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AIRPORT SURFACE SAFETY

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ABOUT THIS ISSUE…

The September/October 2024 issue of *FAA Safety Briefing* focuses on the many facets of airport surface safety. Feature articles and departments provide a "road map" to the various tools, resources, and strategies airmen can use to steer clear of risk during the ramp-to-runway segment of their journey. We also look at how technology is being used in the battle against runway incursions and surface safety events.

Contact Information
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FAA Safety BRIEFING

The FAA Safety Policy Voice of Non-commercial General Aviation

DEPARTMENTS

LARRY FIELDS, FLIGHT STANDARDS SERVICE EXECUTIVE DIRECTOR

SAFE AND SOUND ON THE GROUND

For pilots, it's sometimes easy to overlook the importance of the ramp-to-runway segment of a flight, especially when compared to the rigors of mid-flight challenges and tasks. However, the numbers show mistakes happen far too often on the ground and have the potential to be deadly — look no further than the 1977 Tenerife accident involving two fully loaded jumbo jets. When you take a closer look at the metrics, it's clear that general aviation (GA) attributes to most runway incursions. In fact, in 2022 and 2023 there were a total of 2,199 runway incursions caused by pilot error. GA accounted for about 1,755, or 80% of those incursions.

Surface safety continues to be a top priority for the FAA, with a renewed look at ways we can reduce risk. Progress has been made through joint collaborative efforts between the FAA and industry (see faa.gov/closecalls), but we've got more work to do. This surface safety-focused issue is designed to highlight this critical subject, explore some of the ways the FAA is addressing it, as well as provide some tips for GA pilots to avoid surface-related events.

The main source of surface risk in the National Airspace System (NAS) is a runway incursion, which is defined as, "any occurrence at an airport involving the incorrect presence of an aircraft, vehicle, or person on a runway." Examples include an aircraft that fails to stop and crosses the runway holding position markings without a clearance or one that takes off or lands on the correct (or incorrect) runway without a clearance. In the article, "Deviation Dissonance" we take a closer look at runway incursions, how they're categorized, and strategies for preventing pilot deviations, the leading source of runway incursions.

In that same vein of pilot deviations, there is a concerning trend with pilots not properly adhering to air traffic control's instructions to "line up and wait" before departure. There were 25 of these events in 2023 alone. The article "Please Wait Your Turn" takes a look at this phenomenon and explores some of the reasons why some pilots may unintentionally disregard this instruction. The article also outlines some important strategies that will help you avoid departing when instructed to line up and wait.

As I mentioned earlier, the FAA has made progress in leveraging technology to improve runway safety. In the article "Striving for a Safer Surface," we explore some of these new developments, how they work, and where you might see some of these new tools in action. We also take a behind-the-scenes look at the FAA's hugely impactful *From the Flight Deck* video series that gives pilots a front-seat view of hot spots and confusion-prone areas at airports all across the nation. The series has published over 132 videos which have racked up an impressive 815,000 views so far. Be sure to check out the article "A Front Seat View of Runway Safety" to learn more about this insightful video series and how it could help you before your next flight.

Finally, a big part of what we do at the FAA to improve surface safety relies on your input and feedback. There's no better example of that collaboration on display than the Runway Safety Action Team (RSAT) meetings and pilot controller forums that regularly bring together stakeholders at towered airports to identify surface safety risks and develop plans to mitigate or eliminate those risks. Some pilots are simply unaware of these meetings, many of which have resulted in meaningful changes to eliminate hot spots for good at certain airports. Your input is valuable, so I encourage you to check out the article "Making a Difference" and get involved with an upcoming RSAT meeting or pilot controller forum to share your feedback.

I'd be remiss if I didn't also mention the FAA's vast resources on runway safety available at faa.gov/airports/runway_safety. You'll find airport diagrams and hot spots, videos, our National Runway Safety Plan. Don't forget to check FAASafety.gov too for courses, seminars, and events in your area and contact information for FAASTeam Program Managers.

We hope the information in this issue helps you shore up your ground game and keeps you moving safely both in the air and on the ground. Fly (and taxi) safe!

AVIATION NEWS ROUNDUP

Striving for Zero Serious Close Calls on the Nation's Runways

As part of the comprehensive effort to end serious close calls, the FAA is working with airports across the nation to reduce the risk of vehicle and pedestrian deviations on the airfield. The agency sent refreshed training materials on vehicle/pedestrian deviations, to airport directors, including this video (bit.ly/3Y1y9nN). The video emphasizes the need to improve procedures on the airfield and enhance situational awareness of critical airport changes, construction, safety-area boundaries, airport-specific hotspots, and the importance of using clear and concise communication with the control tower or other aircraft and surface vehicles.

Here are some additional initiatives that help protect the traveling public:

- The FAA has installed Airport Surface Detection Equipment, Model X (ASDE-X) or Airport Surface Surveillance Capability (ASSC) at 44 of the nation's busiest commercial airports, and installed Approach Runway Verification (ARV) in 13 control towers with more locations on the way.
- The FAA will install the Surface Awareness Initiative system at Austin-Bergstrom, Indianapolis, Nashville, and Dallas Love Field airports this summer and at scores of other airports by the end of 2025. Runway Incursion Devices will be installed at five airports for evaluation before the end of this year and be deployed to 74 airports in 2025.
- The FAA holds regular runway safety action team meetings at airports across the country, and issues arrival alert notices for pilots and controllers.
- The FAA is accelerating air traffic controller hiring and enhancing controller safety training with modernized tower simulators.

You can learn more at faa.gov/closecalls.

FAA Ensuring Safe Public Charter Flights

The FAA announced plans to take two actions to address public charter flights, which have rapidly expanded in frequency and complexity in recent years. Some services appear to operate like scheduled airlines but under less rigorous safety regulations — a fact that oftentimes is not transparent to the flying public. The FAA will explore new ways to integrate charter flights into the airspace

in a manner that provides flexibility and safe options for all flyers. The agency intends to initiate a rulemaking to amend part 110 definitions of "scheduled," "on demand," and "supplemental" operations. If finalized, the effect of this proposed rule change would be that public charters will be subject to operating rules based on the same safety parameters as other non-public charter operations.

The FAA intends to issue the notice of proposed rulemaking expeditiously. As part of any proposed rule, the FAA would seek comment on an effective date that would allow for industry to adapt to any change in the regulatory environment. FAA's plans follow an initial request for comment on the issue in August 2023, in which the agency received and evaluated approximately 60,000 public comments.

Additionally, because of the FAA's dedication to expanding air service to small and rural communities, the FAA will explore opportunities to align aircraft size and certification standards with operational needs for small community and rural air service.

#FLYSAFE GA SAFETY ENHANCEMENT TOPICS

Please visit bit.ly/FlySafeMedium for more information on these and other topics.

SEPTEMBER

Preflight After Maintenance:
What items should you focus on and/or add to your preflight inspection checklist after maintenance?

OCTOBER

Vestibular Illusions:
Understanding the dangers of vestibular illusions and best practices for coping with them.

Specifically, the FAA will convene a Safety Risk Management Panel (SRMP) to assess the feasibility of a new operating authority for scheduled part 135 operations in 10-30 seat aircraft. The panel will dig into the data as we work to address the risks that exist today as well as think about the future of the national airspace system.

FAA Amends AME Guidance on Uncomplicated Anxiety, Depression, and Related Conditions

The FAA has revised its guidance to aviation medical examiners (AMEs) on "uncomplicated anxiety, depression, and related conditions," allowing them to issue a medical certificate if a pilot has been off medication for 2 years, there are no issues raised by a questionnaire, and the AME has no concerns. And since it's not unusual to have more than one mental health condition like anxiety and depression, or anxiety and PTSD, your AME can now issue a medical certificate for any class if you have up to 2 mental health conditions provided certain criteria are met. In addition, if your medical application was deferred for a mental health condition prior to a recent change in policy and you meet its criteria, your AME can request an expedited review if he or she determines that you now qualify. Review the questionnaire and conditions at faa.gov/ame_guide.

There is also a new option for AMEs to issue a medical certificate to pilots who used to be on medication for Attention-Deficit/Hyperactivity Disorder (ADHD) if otherwise qualified. This option requires that pilots be off medication for 4 years, have no symptoms, and not have been diagnosed with any other mental health condition. For more, see the latest *Pilot Minute* video at bit.ly/PilotMinute or go to bit.ly/3zNCz7v.

The Rotorcraft Collective: Just Say No!

Pilots are decision-makers who are go-oriented and focused on completing the task at hand. But, when "no" is the correct answer, it is the only answer. In a new video from The Rotorcraft Collective, FAA Safety Team representative Jessica Meiris outlines the importance of knowing and sticking to personal minimums and limitations. "Your personal minimums are meant to be firm. When you are close to exceeding your personal minimums, Just Say No." To view this and other videos in the Rotorcraft Collective playlist, go to bit.ly/RotorYT.

FAA Reauthorization

The U.S. Congress has passed the 2024 FAA Reauthorization Act (H.R. 3935), providing a 5-year authorization for the agency's programs, revenue collection, and setting many new mandates for national aviation policy. The passage of this long-term reauthorization ensures the FAA has the proper staffing and infrastructure it needs to safeguard operations in the National Airspace System.

The FAA Reauthorization Act includes the first-ever general aviation title and features a provision that mandates the expansion of BasicMed, increasing the size of covered aircraft to 12,500 pounds, the number of allowable passengers to six, and the number of seats to seven. Another provision provides a 24-month maximum deadline for the FAA's completion of the MOSAIC final rule.

Other key components of the Act are:

- **Safety Enhancements:** Strengthening aviation safety through rigorous oversight, improved pilot training standards, and updated safety protocols.
- **Infrastructure Modernization:** Investing in airport infrastructure, modernizing air traffic control systems, and upgrading navigational aids to support the future needs of air travel.
- **Sustainability Initiatives:** Promoting environmentally friendly practices by encouraging the use of sustainable aviation fuels and implementing measures to reduce carbon emissions.
- **Innovation and Technology:** Supporting advancements in aviation technology, including the integration of unmanned aircraft systems (UAS) and the development of urban air mobility solutions.
- **Consumer Protections:** Enhancing passenger rights and ensuring fair treatment of air travelers through updated regulations and stronger enforcement mechanisms.

You can review the FAA Reauthorization Act at bit.ly/4bzV7FE.

DR. SUSAN NORTHRUP, FAA FEDERAL AIR SURGEON

MENTAL HEALTH POLICY UPDATES

Continuing the discussion of actions that we in Aerospace Medicine have taken to make the certification process easier for pilots, I want to address some of the recent changes in mental health. While many of these changes were underway before the Aeromedical Summit and Mental Health Advisory Rulemaking Committee (ARC), we were pleased that the members of both identified many of the same issues for improvement.

Since the last Aeromedical Advisory article was written, we have added three more medications to the list of acceptable drugs for the treatment of depression or anxiety. We now allow a total of 8 different antidepressants for medical certification. Here is the link for the list of all the acceptable and unacceptable medications: bit.ly/3WwO6kJ.

As part of our ongoing mental health efforts, we have been actively looking at areas where we can delegate more decision-making authority to the aviation medical examiner (AME) to enable as many pilots as possible leaving the AME's office with their medical certificate in hand. Recall that when we consider any medical certificate, we are concerned with the risk of both sudden and subtle incapacitation. Based on our own experience, review of our database, and a literature review, we were able to expand the decision-making authority for the AME for several mental health conditions. These include uncomplicated depression and anxiety, alone or together, as well as OCD (obsessive-compulsive disorder) and PTSD (post-traumatic stress disorder). With that, let's look at another major change.

The use of medication to treat depression or anxiety no longer automatically requires an FAA review, even if the person is still in counseling, **provided the last use was at least two years ago**. Other criteria include no more than two mental health conditions (specified above), no history of suicidal ideation, substance abuse, prior hospitalization for a mental health condition, and no history of multiple medication use at the same time (sequential use of authorized medications is ok). The expanded guidance can be found at bit.ly/4ebnmgw. For those who potentially qualify, your AME will need to complete a decision tool at the time of your examination. The tool can be found here: bit.ly/3WxBoSC.

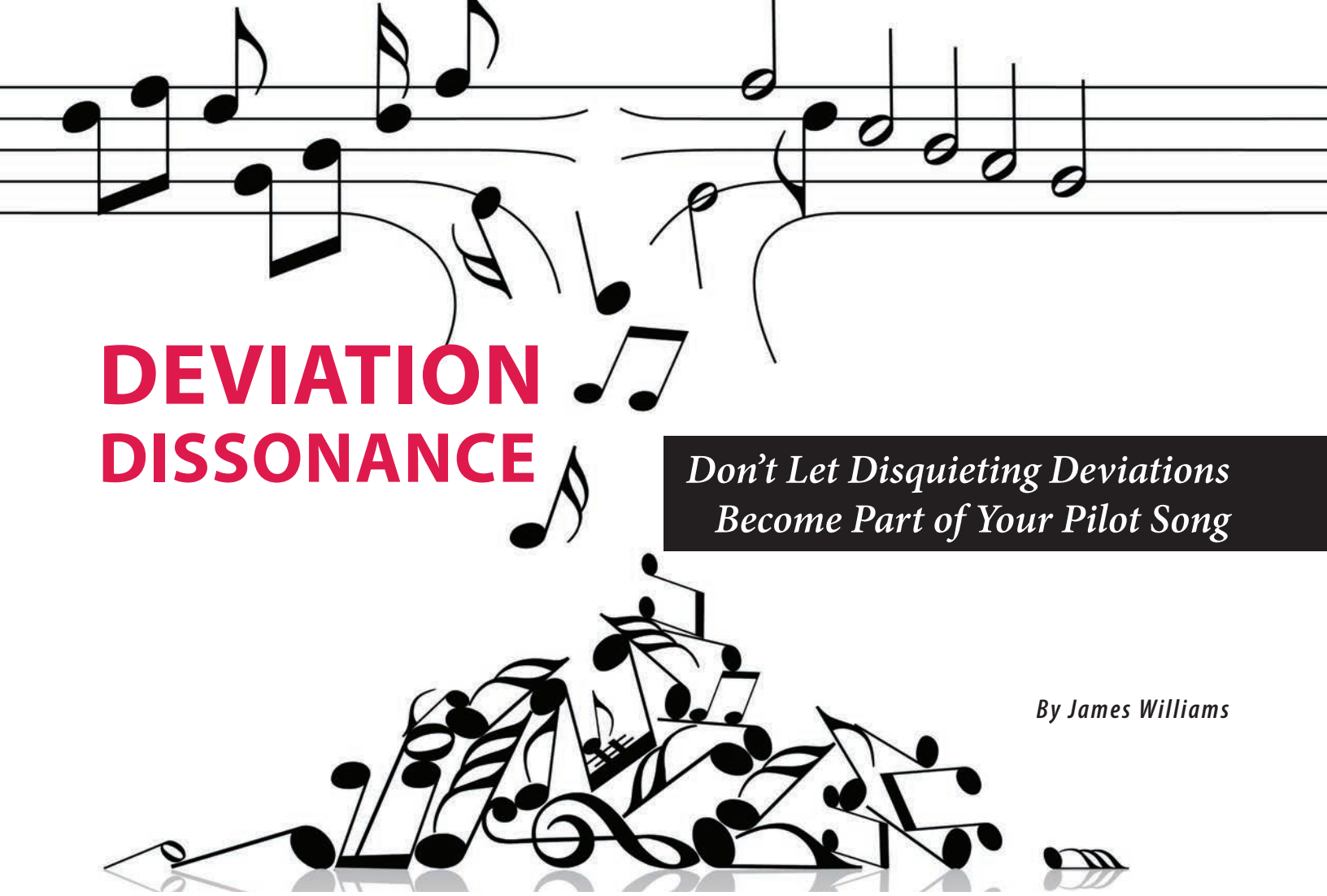
This should enable many more in the pilot community to leave the AME's office with a medical certificate in hand. While not everyone will qualify for the AME issued process, they should not assume that they cannot receive a medical. Rather, they will continue the traditional evaluation process which involves deferral of the medical at the time of the application and a review by the FAA mental health specialists. Individuals who stopped taking medications less than two years ago and those currently taking an approved medication fall into this group. For general guidance on mental health conditions, go to bit.ly/46l9yfY.

Some of you reading this article have probably realized that you are qualified for the new protocol but had your examination before its publication, were deferred, and are now in the mental health queue for review. We have good news for you. Your AME can flag your medical

for expedited review under these guidelines. Notify your AME that you believe that you are eligible for the new protocol track consideration using this tool: bit.ly/3LztMZx. Note though, that if you do not qualify for the new protocol, this will not allow you to jump ahead in the queue for review. Obviously, this will entail additional time and effort on the part of your AME. Accordingly, there might be an additional charge.

We are excited to be able to add additional medications and to roll out this new tool to issue medicals to pilots more quickly. This should benefit even those who do not qualify for the new protocol, since enabling more decision-making by the AME should help reduce the processing time for those who still require a review by the FAA.

Dr. Susan Northrup received a bachelor's degree in chemistry, a medical degree from The Ohio State University, and a master's degree in public health from the University of Texas. She is double board-certified by the American Board of Preventive Medicine in Aerospace Medicine and Occupational Medicine. She is a retired U.S. Air Force colonel and a former regional medical director for Delta Air Lines. She is also an active private pilot.



DEVIATION DISSONANCE

Don't Let Disquieting Deviations Become Part of Your Pilot Song

By James Williams

It was a dark night (although not stormy as many of these stories start) and I was taxiing out to the runway with an instructor friend. I think the goal of our flight was to extend our night currency for upcoming flights, but that part of the memory is lost due to the passage of time. What happened next though was not. That was burned sharply into my memory. We approached the runway, switched over to the tower frequency, and were quickly given our take-off clearance. We pulled onto the runway and slowly advanced the throttle. With the airspeed building, we saw a series of lights speeding from left to right across the runway. We immediately aborted the takeoff and slowed as we passed the taxiway where a plane was on its way to the ramp. We collected ourselves and taxied back for a second attempt, and luckily, completed an uneventful takeoff. The rest of the flight was unremarkable, but talking to the controller upon returning to the airport he mentioned that the airplane had been instructed to hold short of the runway and thanked us for using good judgment.

Through vigilance, a lot of hard work, and a bit of luck, we've worked our way to a profoundly safe system. But that safety is always only one misunderstanding or bit of confusion away from falling apart for any of us. I think that is where the above-mentioned dissonance comes in. How can our system be simultaneously so safe and filled with dangers? My flight was safe. Except for the brief moment that it wasn't. But that moment was almost immediately mitigated. That one runway incursion caused by a pilot deviation almost punched through several layers of safety.

> **With the airspeed building, we saw a series of lights speeding from left to right across the runway.**

To borrow another metaphor, our system is safe because it functions like an orchestra where everyone has a part to play, knows the song, and has sheet music in front of them. But even with all of that coordination who hasn't made a mistake? Any musician will tell you that mistakes happen. Just like my runway incursion experience, many are fleeting and minor annoyances. But some bad notes can disrupt the whole symphony.

A Runway Incursion by Any Other Name . . .

The technical definition of a runway incursion (RI) is any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft. While all incursions are covered by this definition, they are by no means all the same. The least severe is a category D which is an incursion that meets the definition such as the incorrect presence of a single vehicle/person/aircraft on the protected area of a surface designated for the landing and take-off of aircraft but with no immediate safety consequences. Category C is an incursion where there is ample time or distance to avoid a collision. Category B is an incident where separation decreases and there is significant potential for a collision which may result in a time-critical corrective/evasive response to avoid a collision. The most serious is category A in which a collision is narrowly avoided. And of course, above that is an accident where a collision takes place. But because those accidents are thankfully rare, we focus on runway incursions to track trends and develop mitigations to events that almost became accidents so we can prevent the preconditions for such accidents. My personal experience with an RI is probably either a category C or B. We took immediate action, but the night conditions probably made the danger seem closer than it really was.

We group runway incursions into three source categories: operational incidents, vehicle/pedestrian deviations, and pilot deviations. Operational incidents are runway incursions that are the results of an error by air traffic control (ATC) and vehicle/pedestrian deviations are when a vehicle or person enters the airport movement areas without permission from ATC. A pilot deviation (PD) is any action of a pilot that violates any Federal Aviation Regulation but, in this case, we are talking more specifically about deviations around the runway (e.g. crossing a runway without permission). In this article, we are focusing on those PDs for a couple of reasons. First, as pilots, that is the one we generally have the most control over, and second because they make up the majority of RIs, more than 60% in recent years.

Despite efforts to decrease RIs, the numbers remain stubbornly static. Let's look at how we can bring this number down.

Not Playing by Ear

While improvisation is often lauded in jazz, I think a symphony orchestra is a better analogy for the National Airspace System (NAS). The NAS requires each player to know their part and what to expect from all the other players. As a high school quality musician who played jazz, orchestral, and marching band music through the years, I appreciate playing by ear. But when it counts, a

well-coordinated structure is the name of the game.

The first thing you can do is to rehearse. You don't have sheet music to work from but that doesn't mean you don't have sheets. Airport diagrams are freely available from the FAA if you don't have access to them elsewhere (faa.gov/airports/runway_safety/diagrams). You can download these PDFs to your phone or tablet for any airport you might be planning to visit and preplan your visit by tracing the routes you could be assigned upon arrival. And of course, it wouldn't be one of my articles without a plug for the use of PC simulation to conduct a virtual rehearsal.

Another great resource is the ever-growing list of *From the Flight Deck* (FTFD) videos on the FAA's YouTube channel. These videos document general issues facing pilots in addition to airport-specific guidance. All of this is presented, as the name suggests, from the flight deck of a general aviation airplane. For more on the FTFD videos please see the article, "A Front Seat View of Runway Safety."

In the vein of preventative measures, there is also a FAASTeam course on pilot deviations. This course is normally assigned to pilots as part of the Compliance Program after a pilot deviation, but it is available to all pilots on FAASafety.gov. It's good information even if it's not "required." For more on the course, see my Checklist department in this issue.

Leveraging Your "Instrument"

While I was never a musician who could truly take advantage of a higher-quality instrument, I did see its benefits. In aviation, higher-quality instruments were more accessible but still required skill to get the most out of them. The proliferation of modern glass cockpits and widely available tablet-based Electronic Flight Bags (EFB) is a massive upgrade in terms of situational awareness in all phases of flight. But this is especially true in the airport environment where modern systems can superimpose your position on charts and airport diagrams. Some will even let you enter your taxi instructions as part of the flight plan. Of course, knowing how to use all this technology is critical so that you can keep your head up and your eyes outside the cockpit for the most part. When you leave the ramp is not the time to be figuring things out.

Additionally, before boarding the aircraft, it is important to brief any passengers, including other rated pilots, regarding sterile cockpit procedures. Extra sets of eyes can be useful, but distractions are a common cause of PDs.

Following the Conductor

Every orchestra needs a conductor to oversee and keep time in the performance. ATC acts as the conductor at an airport, calling the tune and adjusting the performance as needed. But unlike an orchestra conductor, ATC has more than just a baton. In fact, the FAA is always looking for more and better tools to assist controllers. For a deeper look at some of those new tools please see the article "Striving for a Safer Surface" in this issue.

While you are working your hardest to nail your part, it's important to listen to the conductor. When in doubt, ask. Read back the critical information rather than simply replying "roger" or just your callsign. That snappy reply may be writing a check you'd rather not cash. If you can't comply with an instruction like an intersection departure or a specific turn-off at landing, let the controller know. Don't try to comply unless you are reasonably sure of success. The conductor is likely making other decisions predicated on your ability to hit that "note" so it's better to be clear with them if you can't. If you are not sure what to do regarding the ATC clearance/instruction, stop and ask ATC to repeat.

You don't become a world-class musician overnight and we won't eliminate PDs overnight either. But if we all work together, we can move closer to that perfect symphony we're aspiring to.

James Williams is FAA Safety Briefing's associate editor and photo editor. He is also a pilot and ground instructor.

LEARN MORE

Pilots Handbook of Aeronautical Knowledge, Chapter 14, *Airport Operations*
bit.ly/AeronauticalKnowledge

STRIVING FOR A SAFER SURFACE

A Closer Look at FAA Runway Safety Technology

By Nicole Hartman

As spooky season approaches, some people may be fearful of ghosts and ghouls, while others might be feeling nervous about close calls on the runway. So, the FAA and the aviation community are pursuing a goal of zero serious close calls. Let's take a closer look at some of the technology and pilot aids available to improve situational awareness in the airport surface environment.

Safety ≠ Static Destination

Achieving the goal of zero serious close calls requires continuous improvement. Our aviation system is safe, but it is also changing dramatically and needs improvements to maintain that level of safety. The FAA is doing everything possible to make our runways safer and has fast-tracked three initiatives as part of its Surface Safety Portfolio.

Surface Awareness Initiative (SAI) uses Automatic Dependent Surveillance-Broadcast (ADS-B) data to display surface traffic to controllers at airports that do not have a surface surveillance tool. Aircraft and ADS-B-equipped vehicles appear as icons on an airport map depicting runways, taxiways, hold ramps, and other areas.

The challenge with surface awareness is ensuring that controllers have a vision of all the activity on that surface. The SAI provides timely and accurate depictions of both aircraft and vehicles on the surface movement areas of an airport in all weather conditions. Currently, there are airports where controllers in the tower do not have visibility of all areas of the airport surface. By deploying the SAI capability to the tower cab, controllers will have the awareness necessary to proactively address any potential safety concerns.

Approach Runway Verification (ARV) provides controllers with visual and audible alerts if an approaching aircraft is lined up to land on the wrong airport surface, or even the wrong airport.

When aircraft are approaching an airport, the controller issues a landing clearance to a specific runway. The pilot may believe they are aligned with the proper runway but could actually be lined up with an adjacent runway or even

a taxiway. ARV will then alert the controller if the aircraft is not aligned with the runway surface as instructed.

Runway Incursion Devices (RID) provide a visual and/or audible indication when a runway is not available for arriving or departing aircraft. Each RID is customizable to uniquely identify up to 16 runways (8 physical surfaces).

If for whatever reason a runway becomes unavailable, for example, an airport operations vehicle is inspecting the surface for foreign objects debris (FOD), a button for the corresponding runway would be depressed indicating the runway was occupied (i.e., an indicator light flashes red). When the runway is available, the button is pressed again, and the availability indicator turns green. This simple, yet effective, memory aid has a proven operational track record of providing benefits at the locations where it is currently in use today.

Runway Incursion Devices (RID) provide a visual and/or audible indication when a runway is not available for arriving or departing aircraft.

No Rumpus on the Runway

These technologies are agile, efficient, and cost-effective and the initiatives represent important improvements made by the FAA to swiftly address close calls on the runway. However, they are just a small part of a much larger and integrated effort and philosophy. Let's review some of the aids available to pilots, air traffic controllers, and airport vehicle drivers to support runway safety.

Arrival Alert Notices

To manage wrong surface events where an aircraft lines up to or lands on the incorrect runway, taxiway, or airport, the FAA released Arrival Alert Notices (AAN) at airports with a history of misalignment risk. AANs are graphics visually depicting the approach to a particular airport and language describing the risk of misalignment. You can view the complete list of AANs at faa.gov/aan.

Pilots sometimes confuse TWY A for RWY 30. Be aware that the former south parallel runway, RWY 29L, is closed for reconstruction.

Not for Navigational Purposes
For Situational Awareness Only

Hot spots are generally complex or confusing taxiways or taxiway and runway intersections and have a history or potential risk of collision or runway incursion, requiring heightened attention by pilots and drivers.

From the Flight Deck

The FAA's *From the Flight Deck* video series provides pilots with actual runway approach and airport taxiway footage captured with aircraft-mounted cameras, combined with diagrams and visual graphics to clearly identify hot spots and other safety-sensitive items. The videos also provide advice for pilots on how to mitigate the risk of runway incursions and wrong surface events.

To supplement the videos, the FAA also publishes additional "Pilot Handbook" content. This includes details such as airport-specific cautions, information local controllers want pilots to know, airport communications, airspace details, and other preflight planning resources.

Read the feature "A Front Seat View of Runway Safety" for a deeper dive into the series. Visit faa.gov/flight_deck to view the videos, including one about AANs.

Runway Safety Pilot Simulator

The FAA also offers a self-guided video series to assist flight instructors with teaching student pilots surface safety best practices before they step foot into the cockpit. It allows student pilots to navigate on airport surfaces while communicating with air traffic control (ATC) and follow the instructions provided. The scenarios are interactive and allow viewers to make decisions based on ATC instructions. You can watch the interactive scenarios at faa.gov/runway_safety_pilot_simulator.

Hot Spot Standardized Symbology

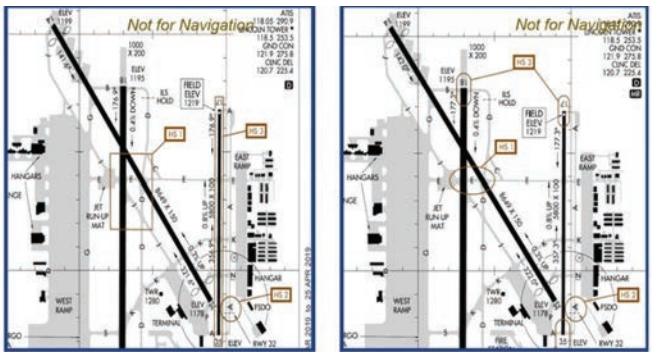
Previously, there was no standard shape to designate a "hot spot" on airport diagrams within chart supplements and the terminal procedures publications; they were charted with a variety of squares, rectangles, circles, ovals, and ellipses with no pattern or consistency. Hot spots are generally complex or confusing taxiways or taxiway and runway intersections and have a history or potential risk of collision or runway incursion, requiring heightened attention by pilots and drivers.

The FAA standardized these symbols into three shapes with two distinct meanings: a circle or ellipse for ground movement hot spots (e.g., hold short line

infractions, approach hold issues, tower line of sight problems) and a cylinder for wrong surface hot spots (e.g., locations where an aircraft has inadvertently attempted to or actually departed from or landed on the wrong surface).

The Proof is on the Pavement

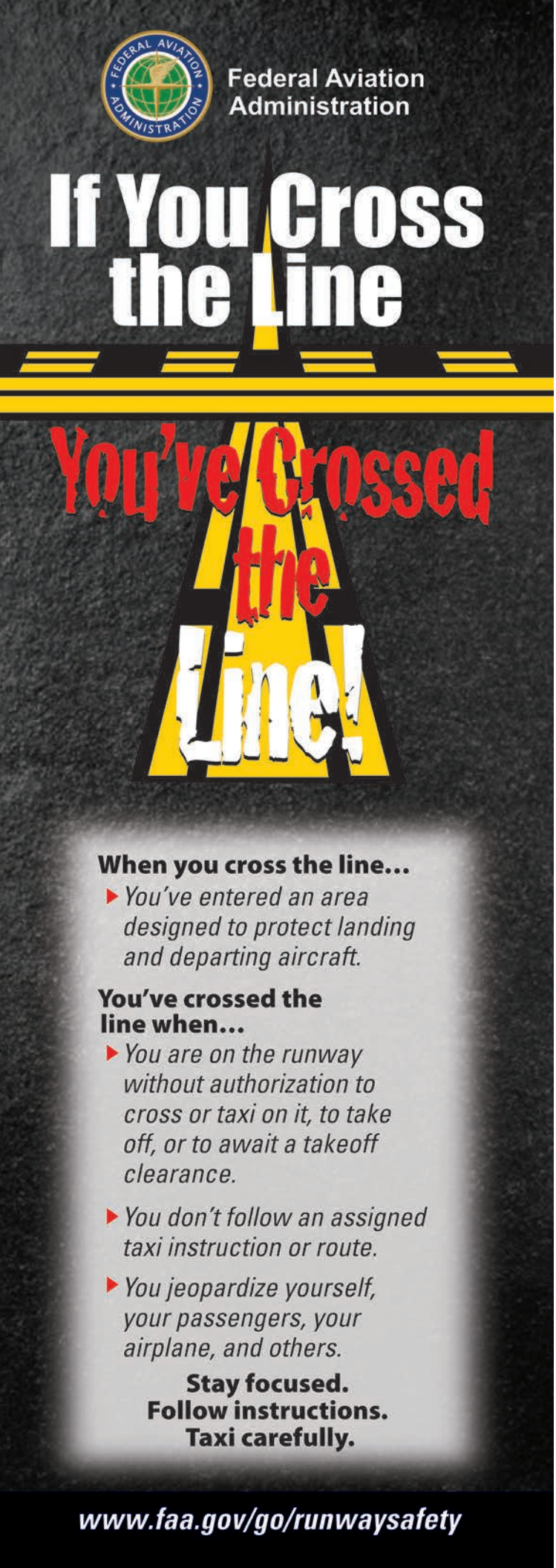
On the morning of Feb. 4, 2023, there was dense fog and poor visibility at Austin-Bergstrom International Airport (AUS). The air traffic controller could not see the exact location of a Southwest jet on the taxiway when they cleared it for takeoff at the same time that a FedEx cargo plane had permission to land on the same runway. Because the controller incorrectly assumed that the Southwest plane was ready to takeoff, the two aircraft came within 200 feet of each other before the FedEx plane aborted its landing at the last moment when the first officer saw the silhouette of the Southwest jet. Without vital technology, like SAI, providing controllers with timely and accurate depictions of aircraft and vehicles on the entire airfield in all weather conditions, this close call could have had a very different ending.



The chart on the right shows the new standardized depictions for hot spots — circles and ellipses will indicate ground movement hot spots, and cylinders will indicate misalignment risk areas.

Fortunately, Austin-Bergstrom International Airport was one of the first in the country to receive SAI, along with Indianapolis, Nashville, and Dallas Love Field. Many other airports will also receive this important technology by the end of 2025.

As of this writing, ARV is operational at a total of nine ATC Towers — this is the first time in the National Airspace System (NAS) ATC will be able to receive



"WRONG SURFACE" or "CLOSED RUNWAY" alerts on their primary display. A waterfall to develop and deploy ARV adaptations for additional airports is underway and more facilities will be adapted to run ARV by the end of 2024. The objective is for ARV to be available for all terminal and tower facilities with standard terminal automation replacement systems (STARS) (or over 400 air traffic control facilities).

> **Technology is a great assist; however, pilots and flight crews must be situationally aware of where they are as they taxi to their assigned runway and shouldn't solely depend on technology to mitigate risks.**

Several RID devices were fabricated to support testing in June 2024. RID devices will then be installed at five airports for an operational evaluation. The RID team will also closely coordinate with stakeholders in the FAA's Technical Operations field to develop a proper maintenance and sustainment plan that will ensure the prolonged operational utility of this valuable surface awareness tool. RID devices are scheduled to be installed at five airports for an operational evaluation by November 2024, with deployments to 74 airports beginning in 2025.

Technology is a great assist; however, pilots and flight crews must be situationally aware of where they are as they taxi to their assigned runway and shouldn't solely depend on technology to mitigate risks. The technologies in the FAA's surface safety portfolio are additional tools to enhance surface situational awareness and represent just some of the actions that the FAA is taking to end serious close calls, making our runways safer and less spooky.

Nicole Hartman is a FAA Safety Briefing associate editor and technical writer-editor in the FAA's Flight Standards Service.

LEARN MORE

Arrival Alert Notices
faa.gov/aan

Runway Safety Program
faa.gov/airports/runway_safety

Ending Serious Close Calls
faa.gov/closecalls

MAKING A DIFFERENCE
ONE AIRPORT AT A TIME

How Runway Safety Action Team Meetings Are Paving the Way to Greater Surface Safety

By Aimee McCormick

It is what many of us strive for; to add value, be part of the solution, save the day, to make a difference. With aircraft operations across the National Airspace System (NAS) more frequent now than ever before, keeping aviation safe is becoming even more of a challenge. New technologies offer some resolve in today's fast-paced, high-tech, over-sensitized world, but they can also compound the potential risk of operator information overload. Conversely, the human component may be one of the best surface safety solutions if we can reverse the focus from human factors failures to human factors successes. We need you to help make that difference.

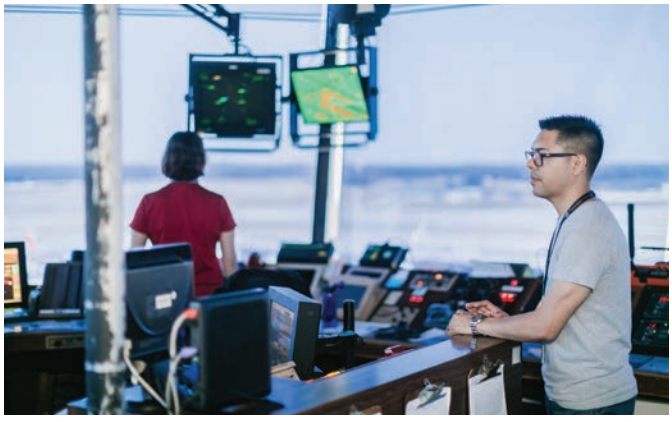
Of the 54.3 million take-offs and landings in fiscal year 2023, only 1,760 (0.0000324%) involved a Runway Incursion (RI) where a pilot, controller, driver, pedestrian, or other reason attributed to the incorrect presence of an aircraft, vehicle, or person on the protected area of a runway or surface designated for the landing and take-off of aircraft. That is an incredible safety record that proves itself year after year and is cause for celebration!

But we want better. We can never rest on our laurels.

To make a difference, we must ask you to make a renewed, personal commitment to surface safety no matter your role in aviation. We need you to opt in, take it on, participate in full force, and respectfully engage in 100% safety compliance. You are an integral part of any safety team not only at your home airport but at every airport you operate into, onto, over, and out of. Today's aviation operators and enthusiasts are equipped with gidgets, gadgets, moving maps, and endless apps. At some point, our technology-based approach to aviation has superseded our authentic human skill of flying. The aviation industry needs you to make a difference in surface safety event trends that, although minuscule, are rising by number and severity as annual operations continue to soar.

FAA Order 7050.1B, *Runway Safety Program*, requires the over 500 air traffic control facilities across the country to conduct an annual Runway Safety Action Team (RSAT) Meeting to specifically address surface safety matters alongside the airport operator, other responsible airport partners, stakeholders, and users. This includes you.

These in-person and/or virtual RSAT meetings include discussions about airfield surface events, national and local safety data trends, planned construction and surface closures, current issues, and evolving safety resources. The RSAT meeting participants share and discuss safety concerns and identify reasonable and measurable corrective actions called action items that are tracked by the FAA until completion and recorded in a Runway Safety Action Plan (RSAP) accepted by the FAA following the meeting.



RSAT meetings have resulted in multiple action items being accomplished to help improve surface safety at hundreds of airports including:

- New Hot Spots added to the airport diagram at specific locations with recurring issues for improved pilot and driver awareness.
- Implementation of specific aircraft callsigns for local student pilots and airfield vehicle driver trainees for improved identification and air traffic oversight when providing operating instructions.
- Airfield marking, light, and sign improvements in specific areas as well as plans made for geometric pavement redesigns to improve traffic flow and to reduce pilot/driver confusion.
- Establishment of common aircraft and driver operating routes to reduce the risk of converging surface traffic when operating in complex airfield areas.
- Publication of Arrival Alert Notices (AAN) at airports with a history of wrong surface arrivals making pilots and drivers aware of site-specific preexisting trends.

If you are unable to participate in RSAT meetings, another safety reporting resource, NASA's Aviation Safety Reporting System (ASRS) gives you the opportunity to report safety concerns at asrs.arc.nasa.gov. This safety reporting system captures confidential reports, analyzes the resulting aviation safety data, and disseminates vital information to the aviation community.

Making a difference for safety begins with you. Please help us improve surface safety across the NAS by participating in your area RSAT meetings and getting involved by:

- Contacting your local airport manager directly or the Flight Standards Program Manager or FAA Safety Team (FAASTeam) representative at FAASafety.gov to learn more about participating in planned RSAT meetings.

RSAT meeting at Nashville International Airport (BNA).

- Signing up for FAASTeam event notifications including airport-specific RSAT meeting dates, other safety events, and to collect WINGS credits for attendance at FAASafety.gov.
- Engaging in local Pilot/Controller Forums, Hangar Hangs, Coffee with Controllers, etc. to build relationships with controllers, area pilots, and other airport users to collectively address safety matters.
- Letting controllers/others know if you see or hear something that can help lead to surface event prevention before it occurs.
- Identifying and sharing safety issues with responsible parties as well as offering realistic solutions.
- Consistently refresh your own operational training, habits, and knowledge and adjust accordingly.
- Practicing active listening, respectful compliance, and focused flying.

As we ponder the original human curiosity, ingenuity, and vision that has accompanied aviation throughout our history, may we never forget that the human act of intentional operational safety must exceed, even outperform, growing aviation operations.

Visit faa.gov/airports/runway_safety for more runway safety resources.

Aimee McCormick is a Runway Safety Program Manager for the FAA's Southern Region.

Photo from a recent combined RSAT meeting for Luis Munoz Marin International Airport (SJU) and Fernando Luis Ribas Dominicci Airport (SIG).

PLEASE WAIT YOUR TURN

The Importance of Properly Heeding "Line Up and Wait" Instructions

By Kent Koran

In February 2023 at Boston's Logan International Airport (BOS), a Learjet 60 departed after being instructed to line up and wait on Runway 9 with an Embraer 190 cleared to land on Runway 4 Right. The Embraer went around, and the Learjet crossed Runway 4 Right only about 330 feet in front of the Embraer.

Then in September 2023 at Sarasota/Bradenton International Airport (SRQ), a Beechcraft *Bonanza* instructed to line up and wait on Runway 14 departed while a Piper *Archer* was on final for Runway 4. ATC told the *Archer* to go-around. The *Bonanza* passed beneath the *Archer* over the intersection of the two runways.

In October 2023, a Hawker 25, was instructed to line up and wait on Runway 22 at Houston's William P. Hobby Airport (HOU). The pilot read back the line up and wait instruction and taxied onto the runway. Then the plane began its takeoff roll. The controller told the aircraft to stop and hold position, but the aircraft continued its takeoff and collided with a Cessna *Citation* that had landed and was rolling out on Runway 13R. Luckily, only the left winglet of the Hawker and the tail cone of the *Citation* touched (see figure 1) and no one was killed or injured.

These were not the only instances of aircraft instructed to line up and wait but instead of waiting, started their takeoff

Figure 1: Aft view of tail cone damage to the Cessna Citation cited in the accident at Hobby Airport. Photo courtesy of NTSB.

roll. In fact, there were more than 25 such events in 2023 alone, with operators ranging from single-engine general aviation (GA) aircraft to air carrier jets with two pilots.

"Line up and wait" is used by ATC to inform a pilot to taxi onto the departure runway to and hold position until cleared for takeoff. It is not authorization for takeoff. It is used to pre-position a departing aircraft on the runway

when it can't yet be cleared for takeoff due to other traffic, for example:

- a preceding arrival that is still on the runway,
- an aircraft taking off or landing on an intersecting runway,
- or an aircraft or vehicle crossing the runway downfield.

This can significantly increase the capacity of an airport because aircraft can already be on the runway when the traffic clears, rather than having to taxi onto the runway from the holding position.

Controllers conduct line up and wait operations according to strict rules, but those rules don't mean anything if pilots line up and "GO" instead of line up and "STOP."

So, why do pilots depart when they are instructed to line up and wait? The answer lies in a variety of human factors that can lead pilots to mistakenly depart.

Expectation bias occurs when individuals are primed to receive and interpret information in a way that aligns with their anticipated outcomes, rather than objectively assessing that information. In the case of line up and wait, it is natural to expect a takeoff clearance when holding short of the runway. But if a pilot fails to anticipate that the next logical step could also include line up and wait, what the controller actually said and what the pilot understands may not be the same. That expectation bias may be so powerful that it can even override a line up and wait clearance that pilots have read-back correctly.

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A phenomenon called habit intrusion may cause normally practiced steps to be so compelling as to override any ATC communications. For pilots who are not accustomed to performing line up and wait, the mere act of taxiing onto the active runway, the act of completing checklist items, or even that view down the runway may be so closely associated with the takeoff roll that performing the takeoff becomes a force of habit.

Our vision provides some of the most powerful cues to the world around us. As mentioned above, the visual cues when looking down the runway in line up and wait status are the same as when lined up for takeoff and can be so compelling that it causes pilots to forget they were told to line up and wait.

Line up and wait is a two-part instruction. The first part, line up, is done immediately. The second part, "wait," is a requirement for future action. The requirement to remember to do something in the future is known as "prospective memory" and it presents a unique mental challenge, namely that we must remember to perform an intended action in the future; in this case "waiting" after lining up on the runway.

Voluntary reporting system reports regularly indicate that distraction is a factor in line up and wait events for both GA and commercial operations. The primary task while taxiing from the hold line to the runway centerline is to safely maneuver onto the runway and hold position. Anything else you do during this period, such as non-operational conversations, completing checklists, or programming avionics, is a distraction that could cause you to forget that you were told to line up and wait.

What can you do to prevent departing when instructed to line up and wait?

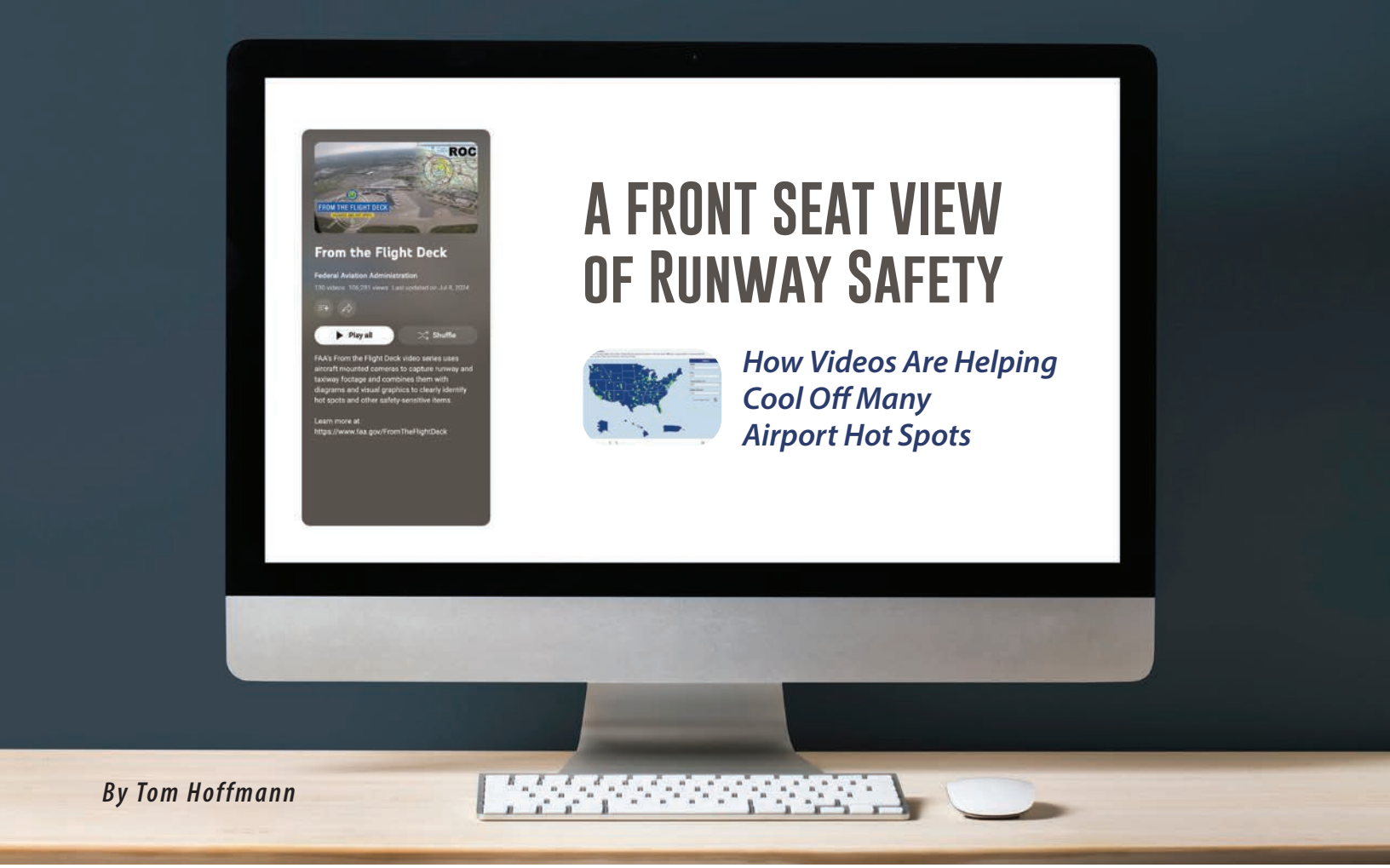
- Actively listen to what ATC is saying — think about what the controller actually said before you respond.
- Clearly read back the instruction to line up and wait, including the runway designation and your callsign.
- Think about the traffic that is restricting ATC from giving you a takeoff clearance. Unless it is obvious, like an aircraft that just landed and is rolling out, the controller should tell you about the traffic. Keeping the traffic in mind will help fight the instinct to take off due to the visual queue of being lined up on the runway.
- Minimize distractions by:
  - ➢ Maintaining a sterile flight deck while taxiing onto and holding on the runway awaiting your takeoff clearance or other instruction. This includes not using personal electronic devices.
  - ➢ Completing pre-takeoff checklist items before crossing the hold line — wait to complete any remaining items until cleared for takeoff.
  - ➢ Responding that you are not ready and will hold short if you are not ready when ATC instructs you to line up and wait.
- Develop and use a memory aid to help you remember you are in line up and wait, such as:
  - ➢ Turning on the landing light only when cleared for takeoff and then check the position of the landing light switch before adding power — if it's not on, you haven't been cleared for takeoff.
  - ➢ Start a flight timer when you receive your takeoff clearance and check it before beginning your takeoff roll — if the timer is not running, you haven't been cleared for takeoff.
  - ➢ Write down "line up and wait" — cross it out when you receive your takeoff clearance — and develop a procedure to check it before beginning every takeoff roll.
  - ➢ For two-person crews — both pilots should concur that you are cleared for takeoff (challenge & response) before adding power.

One other point: No matter what instructions or information you hear while taxiing onto the runway or waiting in position, for example "on departure fly runway heading maintain 4000," you are not cleared for takeoff unless you hear your callsign and "cleared for takeoff."

So, what are you going to do to avoid departing when you are told to line up and wait?

As always, if you are ever unsure about your clearance, ask ATC. They would rather hear "Confirm N7241R is cleared for takeoff" than see you rolling down the runway toward a conflict.

Kent Koran is a program manager on the FAA's Headquarters Runway Safety Team.



A FRONT SEAT VIEW OF RUNWAY SAFETY

How Videos Are Helping Cool Off Many Airport Hot Spots

By Tom Hoffmann

It wouldn't surprise me to see shaking heads or eye rolls when mentioning the words *government*, *education*, and *video* in the same sentence. I'm biased of course, but I'd argue the FAA has put together some pretty fantastic video series in recent years that are helping to change that mindset, with one of those standing out above the rest.

Now, if you're already among the 75,000-plus subscribers to the FAA's YouTube channel, you'll need no introduction to the *From the Flight Deck* (FTFD) videos series that provides a front-seat point of view at airports nationwide to help reduce mishaps and increase a pilot's situational awareness. If you're not familiar with FTFD, I encourage you to buckle up, tune in, and learn more about how these videos are getting a jump on surface safety in every corner of the country.

The "Pilot" Episode

The FTFD series got its start back in late 2018 when the first episode was filmed at Hudson Valley Regional Airport (POU) in Dutchess County, N.Y. Air traffic volume in the nation at the time was at record highs, but unfortunately, so were runway incursions (RI). The idea behind the video series was to showcase airports with known hot spots and higher propensities for RIs in hopes that a more detailed first-person view of these locations would improve awareness, and consequently, safety.

"The need for risk mitigation was real," says FAA program manager and executive producer of the FTFD series Matt Ash. "We were seeing a steady increase in runway incursion numbers, and a few facilities were experiencing a record-high number of incidents and even a few accidents."

To help bolster the video project's success and to ensure all angles were considered, the FAA worked collaboratively across several lines of business to produce the series. The Air Traffic Organization's (ATO) Runway Safety Program office and the Office of Communications partnered to develop the initial concept and later worked with Flight Standards and the Office of Airports to further refine the content.

Once the POU proof-of-concept video was edited and completed, the FAA gave it a thumbs-up and approved an

initial series of 10 episodes. The POU video debuted on Jan. 17, 2020, followed shortly by nine additional location-specific videos.

A Fast and Furious Timeline

Fast forward to today and the FTFD series now boasts 133 videos (from Albuquerque to Zamperini Field), with dozens more on the way.

"Everything starts, and ends, with safety as a focal point," adds Ash. All airport sites for a video are selected based on relative risk — the airports that see the most pilot errors and runway safety events relative to the total number of operations are prioritized.

As we mentioned, the production process is a collaborative effort. Pre-production starts on the ground, with a team of local subject matter experts, including FAA Air Traffic, Flight Standards, and Office of Airports representatives. When developing the script, this team works along with stakeholders from the airport authority and fixed-based operators who offer invaluable insight and local expertise, which in some cases is not even written or captured anywhere. This allows the team a chance to directly inform pilots about important safety issues they need to know and prevent the mistakes they see other people make.

Once there is concurrence on the script, the team starts coordinating the logistics surrounding the flight mission and video capture. "Post-production and editing are also an iterative process," says Ash, "involving everyone from the ATC team at a tower, the local FSDO, and FAA executives at headquarters."

A Leading Role

Contributing to this video series' namesake success is the unique first-person perspective it provides, using a combination of Garmin VIRB and Go-Pro Hero 7 Black cameras installed on a Cessna 210 *Centurion*. The man behind the controls and cameras of every FTFD video filmed so far is pilot and former air traffic controller Karl Grundmann. In addition to flying and filming, Karl also assists with writing scripts, coordinating logistics for each flight, and liaising with ATC to review the series of routes he plans to fly to capture the right footage. Along with video director and editor Dave Lombardo, also a former controller, these gentlemen are the experts squarely behind this project's success.

All airport sites for a FTFD video are selected based on relative risk — the airports that see the most pilot errors and runway safety events relative to the total number of operations are prioritized.

A Close-Up on Cautions

A more recent and extremely popular addition to the FTFD series includes a set of single-topic videos meant to build awareness of more general surface safety issues, like avoiding wrong surface landings or departing the wrong direction from a runway. In fact, the most-viewed FTFD video (with over 32,000 views) is a single-topic video on proper phraseology which reviews some of the words and phrases you might hear when operating on the surface of an airport or preparing to land.

There are a total of nine single-topic videos now available with more on the way. "We're currently working on a single-topic video that covers the problem of pilots taking off when they are instructed to line up and wait," says

Headquarters Runway Safety Team Member Kent Koran. For this video, Koran assembled a team from Runway Safety, Flight Standards Operations, as well as human factors experts from Flight Standards and ATO to develop the script. Stay tuned for its release later this year.

> **As of mid-July 2024, FTFD videos have racked up over 834,000 views and 40,000 hours of watch time.**

The Reviews Are In

As of mid-July 2024, FTFD videos have racked up over 834,000 views and 40,000 hours of watch time. While those numbers are impressive, what stands out most are the troves of positive comments and reviews left by viewers. "Any time I see a pilot go out of their way to leave a positive comment on our YouTube channel, I take note," says Ash. The FAA has received more than 1,200 public comments from pilots, and the sentiment is overwhelmingly positive — it's either a thank you, or it's 'hey, this really helped save my butt.'

While it's hard to measure changes in RIs to a single variable or contributing factor, the FAA is tracking the relative rates of incursions at facilities with and without FTFD videos. But there's no doubt that these videos are adding value. "Every view and every minute watched by a pilot is a benefit to safety," adds Ash, "Seeing a runway configuration in 4K video from a flight deck point of view before actually flying there is going to help anyone, regardless of skill level, but especially novice flyers. Add in the visual identification of hot spots, description of local procedures, and everything controllers want you to know, these videos become invaluable components of any pre-flight briefing."

Flight Standards Operations Section Manager Matt Porter couldn't agree more on the value of these videos. "As an active GA pilot and flight instructor, I know surface safety events can happen to anyone regardless of experience level," says Porter. "One of the most effective ways to

Runway Safety, Seminars, and Swag!

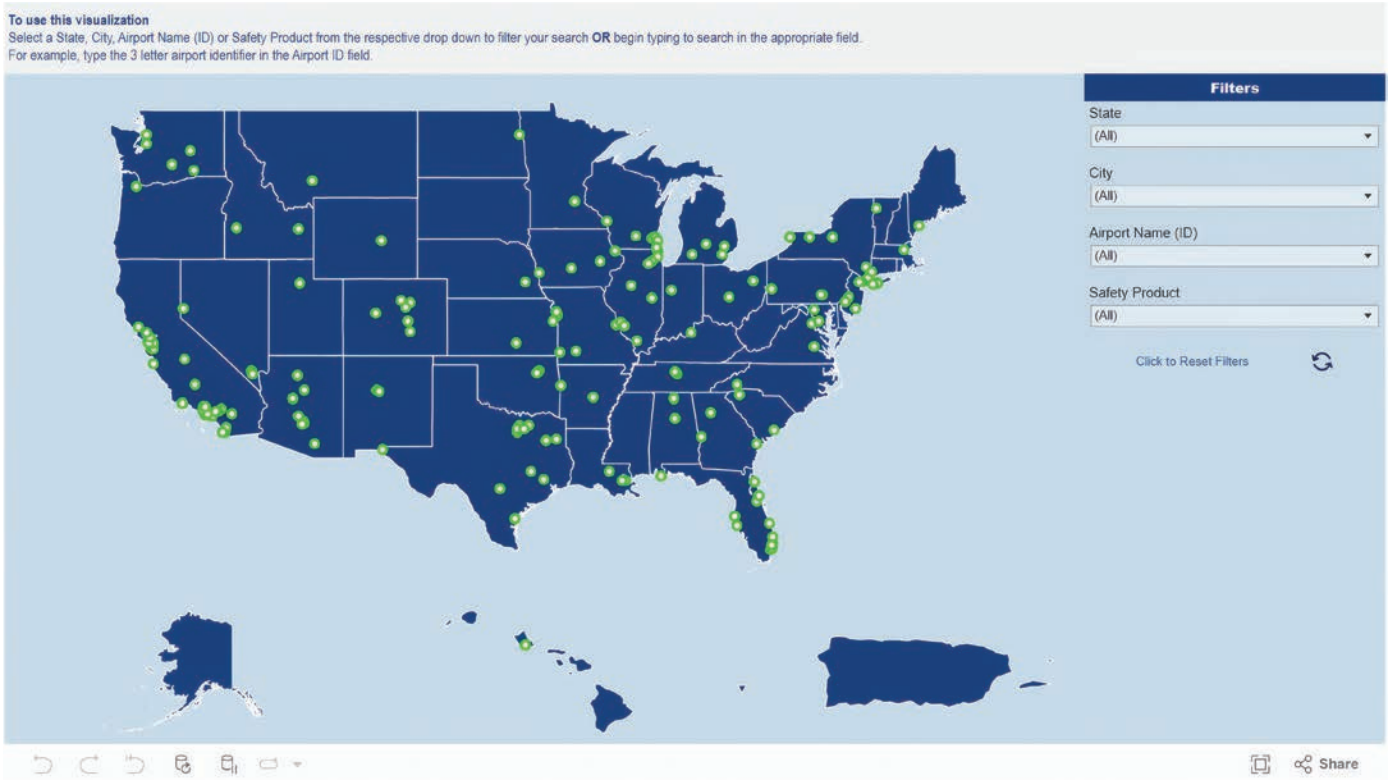
If you attended this year's Sun 'n Fun Aerospace Expo in Florida or EAA's AirVenture in Wisconsin, you might have had a chance to chat with some members of the FAA Runway Safety Team. Aimee McCormick, Dane Guynn, and Andy Applegate represented the Runway Safety Office at Sun 'n Fun, while Margit McKee, Ramin Panahi, and J. Fernando Morales III were on hand at AirVenture. Together the two teams talked to thousands of pilots from all over the globe and provided vital information about everything from runway markings to pilot deviation prevention strategies.

The teams also handed out flyers promoting the "From the Flight Deck" YouTube video series available at faa.gov/flight_deck. Many visitors also walked away with ATC light gun signal decals and airport marking and signage reference guides. However, the most popular item was the sticky memo pads that pilots can use to jot down ATIS information including any taxi clearances and hold short points. Visitors walked away with all their swag in the ever-popular *"If You've Crossed the Line, You've Crossed the Line"* yellow bags.

In addition to manning the booths in the FAA safety centers, both teams also got the chance to present FAA Safety Team seminars ("Effective Pre-Flight Planning for Enhanced Runway Safety" at Sun 'n Fun and "Prepare and Prevent" at AirVenture). During the seminars, pilots and instructors listened and asked questions as the team discussed the various runway safety pre-flight products that are available such as "From the Flight Deck" videos, construction notice diagrams, Arrival Alert Notices, and best practices for effective runway safety.

If you didn't get a chance to see the runway safety teams in 2024, have no fear! These teams are committed to providing important runway safety outreach so keep an eye out for them at future aviation events.

Top photo: Dane Guynn and Andy Applegate presenting on runway safety at Sun 'n Fun. Bottom photo: (l-r) J. Fernando Morales III, Margit McKee, and Ramin Panahi manning the FAA runway safety booth at AirVenture.



The FAA's new data visualization chart at faa.gov/flight_deck lets you filter and search for runway safety resources by state, city, airport name, airport ID and safety product.

address these issues, especially within the GA community, is through safety promotion. That's why these videos are so important because they allow us to target certain airports to address either a specific event, a unique airport layout, or even an increase in surface safety events at that airport."

The Show Must Go On

With a successful run thus far, the plan is to continue to produce new FTFD videos as well as update some to incorporate changes that have occurred. To help viewers find locations of the 130-plus videos, an interactive map was created on the FTFD landing page at faa.gov/flight_deck and was recently updated as a data visualization chart. This chart shows a map of the United States and includes filter and search options that let users customize their search by state, city, airport name, airport ID, and safety product to easily access *From the Flight Deck* videos and other content like Arrival Alert Notices (faa.gov/aan).

The FAA is also expanding its runway safety outreach efforts beyond video with corresponding digital content in the form of pilot handbooks for specific airports. These online documents convey much of the same safety information as the videos, including a section on specific cautions and local information that controllers want pilots to know. This supplemental content is currently available for over 80 airports across the NAS, with more on the way. The FAA is also working with popular flight planning apps, like

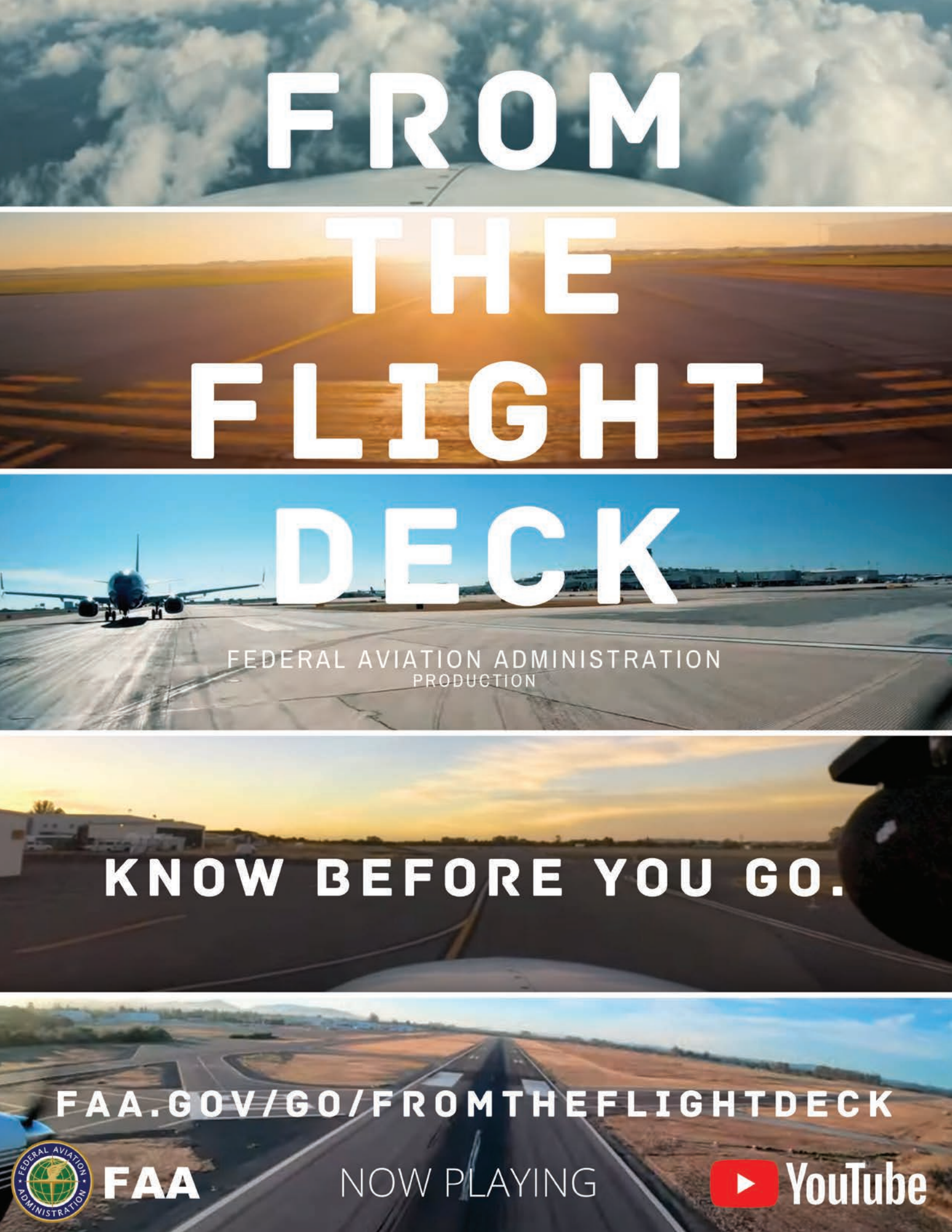
Pilot Handbooks include details such as airport-specific cautions, information local controllers want pilots to know, airport communications, airspace details, and other preflight planning resources.

ForeFlight, SkyVector, and PlaneEnglish to get this safety content included with their products and into the hands of as many pilots as possible.

So, before your next flight, be sure to let *From the Flight Deck* be your preflight partner. It's a great way to help you stay aware and steer clear of any airport surface issues and keep your flight safely on track.

LEARN MORE

FAA's *From the Flight Deck* page
faa.gov/flight_deck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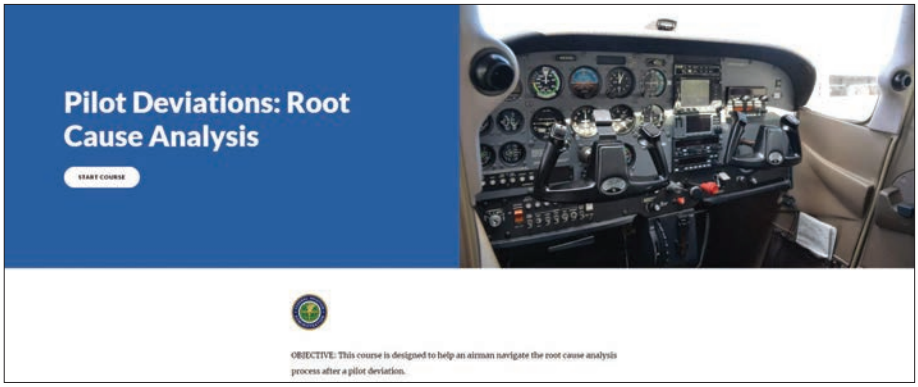
JAMES WILLIAMS

A PROACTIVE COURSE OF ACTION



Deviation Discourse

Many pilots are likely to first encounter the course "Pilot Deviations: Root Cause Analysis" after a pilot deviation and an encounter with the FAA's Compliance Program. The Compliance Program is an alternative to traditional enforcement action that the FAA can use in certain situations where education will likely be a better solution to correct an error. Online training is used in part to meet those education requirements, and the pilot deviations course may be assigned during that process. In that case, the pilot takes the course and fills out a questionnaire at the end. They then provide the completed questionnaire to the assigning Flight Standards District Office to share what they have learned. The course reviews concepts from human factors, technology, the National Airspace System (NAS), and more, to give the learner a chance to see how those factors may have contributed to their deviation. Through this process, everyone benefits. The pilot doesn't face traditional enforcement action (such as a certificate suspension). The FAA doesn't have to commit the resources to a lengthy enforcement process. Most importantly, the NAS gets safer by addressing root cause issues rather than simply punishing the offense. But why would this course be relevant outside those circumstances for pilots who haven't had a pilot deviation?

The wide variety of topics covered in the course allows you a jumping-off point to work on your skills beyond the initial focus of pilot deviations. Concepts like information processing and overload apply to many situations in which a pilot may find themselves unrelated to a pilot deviation.

Playing Offense

For most of its history, aviation employed what we would call a reactive safety system; It looked at an accident or incident, found a problem, and fixed the problem. However, as more problems were fixed, the system became safe enough that we started to run low on events to analyze, especially in the commercial aviation sector. In recent decades, we have moved to a proactive system where we actively search for safety issues before they become documentable events. We can think of this as moving from playing defense to playing offense in a sport. It's a good thing that safety is improving, but it does mean that we need pilots to take a more active role in the process.

Playing offense means working both inside and outside the cockpit to hone your skills and expand your capabilities. This course is one way of doing that. Instead of looking back at an incident that has already occurred, you can look forward to how you would respond in a future environment. The wide variety of topics covered in the course allows you a jumping-off point to work on your skills beyond the initial focus of pilot deviations. Concepts like information processing and overload apply to many situations in which a pilot may find themselves unrelated to a pilot deviation.

This particular course also includes additional resources that can be helpful to include more FAASTeam courses on related topics. I understand that time is a finite resource and spending hours in front of a screen isn't ideal. This course is a good starting point for building a routine of continuing education. Whether weekly, monthly, or even quarterly, establishing a routine will give you the framework to keep a proactive safety approach and may prevent a pilot deviation before it happens.

James Williams is FAA Safety Briefing's associate editor and photo editor. He is also a pilot and ground instructor.

LEARN MORE

ALC-1182, *Pilot Deviations: Root Cause Analysis*
bit.ly/ALC1182

REBEKAH WATERS

CLEAR THE RUNWAY

As a drone pilot, you probably don't typically use runways, so you might think that runway safety doesn't apply to you, right? Well, even though drones usually don't take off from runways, they still can potentially affect safety at or near airports. Here are a few pointers to help keep you operating safely.

See and Avoid

It is always the drone pilot's responsibility to see and avoid other aircraft. This is because it is often difficult for traditional aircraft pilots to see drones given their small relative size and lack of anti-collision lighting. The chances of encountering other aircraft are much higher if you are flying near an airport. It's always best to just avoid these areas, but if you can't, make sure you are doing everything you can to fly safely and responsibly.

One way to fly safer, no matter where you fly, is to augment your operation with visual observers. This helps reduce the chances of a collision and improves your situational awareness. An extra set (or more) of eyes scanning the skies for other aircraft will keep your flight safer and maybe even more enjoyable. Make sure you and your visual observer(s) have a clear communication plan. This will help avoid confusion that might happen if you misunderstand or can't hear them clearly when they try to point out another aircraft in the area and provide directions on how to see and avoid it.

Another way to make sure you are seeing and avoiding aircraft near airports is to become familiar with things like aircraft radio transmissions, airport traffic patterns, and the way wind affects the directions planes takeoff and land.

Listening to aircraft radio transmissions will help you know when planes are coming and going. While an aviation radio receiver lets you hear aircraft transmissions, using one and understanding what you are hearing requires some learning. To get familiar with pilot radio lingo you can take a look at the Pilot/Controller Glossary (bit.ly/PilotControllerGlossary) or section 2 of Chapter 4 in the *Aeronautical Information Manual* (bit.ly/AIMweb). If you do decide to purchase an aviation radio, you should never transmit on aviation frequencies.

All airports have traffic patterns. Generally speaking, pilots fly a rectangular pattern around airports with one "long side" of the rectangle being the runway itself. Unless directed otherwise, pilots make all turns to the left. Learning more about traffic patterns will help you know where to expect and keep an eye out for other aircraft. Chapter 8 of the *Airplane Flying Handbook* (bit.ly/FAA-AH) is a great place to start.

Wind will affect the direction planes takeoff and land, so this is another thing you'll need to pay attention to if you are flying near an airport. Aircraft usually take off into the wind whenever possible. They are also likely to land into the wind as well. So make sure you are aware of which direction the wind is blowing. For a more detailed look at weather and technology pilots use, take a look at "A Fresh Forecast" in the March/April issue of *FAA Safety Briefing*.

Finally, you should always check the airspace you are planning on flying in. The FAA's B4UFly service is a great way to know if the airspace is controlled, uncontrolled, what the maximum altitudes may be, if you'll need an FAA airspace authorization prior, or if drone flying is restricted or prohibited.

> **Learning more about traffic patterns will help you know where to expect and keep an eye out for other aircraft.**

Although flying near airports is never recommended, if you can't avoid it, use these tips to keep the skies safe. Remember that drone pilots must avoid all other aircraft at all times and are always responsible for any safety hazard their drone creates near an airport environment. No matter where you operate your drone, safety must always be your priority. So, if you find yourself operating around airports, make sure you are doing your part for runway safety!

Rebekah Waters is an FAA Safety Briefing associate editor. She is a technical writer-editor in the FAA's Flight Standards Service.

REBEKAH WATERS

RAMPING UP SAFETY

Runway safety includes a spectrum of efforts aimed at preventing incidents and accidents during takeoff, landing, and taxiing. Discussions about runway safety are often directed to pilots and air traffic controllers, but general aviation mechanics also need to be included in this conversation. Whether you fly the plane, clear the plane for takeoff, or fix the plane, runway safety is everyone's business.

> IF AT A TOWERED AIRPORT, ALWAYS OBTAIN CLEARANCE FROM THE CONTROL TOWER BEFORE MOVING THE AIRCRAFT ACROSS RUNWAYS OR TAXIWAYS.

Mechanics, of course, play a crucial and often overlooked role in ensuring runway safety by meticulously inspecting, repairing, and maintaining critical systems like landing gear, brakes, tires, and engine components. By identifying and resolving issues proactively, mechanics mitigate risks that could lead to runway incursions, aborted takeoffs, or emergency landings. But, a mechanic's role in runway safety includes more than just inspections, maintenance, and repairs. Let's take a look at some other important ways mechanics contribute to runway safety.

Flight Line Safety

The flight line can be a dangerous place. Leaving loose objects around only makes it more dangerous. Most mechanics are well aware of the dangers caused by loose objects, like shop towels, safety wire, or misplaced tools that could cause aircraft damage or personnel injuries. But it never hurts to review ways to prevent foreign object damage. To control this type of damage, keep the ramp and operations areas clean. Be especially mindful when working near the intake of turbine engines. These engines can propel loose objects with enough distance and force to damage anything that is hit. Have a tool control program and provide convenient receptacles for used hardware, shop towels, and other waste.

Runway safety can be personal, so don't forget to keep yourself safe. Seasoned mechanics know the importance of situational awareness when performing maintenance on the flight line. Never forget how important it is to be aware of everything that is going on around you. Your safety on the runway includes things like having well-fitting hearing protection. Whether you choose external (like earmuffs) or internal hearing protection, it's important to protect your ears by reducing the sound level before it reaches your eardrums. You might always be aware of your proximity to propellers but never assume a taxiing pilot can see you. Always stay within view of all pilots when you are on the ramp area.

Ground Handling

Sometimes you might be asked to move aircraft across the airport. Sometimes taxiing isn't an option, you'll have to tow it. Never tow an aircraft in congested areas without someone to help you determine that you have adequate clearance. If at a towered airport, always obtain clearance from the control tower before moving the aircraft across runways or taxiways. Whether towing or taxiing — safety is the top priority, so be sure you are thoroughly familiar with all towing and taxiing safety procedures specific to the type of aircraft you are moving.

As you move around your airport, always keep safety in mind. Never forget the important role mechanics like you play. When you perform inspections, maintenance, and repairs, when you keep the flight line clean of debris, when you practice safe ground handling procedures, you are contributing to runway safety.

Rebekah Waters is an FAA Safety Briefing associate editor. She is a technical writer-editor in the FAA's Flight Standards Service.

LEARN MORE

"A Tug Here and a Tow There — Runway Safety for Aviation Mechanics," *FAA Safety Briefing*, Mar/Apr 2021
bit.ly/TugTow

AC 00-65A, *Towbar and Towbarless Movement of Aircraft*
bit.ly/AC00-65A

AC 00-34B, *Aircraft Ground Handling, Servicing, and Marshalling*
bit.ly/AC00-34B

GENE TRAINOR

THE KEYS TO ROTORCRAFT RUNWAY SAFETY: TRAINING, EDUCATION, & EXPERIENCE

When thinking about runway safety, most people probably focus on fixed-wing aircraft. With so many helicopter businesses and operations at or near airports, rotorcraft pilots and operators also play a role in runway safety.

When it comes to rotorcraft operations, the FAA has focused on preparing student helicopter pilots to responsibly navigate the often-busy airport environment. Areas of key importance include experience, training, and education, which help pilots learn how to spot hazards quickly and accurately.

Experience matters and the data backs that up. According to the FAA *Helicopter Flying Handbook*, accident rates decrease by nearly 50% once a pilot obtains 100 hours and continue to decrease until the 1,000-hour level. Despite this downward trend, the helicopter accident rate is still 30% higher than the accident rate for fixed-wing aircraft, the handbook also states.

Education and training are key as pilots gain experience. Here are some helpful recommendations from the FAA *Helicopter Instructor's Handbook* and other FAA publications to keep in mind for rotorcraft (and fixed-wing) pilots:

- Learn the airport's traffic patterns and flight procedures (many airports have facility guides). Be aware of your helicopter's position and the position of other aircraft and obstructions. Even though helicopters do not regularly use runways for takeoffs and landings, runway incursions need to be understood and discussed.
- Typically, helicopters fly lower at airports than fixed-wing aircraft. The average traffic pattern altitude is 500–800 feet above ground level (AGL) for helicopters, while for most fixed-wing aircraft it is 1,000–1,500 feet AGL. Listen attentively to any clearances and instructions from air traffic control (ATC) and acknowledge them in full.
- Blowing dust, sand, or rocks caused by the helicopter's rotor wash can be hazardous. Take whatever actions that you can when landing and taking off to prevent creating these hazards.
- In forward flight, departing or landing helicopters produce a pair of strong, high-speed trailing vortices similar to wing tip vortices of larger fixed-wing aircraft. Pilots of small aircraft should use caution when operating behind or crossing behind landing and departing helicopters.
- To mitigate risks, the FAA urges pilots to wait several minutes for the turbulence to dissipate or maintain a safe distance from the rotor downwash. How long you should wait depends on wind conditions and the terrain. A rule of thumb in the aviation community is to wait at least two minutes or keep a distance of three nautical miles.
- FAA guidelines recommend that pilots of aircraft weighing 41,000 pounds or less, which covers most helicopters and small planes, avoid operating within three main rotor diameters of any helicopter operating in a slow hover taxi or a stationary hover.
- Be aware of both main and tail rotors on the ground. The potential of someone walking into turning rotors is significant. The tail rotor, in particular, is hard to notice.
- Pay attention to any wind indicators, such as windsocks, flags, and smoke.

Before flying, Colorado flight instructor and pilot Jessica Meiris said she considers whether the airport is controlled or uncontrolled, how much traffic she can expect, her mission, and type of helicopter she's flying.

"Generally speaking, I gather weather information like ATIS or ASOS to plan for approach direction and begin communications — either clear position reports or contacting ATC — early enough to allow for a change in specific landing site or diversion if needed," she said. "I'm also conscious about helicopter wake turbulence and how my flight path might affect other aircraft in the pattern or on the ground. Remember, larger helicopters generate bigger and more dangerous vortices."

"If I'm landing direct to a ramp, I scan the area and choose a site that is clear of debris, obstacles, and other aircraft if possible. As I approach the intended landing zone, I keep scanning the immediate as well as the general area for obstacles in case I need to respond to an emergency or go around, so I always have an escape. Takeoff protocols are similar — maintaining situational awareness, communicating clearly, and being mindful of the impact my actions have on others."

Meiris noted that safety is a team effort.

"How you fly out there reflects on the entire industry," she said. "Let's operate in a way that leaves others with the impression that helicopters are safe, considerate, and resourceful machines."

Gene Trainor is a technical writer/editor in the FAA's Aircraft Certification Service.

Check out our GA Safety Facebook page at **Facebook.com/groups/GASafety.**

If you're not a member, we encourage you to join the group of more than 16,000 participants in the GA community who share safety principles and best practices, participate in positive and safe engagement with the FAA Safety Team (FAASTeam), and post relevant GA content that makes the National Airspace System safer.

Approval After a Disqualifying Condition

Thanks for this article ["Getting to Yes," Jul/Aug 2024 bit.ly/3Lqnyvd]. It's been a long journey, especially for those who live with these diagnoses and have a first-person view of their function and capability to perform safely in the NAS. Let's continue to move forward with diligence and good data. The biggest obstacles are additional costs (thousands of dollars per applicant, typically) and the amount of time it takes to satisfy the FAA. If more work can be done on these fronts it would greatly help those aviators who find themselves (typically due to no fault of their own) in these situations. Thanks for the continued focus on getting capable and safe pilots back in the air and keeping them there.

— Tim

Hi Tim. Thanks for your feedback and support! The FAA is committed to data-driven risk assessments and continuous improvement of our medical standards. In addition to adding medications that are allowed for special issuance consideration for use by pilots and air traffic controllers, we recently amended the AME guidance on uncomplicated anxiety, depression, and related conditions. AMEs can now issue a medical certificate if a pilot has been off medication for two years, there are no issues raised by a questionnaire, and the AME has no concerns. And since it's common to have more than one mental health condition like anxiety and depression, or anxiety and PTSD, your AME can now issue a medical certificate for any class if you have up to two mental health conditions provided certain criteria are met. You can learn more at bit.ly/4ebnmgw.

Aviation Weather Under the Microscope

Hello! "A Fresh Forecast" [Mar/Apr 2024 bit.ly/3vc1JLu] is one of the best articles I have read in any aviation magazine. By starting with the basics of METARs and TAFs, the article draws in pilots who have abandoned checking the weather before flights. The rest of the article explains the 'METS, Doppler, etc. without overwhelming the reader, but giving plenty of links to "Learn More."

I personally see pilots at local airports do the 360GL approach (my abbreviation) to check the weather. They stand on the ramp, do a 360º ground look up at the sky and climb into the pilot's seat. Or they will "check the weather when I'm up there." Kudos to the authors. Checking the weather takes time measured in minutes. The average funeral lasts more than an hour.

— Pierre

Hi Pierre. Thank you so much for your comments, we're thrilled you found the information valuable! The weather has a critical effect on safe GA flying and should affect every decision made in aviation. We hope all of our readers will use these vital evaluation products to support an exhaustive weather briefing and inform good judgment.

For more stories and news, check out our blog "Cleared for Takeoff" at medium.com/FAA.

Let us hear from you! Send your comments, suggestions, and questions to SafetyBriefing@faa.gov. You can also reach us on X (formerly known as Twitter) @FAASafetyBrief or on Facebook at facebook.com/FAA.

We may edit letters for style and/or length. Due to our publishing schedule, responses may not appear for several issues. While we do not print anonymous letters, we will withhold names or send personal replies upon request. If you have a concern with an immediate FAA operational issue, contact your local Flight Standards Office or air traffic facility.

TOP SIX TAXI TIPS

One of the first skills a fledgling pilot learns is how to manage your aerial steed safely on the ground. From properly straddling the yellow line, to attentively listening for your call sign, to deciphering the array of multi-colored lines, letters, and numbers all clamoring for your attention — it can be overwhelming at times. Even veteran pilots occasionally struggle with ground maneuvers, particularly after a period of inactivity or when visiting a new airport. Regardless of your experience, it's always a good time to shore up your ground game and make runway safety a top priority.

Here's a list of surface safety tips that are sure to help:

1. Expect the Unexpected

With the excitement of the destination in your head, the chatter of anxious passengers, and changes that crop up, it's understandable that pilots can become distracted and sometimes complacent during taxi. Throw in an unexpected taxi clearance, some marginal weather, and/or a heavy amount of aircraft activity, and you've got a recipe for a potentially deadly runway incursion on your hands.

The good news is that by preparing (study the airport diagram and any relevant *From the Flight Deck* videos before you taxi!), leveraging the technology at your disposal (moving map displays), and having a solid understanding of airport signage, you can significantly mitigate the risk in these types of situations.

2. Don't Get Burned at Airport Hot Spots

An airport surface hot spot is a location on an airport movement area with a history or potential risk of runway incursions and is generally found in areas with confusing or complex geometry. It's vital to check the airport diagram and know where the hot spots are before you go to any airport. To help, the FAA standardized hot spot symbology and now uses three shapes with two distinct meanings: a circle or ellipse for ground movement hot spots and a cylinder for wrong surface hot spots.

3. Remember: Wrong Surface Events Happen More Often Than You Think

Wrong surface events can happen to the best of us, and they occur more frequently than you might think. In fiscal year 2023, there were 103 attempted wrong surface operations reported, a vast majority of which were attributed to general aviation.

The risks associated with a wrong surface or wrong direction takeoff are serious, but thankfully, there are several ways you can avoid being on the wrong surface at the wrong time.

As we stated earlier, be aware of any complex geometry or hot spots at your airport. Be sure to also listen to ATIS for more than just wind and altimeter settings. You could be missing out on crucial construction notices, runway closures, or runway misalignment warnings.

Another tip is to set the heading bug on your heading indicator to the assigned runway heading before you taxi and verify the aircraft is heading this direction when lined up on the runway. You can also set up a GPS user waypoint on the assigned runway.

4. When in Doubt, Give ATC a Shout

While it might involve swallowing a bit of pride, if you are ever in doubt as to your position on the airport or your taxi clearance, don't be afraid to stop where you are and ask the tower for help and/or progressive taxi instructions. If you receive an instruction from ATC that you're uncomfortable with or are unable to comply with, simply state "unable." ATC can and will help you in both cases.

5. Don't Cross the Line!

Literally, don't cross the line. The hold short line that is — unless you've been specifically cleared to do so. Actually, there are several types of hold short position markings you may encounter while taxiing, all of which deserve careful attention. But the runway holding position marking is by far one of the most critical markings on the airport and the one which is most misunderstood or overlooked. Better to hold short and ask if you are unsure of your clearance. A helpful memory aid is to "stop for solid, dash through the dashes."

6. Be Cool, Stay in School

There are tons of helpful resources available to pilots that can help you keep your taxi skills sharp. The articles in this issue highlight many of them, but here are few worth noting:

- The FAA's Runway Safety page at faa.gov/airports/runway_safety
- The FAA's *From the Flight Deck* video series at faa.gov/flight_deck
- FAASafety.gov has several runway safety-related notices, live seminars, and online courses (e.g., Tarmac Tales, ALC-670)
- FAA's *Pilot Handbook of Aeronautical Knowledge*, Chapter 14, at bit.ly/AeronauticalKnowledge

PAUL CIANCIOLO

MATT PORTER

Manager, FAA Flight Standard Service's Authorized and Certificated Operations Section


Matt Porter with his family on a sailing trip.

Working on the farm in Kansas with his grandpa was Matt Porter's first "job." But it wasn't until visiting relatives in Tennessee that Matt found his calling when a flight in a Cessna 172 out of Murfreesboro Municipal Airport (MBT) instantly hooked him into the world of aviation.

"I still remember the awesome feeling of lifting off the ground for the first time and instantly knowing that flying was my passion," he reminisces. "And I love sharing that passion with others."

After high school, Matt earned a bachelor's degree as a professional pilot and a master's in aviation safety and security management from Middle Tennessee State University. He also served as a flight instructor at MTSU. After college, he flew as an airline pilot for Comair, operating as Delta Connection in the Bombardier CRJ-200.

Airline furloughs shifted his flight path to corporate flying for a large medical company in Nashville. There, he eventually became the chief pilot for a flight department with two Cessna *Citations*, a Piper PA-42 *Cheyenne III*, and two Cessna 310s.

Matt joined the FAA as an aviation safety inspector at the Nashville Flight Standards District Office (FSDO) and now serves as a remotely located manager at the agency's headquarters. His eight-person team in the FAA's Flight Standards Service is responsible for the operational policy related to part 91 business aviation and subpart K fractional aircraft ownership operations, part 133 rotorcraft external loads, part 137 agricultural aircraft operations, restricted category aircraft operations, investigation policy, and runway safety.

His section also helps produce the *From the Flight Deck* video series (detailed in the article "A Front Seat View of Runway Safety"), which provides pilots with actual runway approach and airport taxiway footage captured with aircraft-mounted cameras.

Matt also notes that some general aviation pilots may not fully appreciate the difference in operations at towered versus non-towered airports.

"When we go through our primary training as pilots, we typically train from either one or the other — towered or non-towered — and that naturally makes us less comfortable going to the opposite type of airport.

He adds that this can lead pilots to favor one type of airport over the other when planning trips, making them even less comfortable going to the opposite type of airport we have more experience and familiarity with. Then, one day, you will inevitably need to go to the type of airport you are uncomfortable with. This is a likely place for a safety event or possible runway incursion to occur.

Matt highly recommends that pilots proactively address the bias by flying with a flight instructor to the more unfamiliar airport type — towered or non-towered. Flying regularly into both airport types is vital to your pilot proficiency training.

Another way to avoid an incident on the ground is to plan ahead.

"If the first time you are thinking about your approach, landing, and taxi into a new airport is on your initial descent, then you are setting yourself up for failure," he explains.

Beyond safety promotion, the next realm of increased surface safety for general aviation is data and technology. This includes streamlining the pilot deviation investigation process by improving root cause analysis and data quality, sharing safety data, and leveraging technology already in the aircraft to backup the pilot without increasing workload.

Matt continues to fly regularly as a GA pilot and a flight instructor. When he is not at an airport, he is on the inland waterways sailing with his family, experiencing both powered and non-powered fun.

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LOOK WHO'S READING *FAA Safety Briefing*

When she's not walking the runway as Miss America 2024, Air Force 2nd Lt. Madison Marsh makes time for runway safety and *FAA Safety Briefing*.