and the vertical acceleration changed to -2.3 gs, the NTSB said. Next, the control column was moved aft and the aircraft pitched up to 20 degrees with a resulting four-g load.

Following the upset, the flight crewmembers were alerted by a passenger that another passenger had been injured. The SIC exited the cockpit to check on the passenger and provide medical attention. Soon afterward, the SIC advised the PIC that there was a medical emergency and they needed to land. The passenger would later die at the hospital from her injuries.

The NTSB’s analysis of the horizontal stabilizer trim electronic control unit (HSTECU) non-volatile memory found that during the rejected takeoff, the speed mismatch between air data computer 1 (ADC 1) and ADC 2 exceeded 20 knots for more than five seconds due to the covered pitot probe. This scenario induced several fault messages, such as “ADC 1/ADC 2 miscompare,” into the HSTECU system logic that ultimately resulted in a “RUDDER LIMITER” fault and subsequent and cascading autopilot/trim failures. Flight testing of an exemplary Challenger 300 confirmed these findings.

Sadly, according to the report, the HSTECU faults could have been cleared if the unit—via circuit breaker or the entire airplane—was powered down and then back up before takeoff.

The NTSB determined that the probable cause of the accident was “the flight crew’s failure to remove the right-side pitot probe cover before flight, their decision to depart with a no-go advisory message following an aborted takeoff, and their selection of the incorrect non-normal checklist inflight, which resulted in an inflight upset that exceeded the load factor limitations of the airplane and resulted in fatal injuries to a passenger whose seatbelt was not fastened.

"Contributing to the severity of the inflight upset were the PIC's decision to continue to climb and use the autopilot while troubleshooting the non-normal situation, and the PIC's pilot-induced oscillations following the autopilot disconnecting from the out of trim condition. Also contributing to the accident was the crew's inadequate crew resource management."

Houston…We Have a Problem

On Oct. 24, 2023—seven months after the Challenger in-flight upset—the crew of a Hawker 850XP on takeoff roll struck a Cessna Citation Mustang that was landing on a crossing runway at Houston Hobby Airport (KHOU). Both aircraft were substantially damaged, but fortunately, none of the occupants were injured.

According to the NTSB preliminary accident report (the final report has not been published), the tower controller instructed the pilots of the Hawker to "line up and wait" on Runway 22, while the Citation Mustang was cleared to land on Runway 13R. In a post-accident interview, the Hawker pilots said they believed that they were cleared for takeoff when they took off.

According to the Hawker pilots, prior to reaching the runway, the V-speeds were no longer displayed on the flight display screens. This created a distraction, along with "RUDDER BIAS" and "PITCH TRIM" alerts that were displayed during the takeoff roll. Remarkably, the Hawker pilots were attempting to "resolve [these alerts] as they were on the takeoff roll."

According to the report, as the Hawker approached Runway 22, it unexpectedly began its takeoff roll. At this point, a controller in the tower working clearance delivery noted the Hawker's movement and notified the tower controller. The tower controller immediately instructed the Hawker crew to "stop, hold your position." There was no response. Again, the tower controller yelled, "Hold your position, stop," to which there was no response.

Less than two minutes after beginning its unauthorized takeoff, the Hawker's left wingtip struck the empennage of the Citation. Both pilots of the Hawker stated that they did not see the Citation until about one second before impact, and they described the feeling as a "thud." The Citation pilot said he did not see the Hawker and described the impact as a "sound similar to a truck tire blowing."

After the aircraft hit each other, the Hawker crew continued their takeoff and immediately returned to land on Runway 13R. The Citation cleared the runway.

A post-accident examination revealed significant damage to the Hawker's left winglet and wing leading edge surfaces. The Citation had significant damage to its empennage, including the tail cone, rudder, and other structural elements.

Conclusion

To me, as a fan of business aviation for more than 40 years, these accidents are unsettling. Is this a "Bedford moment"—the 2014 accident of a Gulfstream IV that killed seven people? Are these isolated events or is this a systemic issue in business aviation?

In each case, pilots during takeoff were confronted with cockpit alerts related to flight control issues. Guidance from approved aircraft manuals or insightful maintenance personnel would require these pilots to take a time out to reflect on the safety and legality of their flights.

In hindsight, in each case, the safest course of action would have been to simply clear the runway, set the parking brake, and pick up the QRH or phone a friend such as a maintenance manager or chief pilot.

The opinions expressed in this column are those of the author and are not necessarily endorsed by AIN Media Group.

Stuart "Kipp" Lau
Contributor – Safety

Pilot, safety expert, consultant, and aviation journalist Stuart "Kipp" Lau writes about flight safety and airmanship for AIN.

Introduction to Human Factors and Safety Culture

(**Source:** FAA Safety Briefing Magazine; Cleared for Takeoff, January 11, 2024)

Over the last 50 years, we've seen tremendous progress toward reducing the rate of fatal general aviation (GA) accidents. We now have far less than one fatal accident per 100,000 hours of GA flying. That is impressive! We've come a long way, but to continue that success and get that rate even lower, we'll need to seek a few new ways to improve safety. Part of that involves human factors research, looking at ways humans succeed — and fail. It also involves finding ways to reduce or eliminate the risk of failure and stressing the importance of a safety culture.

Break the Accident Chain with Human Factors Training

Time of Transition

We're in the midst of a new way of thinking about safety. We are transitioning from a reactive culture, where we wait for something to go wrong and then fix it, to a **proactive and just** culture that treats aviators fairly and employs safety risk management to improve safety.

Reactive cultures are known for the blame-shame-retrain method for pilots who are involved in accidents and incidents. The trouble with this approach is that you must have an undesirable event before you begin to think about how to avoid it. And if you focus your attention on individuals rather than systems and environments, you're often setting up folks for future failures.

There's a better way …

Proactive cultures seek to:

- identify hazards associated with flight operations,
- assess the risk that those hazards would negatively impact safety,
- and either eliminate those risks or mitigate them to acceptable levels of safety.

Proactive cultures are also just cultures and still hold people accountable for their actions, but — if they are complying with established regulations, policies, and procedures — the focus will be on the system and not just the individual. Just cultures will always ask, "*What* happened?" rather than, "*Who's* responsible and how should they be punished?"

The FAA's Compliance Program is helping further the evolution toward a just safety culture. The program's objective is to identify safety issues that underlie deviations from standards and correct them as effectively, quickly, and efficiently as possible. It stresses a collaborative problem-solving approach (i.e., engagement, root-cause analysis, transparency, and information exchange) where the goal is to enhance the safety performance of individuals and organizations. You can read more about the Compliance Program in the Jan/Feb 2024 issue of FAA Safety Briefing.

A Just Culture for Safety

Jumpseat: an executive policy perspective

medium.com

SMS and You

Proactive cultures often feature formal Safety Management Systems, or SMS, which are frequently used in aviation organizations but can be useful for individual pilots as well. An SMS consists of 4 foundational components:

Safety Policy — a top-down commitment to safety. In large organizations that means safety is paramount for the CEO all the way to the latest entry-level new hire. For individuals, it means an unwavering commitment to safe operations.

Safety Risk Management — a formal process that identifies potential hazards, assesses the likelihood that identified hazards will negatively compromise operations, and predicts what the consequences will be should a mishap occur. Safety risk management also identifies ways to either eliminate hazards or mitigate them to an acceptable level of safety.

Safety Assurance — monitors and feeds back results and best practices from the safety risk management process. This feedback is used to refine processes and procedures.

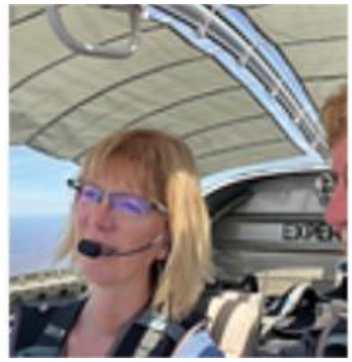
✈️ Safety Promotion — actively and constantly demonstrates the commitment to safety. In other words, safety promotion is walking the talk.

You can learn more about how SMS works and how adopting a personal SMS can help improve flight safety in the article here.

New Year, New (Safer) Operations

A Closer Look at Personal SMS

medium.com



On a more individual level, let's take a look at three essential elements that support a personal commitment to safety. They are:

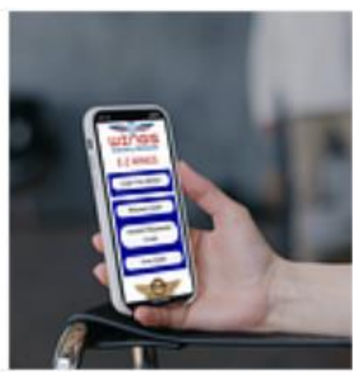
- Safety Risk Management ✅ — A structured process consisting of hazard identification, risk assessment, and risk elimination/mitigation.
- Pilot Proficiency 🧑‍✈️— maintaining a level of performance equal to or exceeding requirements for normal and emergency aircraft operations. Proficiency can be facilitated through the FAA's WINGS program, using a personal minimums checklist, or evaluation and coaching from a flight instructor.
- Technology 💻 — effective use of information and automation technology to increase flight safety.

While we've made great strides in addressing risk through SMS and Safety Risk Management achieving further progress with safety will require a closer look at the art and science of human performance.

WINGS Pilot Proficiency Program

#FlySafe GA Safety Enhancement Topic

medium.com



The Human Element

The term “human factors” refers to the wide range of issues affecting how people perform tasks in their work and leisure environments. Human factors study applies knowledge of the human body and mind to better understand human capabilities and limitations. This allows us to better design tasks and technology to optimize the relationship between human operators and the environments within which they work.

Few aviation accidents result purely from technical factors. In around 70–80% of cases, deficiencies in human performance contribute directly to the outcome.

World War I and World War II spawned rapid improvements in aircraft design and performance. This also resulted in increased aircraft complexity. Accident experience prompted aircraft designers to consider human performance requirements that continue to this day, especially with the growing complexity of aircraft systems, automation, and tasking.

Knowing when and where humans are likely to make mistakes has helped us to understand that errors rarely occur in a vacuum, but rather within organizational and operational systems. That allows us to design safety management systems that feature error-tolerant processes with built-in checks and balances and complementary assistive technology.

In addition, information from flight data and cockpit voice recorders during accident investigations over the years has identified deficiencies in crew resource management. That discovery led to the crew resource management and single-pilot resource management processes that are successfully practiced today.

Challenges remain, however, whether it's over-reliance on technology, the pilot shortages that strain existing operations and resources, the expansion of new National Airspace System (NAS) entrants, or the continued need to stay focused on safety and security systems. How individuals and groups meet these and other operational challenges has a lot to do with culture.

Safety Culture

The beliefs, attitudes, norms, and values that people within an organization share are described as organizational culture. You could describe culture as, "the way we do things around here." Safety culture is an essential part of organizational culture. It affects the way the organization manages safety and therefore, the ultimate effectiveness of its safety management system.

Robust safety management programs employed through a team of dedicated, proficient people can enable organizations to perform incredibly difficult and dangerous tasks in safety. For example, military demonstration teams can perform thousands of flight demonstrations without a mishap not because they are lucky, but because every member of the team — from the commanding officer to the newest member — is an active member of the organizational safety culture.

Dr. James Reason, a noted psychologist and human factors expert, produced a model of the five key ingredients of effective safety cultures.

Let’s see what attributes individual pilots might exhibit in support of each ingredient:

- Informed Pilots — gather all available information before flight and identify hazards that may compromise safety. They eliminate or mitigate the risks those hazards pose before takeoff and continuously update their assessments with new information en route.

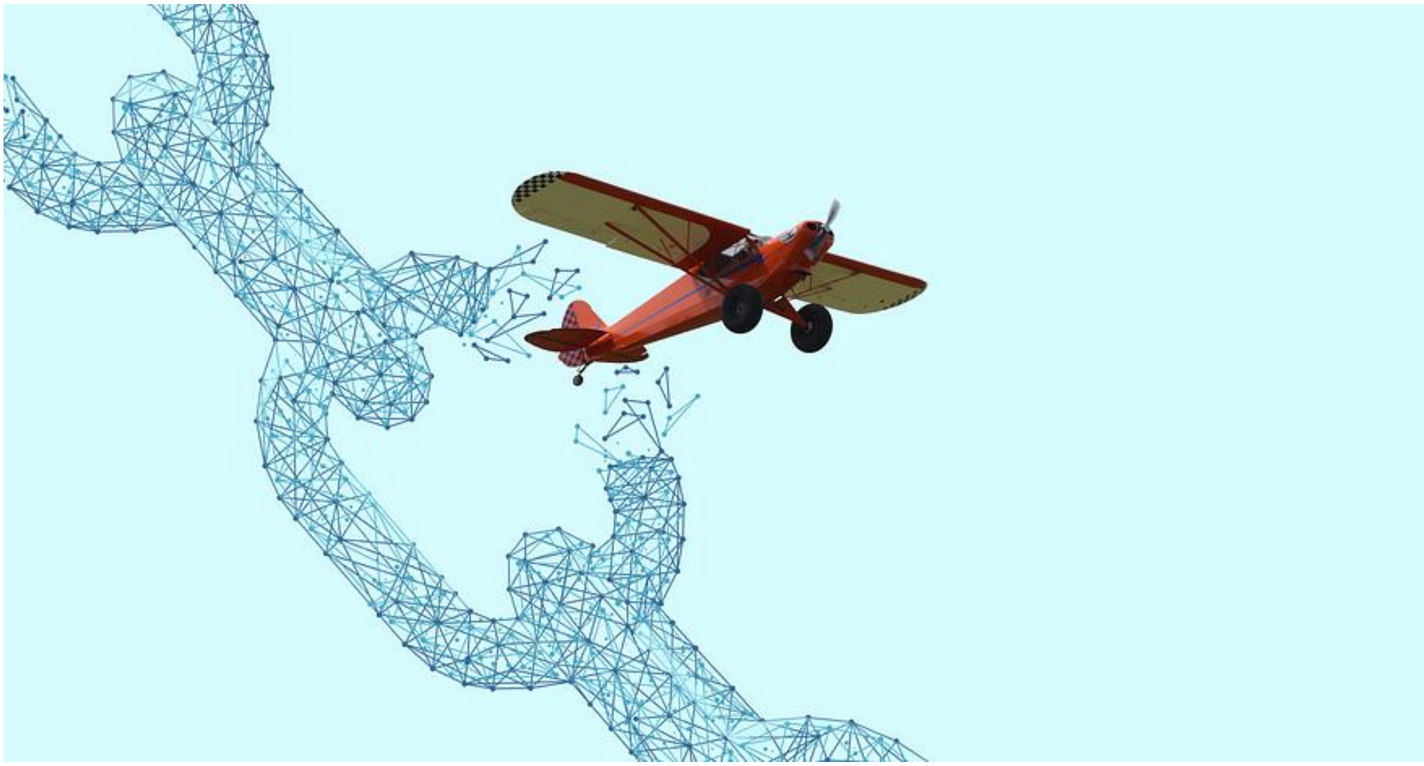
- Reporting Pilots — do not hesitate to discuss and learn from errors they make. They strive to report objectively and without bias. They seek guidance and coaching from flight instructors and peers.

- Learning Pilots — are constantly learning from their experiences and from those of their peers. They participate in continuing education and proficiency training and they use lessons learned to improve their operational procedures.

- Flexible Pilots — are flexible in their relationships and in their mission planning and execution. They are willing to adapt to changing conditions and priorities, but only if they can maintain an equivalent or higher level of safety.

- Just Culture Pilots — understand that errors are inevitable and that they have a responsibility to disclose them in order to provide information useful to crafting more effective processes and procedures. They expect to be treated fairly but also to be held accountable for their actions — especially those that are violations of policy, procedure, or regulation.

We hope this has brought to light the importance of having a robust safety culture and how better understanding human factors can help us more effectively manage risk in the aviation environment.



Want to Learn More?

Nine new Human Factors courses based on the Australian Civil Aviation Safety Authority's *Safety Behaviors — Human Factors for Pilots* are available on FAASafety.gov. The course modules focus on safety culture, human performance, communication, teamwork, situational awareness, decision-making, threat and error management, human information processing, and design and automation. The courses are eligible for credit in the WINGS Pilot Proficiency Program.

Many are familiar with the "accident chain" — a series of circumstances, events, and decisions that lead to an accident. Log in today and complete your training to learn how to "break a link in the chain" and prevent an accident.

Operational Pressure meets Emotional Intelligence

(Source: Jessica Meiris; USHST Fall 2024 Newsletter)

Pressure can show up in unexpected forms, and sometimes operate in the background- influencing ways of being you might not otherwise recognize. Sometimes a little extra attentiveness can help your overall process in detecting and mitigating risk.

I'm thinking back to a day this summer in a longline utility operation where I made several silly errors. Nothing dangerous or unsafe, but simple little things that were unlike me and stuck out as unusual. While fatigue was also a factor, there was operational pressure present in the form of a couple 'higher ups' from the customer's leadership team that were on site at the time, as well as the general knowledge that the project was behind schedule. Since the daily tasks of the project depend on the helicopter, the machine is an easy place to point the finger when productivity is low, even though it had little to do with the delays. The leadership team members on site weren't actually placing any pressure on me, and no one was shaking a finger in my face demanding to fly. In fact, they were quite cordial and made it clear they trusted my judgment about whether to leave the ground or not. Regardless, I perceived their presence as an energetic shift where I felt the need to show up in a different way from what was normal for me. You might think their presence would cue me to elevate my performance, reducing the chance of error. However, the opposite happened! After some reflection on the mistakes that day, I realized that I'd allowed myself to become distracted by the perceived need to perform, and my normal routine was disrupted in a negative way. While some disruptions in routine can be healthy and help avoid complacency, in this case the deviation had a negative impact.

What stood out about this instance was not only the sneaky ways that pressure can interfere with your decision making, but also the self-awareness it requires to notice those small nuances which can then improve the level of decision-making response. By contrast, a lack of awareness could lead to me chalking those mistakes up to "just having an off day". There's no way to prove it either way so I'll never know with certainty, however I feel that a high level of emotional intelligence allows me to know myself and my tendencies well, and therefore be able to identify patterns or behaviors, analyze them, and respond more appropriately.

How do you improve your self-awareness and emotional intelligence? There are many resources on the topic including online articles, books, and courses. Some easy ways to get started:

- Spend more time in observance of your own emotions, and work to expand your vocabulary for emotional expression.
- Frequently inquire as to the “why” of someone else’s thoughts or actions- be curious rather than reactive.
- Ask others for perspective and accept criticism with a learner’s mind.
- Be fully present when listening, rather than thinking about your response. Take a moment to pause before you speak.
- Respond from a place of compassion and curiosity.
- Ask open ended questions, which cannot be answered with a Yes or No. They usually start with Why, How, When or What. For example, saying “How did that make you feel?” versus “Did you feel angry?” allows the person to respond with more freedom.

The benefits of boosting your self-awareness and emotional intelligence include increased trust with team members or in a leadership role, enhancing customer service capability, forming or maintaining deeper relationships, and a heightened sense of connection and belonging. Who doesn’t want that?

As pilots we are tasked with thousands of decisions every day. Take the time to ask yourself why something went the way it did, and reflect on the root cause. Develop the mindfulness to understand when you’re triggered or affected by something, especially if it’s deviously hanging out in the background like operational pressure. Build the skills to communicate more effectively with your colleagues and the people in life you care about. And lastly, be willing to vulnerably share your experiences with others. We’re not alone out there!

SAFETY MANAGER'S CORNER

PRISM SMS: ASAP

PRISM SMS

Did you know?

PRISM SMS offers **ASAP** as a standalone tool to enhance data collection & analysis, hazard identification, and assist with fostering a healthy safety culture.

Does the ASAP Tool work with internal ASAP programs or do you have to use a third party?

The **ASAP** tool in PRISM SMS is available to all operators whether you have an internal **ASAP** or you use a third party like Air Charter Safety Foundation (ACSF).

How do you get started with the ASAP Tool?

If you would like ASAP turned on in your PRISM SMS account, please contact PRISM Support (prism@argus.aero). PRISM will need the following information:

- A copy of your signed ASAP MOU
- Who the ASAP Manager will be
- A list of the ERC Members

How does the ASAP Tool work?

Once activated, the ASAP Tool will appear on the left hand side menu in PRISM SMS. The basic steps of how the system functions are listed below:

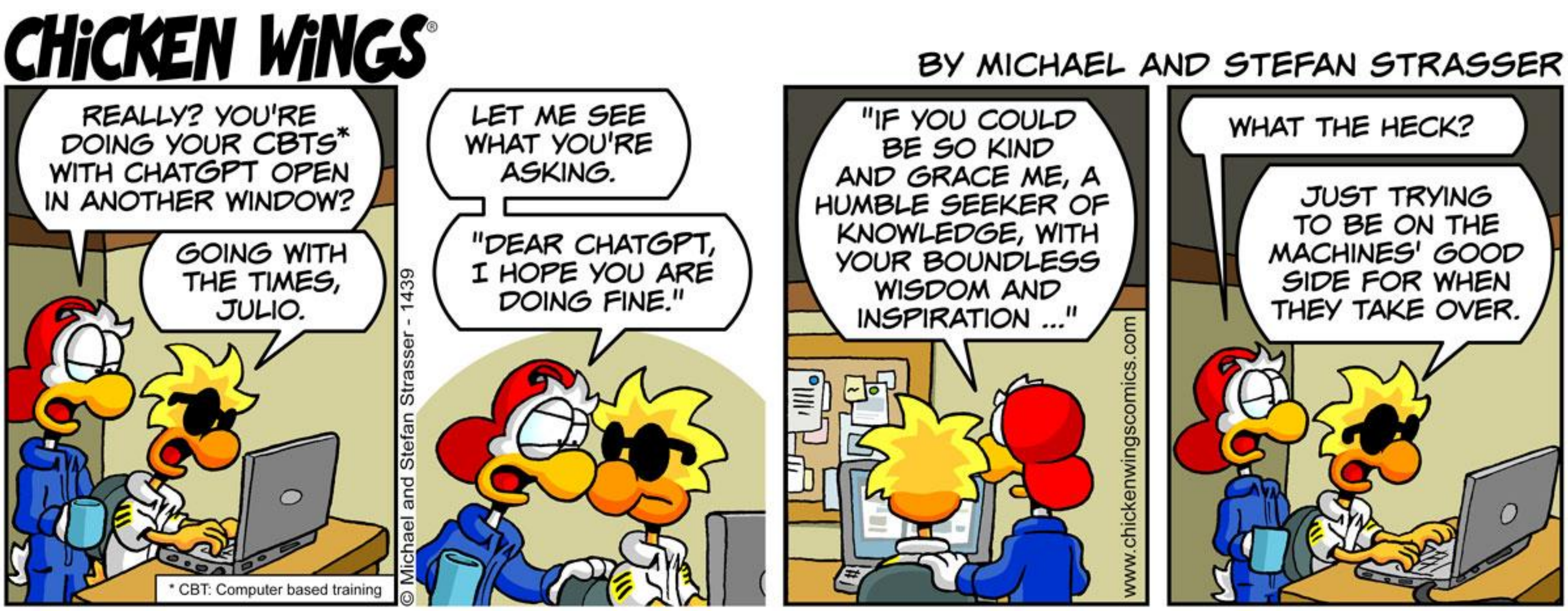
- Similar to the Reporting Program Tool (RPT), users will submit an ASAP report through the ASAP Tool.
- When a report is submitted in the ASAP Tool, the ASAP Manager is notified.
- The Manager reviews and assigns the report to the ERC Members. No one else can see the report.
- The ERC Members review and provide input to the report if desired.
- The Manager closes the report.
- The report can then be published.

Quote of the Month

Hard work beats talent when talent doesn't work hard.

BY: Tim Notke

Ah talent, such a wonderful thing. It’s flashy and fun to watch. Broken down, it’s comprised of two components: inborne ability and learned ability. Each of us possesses a unique proportion of these, no one person like the other. Individuals blessed with an abundance of inborne talent often perform exceptionally well, especially when introduced to a new task, while others use more learned ability to bridge the gap and move into proficiency a bit slower. But there’s a catch, a price to pay, as there always is. Talent can only be sustained by hard work, consistent hard work. Talent’s innate cruelty is its tendency to whither over time, sag into mediocrity, if not buttressed by continued leaning, practice and hard work. Think of a strong vertical slope flattening over time’s X axis, while the slope of hard work climbs steadily and consistently, never yielding to time. Every day is a test, so always be ready for the exam’s questions.



CONTACT LIST

Jenna Albrecht

Jenna.albrecht@prism.aero

Director, SMS Services

Wayne Ehlke

Wayne.Ehlke@prism.aero

Safety Analyst, SMS Services

ARGUS PRISM
A member of the SGS Group

6021 S. Syracuse Way, Ste 302

Greenwood Village, CO 80111

www.argus.aero

#PRISMPREFERS

UPCOMING COURSES

March 11-12, 2025—PROS Course
Risk-Based IOSA Training
Virtual

April 7-11, 2025—PROS Course
ALAT Training
Denver, CO

April 8-10, 2025—PRISM Course
Safety Management System (SMS)
Denver, CO

May 13-14, 2025—PROS Course
Risk-Based IOSA Training
Virtual

Go to Upcoming Training Classes to register.

+1 513.852.5110
+1 800.361.2216

argus.sales@argus.aero