September/October 2022

FAA Safety BRIEFING

—FLY FAA—
PRACTICING WHAT WE PREACH

Federal Aviation Administration

U.S. Department
of Transportation

**Federal Aviation
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Published six times a year, *FAA Safety Briefing*, formerly *FAA Aviation News*, promotes aviation safety by discussing current technical, regulatory, and procedural aspects affecting the safe operation and maintenance of aircraft. Although based on current FAA policy and rule interpretations, all material is advisory or informational in nature and should not be construed to have regulatory effect. Certain details of accidents described herein may have been altered to protect the privacy of those involved.

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ABOUT THIS ISSUE…

The September/October 2022 issue of *FAA Safety Briefing* focuses on the FAA's Flight Program Operations team and the critical role they play in assuring safety in the National Airspace System. Feature articles cover the team's various missions and how to operate safely when you hear the "Flight Check" call sign on the radio. We also look at the various partnerships Flight Program Operations has with other agencies, provide a behind-the-scenes peek at the fleet, and make a pitch for potential career opportunities with this dynamic group of aviation professionals.

Contact Information
The magazine is available on the internet at:
www.faa.gov/safety_briefing

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- **Calling:** (202) 267-1100
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FAA Safety Briefing

The FAA Safety Policy Voice of Non-commercial General Aviation

DEPARTMENTS

IT TAKES A TEAM

Whether you are in the window seat of an airliner or in the command seat of your own aircraft, it's likely that you've been awed by the seemingly magical way things "just work" in bad weather. It may be that you've been in the thickest (and possibly the bumpiest) of clouds since takeoff. But modern navigation technology housed on the ground, in space, and in your panel comes through. There are flights in which you get little or no glimpse of the ground from takeoff to touchdown. Still, pilots and passengers these days can confidently count on this technology to guide the aircraft safely and accurately to wherever you're going.

> THE HIGHLY ACCURATE AND VIRTUALLY FLAWLESS PERFORMANCE OF MODERN NAVIGATION AIDS TAKES EXQUISITELY EXACTING WORK FROM A HIGHLY SKILLED TEAM WHOSE MEMBERS MAKE THE SO-CALLED "MAGIC" WORK AS IT SHOULD — SEAMLESSLY, CONSISTENTLY, AND PRECISELY.

It's Not Magic!

Calling it "seemingly" magical is a very deliberate phrase. In fact, the highly accurate and virtually flawless performance of both ground- and space-based navigation aids takes exquisitely exacting work, performed by a highly skilled team whose members do the work to make the so-called "magic" work as it should — seamlessly, consistently, and precisely. I am proud to say that these dedicated public servants work for the FAA and, more specifically, for a part of the FAA called Flight Program Operations. It was my privilege to lead this team before taking my current position, and I am delighted that we are devoting this issue of *FAA Safety Briefing* magazine to telling you about your aerial colleagues in this part of the FAA and the vital work they do to assure safety in the National Airspace System.

Pilots Lorry Faber and Dan Kirby fly over South Florida for 5G flight testing.

WIIFM

If you are wondering why we chose this topic and "What's In It For Me," here's the story. This concept for this issue of the magazine started last fall when folks in Flight Program Operations reached out to the magazine team for help enhancing GA awareness of flight inspection work. We will certainly cover that important subject in detail, letting you know what it means when you hear the "flight check" call sign on the radio and how to operate safely in the vicinity of FAA flight inspection work.

But as the clichéd commercials go, "Wait! There's more!" When the magazine staff learned about the breadth of the work conducted in Flight Program Operations, the staff decided it was well worth sharing. Accordingly, this issue takes you on a tour of the many functions this team takes on. We'll tell you about partnerships with the NTSB and DOD, how we keep it real with part 135 and part 145 certificates, how we train those FAA employees whose jobs include flying, and — every aviator's favorite — we'll introduce you to the airplanes used for the work FAA does to make the "magic" happen when you fly. We also make a pitch for anyone with interest in this kind of exciting and meaningful work to consider FAA career possibilities.

We think you'll enjoy the view of this unique operation — so read on!

AVIATION NEWS ROUNDUP

Joint Global Safety Conference on Vertical Lift to be Held

The Vertical Aviation Safety Team (VAST), Helicopter Association International (HAI), the FAA, and the United States Helicopter Safety Team (USHST) will host the 2022 VAST Global Conference October 4-6 in the Fort Worth suburb of Hurst, Texas. The conference is an outgrowth of the FAA's international rotorcraft safety conferences first held in 2015.

Registration is now open for the event, which will include three days of presentations and panels centered on the safety of vertical lift aircraft and reducing the national and international vertical aviation accident rate. A virtual registration is available for those unable to attend the event in person. There is a nominal registration fee.

The event's theme is "The New Era of Vertical Lift – Collaboration in Safety Culture." Collaboration is also a key focus of the organizing groups, acknowledging that vertical aviation accidents around the world occur for many of the same reasons. Collaborating globally and locally allows the groups to focus on successful mitigation strategies.

The event will offer inspection authorization refresher course credits and FAA AMT and WINGS credits. While helicopter-focused programming will continue to be emphasized, this conference represents an expansion of the previous forums to include vertical take-off and landing vehicles.

Go to conference.vast.aero for more info.

New Database for SAIBs and ADs

The FAA's Regulatory Guidance Library (RGL) recently decommissioned the database hosting special airworthiness information bulletins (SAIB) and airworthiness directives (ADs). These documents are hosted on the new Dynamic Regulatory System (DRS). Go to drs.faa.gov for a comprehensive knowledge center of regulatory and guidance material from the FAA.

New Pilot Minute Video Addresses Fatigue

In the latest episode of the Pilot Minute video series, Federal Air Surgeon Dr. Susan Northrup tackles the topic of fatigue and whether it's ok for pilots to fly even if they are just a little tired. As the video points out, pilots should know to never fly when exhausted, however, any amount of fatigue can be dangerous. Research shows that fatigue can cause difficulty concentrating, fixating on tasks, increased reaction time, increased errors, and memory problems. Any of these can impact your flight safety and can't be remedied with an extra cup of coffee.

Go to youtu.be/DZNnay24dNw to watch the video.

SAFETY ENHANCEMENT TOPICS

Please visit bit.ly/GAFactSheets 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

Pilots and Medication Use — Understanding how drugs can compromise a pilot's ability to control the aircraft.

New Part 147 Regulations for Aviation Maintenance Technician Schools

On Dec. 27, 2020, Congress enacted the Consolidated Appropriations Act, which contained the Aircraft Certification, Safety, and Accountability Act. Section 135 of the act directed the FAA to publish interim final regulations to establish requirements for issuing aviation maintenance technician school (AMTS) certificates and ratings and general operating requirements for holders of such certificates. The improvements provided by the interim final rule (IFR) will help educate the future aviation maintenance workforce and meet the demands of the evolving aviation community. Under the new rule, AMTS will revise their curriculum and incorporate technical training that aligns with the mechanic airman certification standards.

The new regulations will be effective on Sept. 21, 2022. AMTS must continue to conduct training operations to meet the currently effective part 147 regulations until then.

To download frequently asked questions, go bit.ly/147IFR.

Take a Course on Illegal Air Charter

An online Advanced WINGS-credit course about air charter safety will help you understand the federal regulations and definitions of private and commercial pilot privileges, charter operations, operational control, wet and dry leases, holding out, compensation, and expense sharing to help keep you out of legal trouble. It also illustrates the differences between 14 CFR part 61 pilot privileges and limitations and operating rules for part 91 and part 135.

The course has two videos to choose from — one geared toward flight instructors and one geared toward designated pilot examiners. Go to bit.ly/697aircharter to take the course. If you don't already have an account, you can sign up for free on FAASafety.gov.

Despite Overall GA Accident Decrease, Go-around Phase Accidents Have Increased

A recently published study is suggesting that further investigation be made into go-around procedures in unstable flights. The go-around procedure during flight is a safety maneuver used when the flight's landing is abandoned during final approach due to several different reasons such as an obstruction on the runway or an unstabilized approach.

In *Go-around accidents and general aviation safety*, published last June in the *Journal of Safety Research*, the authors determined that fatal accidents during such maneuvers have increased when they compared two sets of accident data from the NTSB from 2000 to 2004 and from 2013 to 2017. The comparison revealed that the total number of GA accidents has otherwise decreased overall, attributable to improvements in training and technology. Further analysis revealed that fatal go-around phase accidents were most likely to occur during instrument meteorological conditions (IMC) as well as nighttime. The authors suggest that this trend warrants closer examination and specifically recommend scenario-based learning during training to increase pilots' proficiency in go-around procedures.

This excerpt was written by Colleen Kilday. The study can be read at doi.org/10.1016/j.jsr.2022.06.008.

5G C-band Update

Key stakeholders in the aviation and wireless industries have identified a series of steps that will continue to protect commercial air travel from disruption by 5G C-band interference while also enabling Verizon and AT&T to enhance service around certain airports.

The phased approach requires operators of regional aircraft with radio altimeters most susceptible to interference to retrofit them with radio frequency filters by the end of 2022. This work has already begun and will continue on an expedited basis.

At the same time, the FAA worked with the wireless companies to identify airports around which their service can be enhanced with the least risk of disrupting flight schedules.

During initial negotiations in January, the wireless companies offered to keep mitigations in place until July 5, 2022, while they worked with the FAA to better understand the effects of 5G C-band signals on sensitive aviation instruments.

Based on progress achieved during a series of stakeholder roundtable meetings, the wireless companies offered to continue with some level of voluntary mitigations for another year.

Airlines and other operators of aircraft equipped with the affected radio altimeters must install filters or other enhancements as soon as possible.

Filters and replacement units for the mainline commercial fleet should be available on a schedule that would permit the work to be largely completed by July 2023. After that time, the wireless companies expect to operate their networks in urban areas with minimal restrictions.

The radio-altimeter manufacturers have worked at an unprecedented pace with Embraer, Boeing, Airbus, and Mitsubishi Heavy Industries to develop and test filters and installation kits for these aircraft.

Throughout this process, the FAA is tracking the pace of the radio altimeter retrofits while also working with the wireless companies to relax mitigations around key airports in carefully considered phases.

GOING LONG: THE PHYSIOLOGICAL RISKS OF FATIGUE

As I write this article, I am catching up from AirVenture. This wonderful experience tends to be very busy so fatigue is very much on my mind and I suspect that it is for many of you. In general, we think of fatigue as acute (recent sleep deficit), chronic (multiple days of inadequate sleep), or circadian (related to time of day and normal physiological lows). In commercial aviation, there are specific safeguards to limit the duty day depending on reporting time and number of legs. These regulatory restrictions do not apply to operations under 14 CFR part 91, but our physiological limitations do. The number of mishaps attributed to fatigue, some fatal, clearly demonstrates this.

Fatigue impairs the brain's executive functions including attention, multitasking, and decision-making, sometimes dramatically. This can result in confusion, task fixation, increased errors and, of course, drowsiness. Unfortunately, your ability to recognize this is also impaired.

Early in training, we are more likely to dedicate time specifically to flying, whether local or cross-country. Both tend to focus on meeting explicit regulatory requirements (hours and distance). This makes sense in flight training; the goal is to learn essential aviation skills as efficiently as possible. But this approach might not prepare you for your first actual long-range solo or sole pilot flight without someone reviewing your planning. Tack on fatigue and you increase the risk of an adverse outcome.

Here are a few potential pitfalls. The risk of fatigue should be obvious when you experience inadequate sleep, trans-meridian travel (jet-lag), recent illness, hectic work week, etc., but it's unwise to underestimate human ability at self-deception. Even if you had enough time for sleep, it might not have been restorative. Stress, alcohol (even within legal minimums), some medications, or a poor sleeping environment, can lead to unexpected (and unrecognized) fatigue. Even the flight can contribute: preparations, duration of flight at altitude, weather, or unfamiliarity with the course are all aggravating factors. Also dehydration can mimic and magnify the effects of fatigue.

What Can You Do?

A pre-flight and ongoing self-assessment of your fitness is critical. IMSAFE is a good tool. Pressing ahead if you feel tired is high risk, especially at night. Take a nap, reschedule the flight, or break up your trip with an overnight stay. Stay hydrated even if it requires an en route stop. For longer flights, plan shorter legs. It helps keep a safe fuel reserve, a comfortable bladder, and reduces the risk of a blood clot. (By the way, coffee is not the solution: it does not replace adequate rest). It is better to arrive safely at your destination late than not at all.

What Are We Doing?

Aerospace medicine conducts ongoing research into fatigue management and countermeasures. My staff are working with counterparts at NASA and NTSB to continue steady improvements in flight safety. Robust programs for commercial aviation can be applicable to general aviation, even for single pilot operations (see below). For over a decade, general aviation has enjoyed a steady decrease in the mishap rate. Please help keep this trend going downward.

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.

LEARN MORE

Fatigue in Aviation
bit.ly/3fNf4hG

Dehydration and the Pilot
bit.ly/3Q4Cobw

Deep Vein Thrombosis and Travel
faa.gov/pilots/safety/pilotsafetybrochures/media/DVT.pdf

Fatigue Risk Management Systems for Aviation Safety
bit.ly/3dyUV19

Basics of Aviation Fatigue
bit.ly/3A0566i

Single pilot crew resource management toolkit (IMSAFE)
bit.ly/3C8gU9e

DR. LEO HATTRUP, FAA MEDICAL OFFICER

THE HEAT IS ON! THE IMPORTANCE OF STAYING WARM

We are fortunate that for most of the time, staying warm is a matter just about comfort. We easily control it by how we dress and adjust the thermostat. Nonetheless, we operate in a narrow range of acceptable body temperatures; moving out of this range can imperil both our performance and even our survival. We will focus on a low body temperature (hypothermia) in this article. After all, winter is coming — and soon.

Humans are endothermic (commonly referred to as "warm-blooded") meaning that we actively control our body temperature through metabolic processes. Regardless of the ambient temperature, we keep our body temperature between 97 and 99 degrees Fahrenheit or 36.6 to 37.2 centigrade (in adults). Like other mammals and birds, which are endothermic as well, we are able to function in a wide range of operating environments. In contrast, the body temperature of ectothermic ("cold-blooded") animals such as insects, fish, amphibians, and reptiles reflects the surrounding environment; their advantage is that they need much less energy (food), pound for pound than endothermic species. However, there are limits to your body's ability to deal with extremes before we become either too hot (hyperthermia) or too cold (hypothermia).

Trying to Turn up the Heat

We produce heat from metabolic processes and muscle activity. When this and the use of protective clothing is inadequate, you begin to feel cold and your body starts to generate more heat. As you know, if this is inadequate, you will shiver to generate additional heat followed by redirection of blood away from extremities in order to conserve heat for your vital organs. If allowed to progress, one can feel numbness or a "pins and needles" sensation in your fingers and toes. Your fine motor skills become degraded. There is a decline in judgement, memory, and thinking. Hypothermia also compromises your ability to recognize these impairments, so be alert for even minor changes. Warm up before you fly if needed. Obviously, even early symptoms of hypothermia are dangerous in an aviation environment.

An Ounce of Prevention

Being prepared for cold is essential. Begin with preflight planning. Know what conditions to expect. What is the forecast? Are there any conditions that would exacerbate the effect of low temperatures (i.e., wind, snow, rain, etc.)? Consider your origin airport, route (terrain and elevation), and destination. Make sure that you perform an adequate preflight no matter how tempting it might be to rush and shorten or even skip this step. Dressing in layers enables you to adjust your insulation needs before, during, and after a flight. Outer gloves with separate liners provide both insulation for most of the pre-flight and dexterity when needed. Military style flight gloves also work well for short exposures to cold. Pre-heating the engine is common, but the cabin should also be preheated if possible. This is better for the avionics and it allows you to remain comfortable without wearing a heavy coat prior to cabin heat. Removing a jacket in a small GA aircraft is challenging at best and, at times, dangerous. Do not count on jumping right into the airplane as an adequate mitigation strategy against the cold.

> **EVEN EARLY SYMPTOMS OF HYPOTHERMIA ARE DANGEROUS IN AN AVIATION ENVIRONMENT.**

During flight, do not let concern regarding carbon monoxide (CO) poisoning stop you from using cabin heat. The risk is low and further mitigated by using either panel-mounted or portable active CO detectors. Modern devices are affordable and effective at detecting this odorless and potentially deadly gas. Be sure to keep your aircraft maintained and carefully preflight the exhaust and heating system. While not all cracks are visible on preflight, many are visible on preflight inspection … if you look. Stay safe and fly warm!

LEARN MORE

Check the FAA's NORSEE equipment page for CO detector options:
faa.gov/aircraft/air_cert/design_approvals/norsee

Carbon Monoxide: A Deadly Menace
faa.gov/pilots/safety/pilotsafetybrochures/media/COBroforweb.pdf


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FLIGHT CHECK
Please Keep Your Distance!

Who We Are, What We Do, and How It Matters to You

By Mary Ladner

I have been around general aviation (GA) as a passenger most of my adult life. The extent of my practical knowledge of instrument flight procedures is looking at an overcast sky and asking my pilot friends if we are filing an instrument flight rules (IFR) flight plan, usually concerned about whether I will make it to a beach getaway. After working almost a decade in FAA's Flight Standards Service, I am much more familiar with the regulations for IFR flying than how pilots apply these rules in reality.

It's magical to me that pilots rely on enroute navigational aids (NAVAIDs) and instrument landing systems (ILS) to guide aircraft, of various sizes and seat counts, to their destination and safely to the ground in challenging weather conditions. I never put much thought into the work that makes this capability possible until last summer, when I took a position in the FAA Flight Program Operations organization. Flight Program Operations is part of the FAA's Air Traffic Organization and operates aircraft for several FAA missions, the largest of which is flight inspection, commonly known as "flight check." I quickly learned that there is a method behind their magic and that a lot more goes into ensuring the integrity of our National Airspace System (NAS) infrastructure than I ever imagined. In fact, I have learned a lot of things in my first year with Flight Program Operations, and I want to share these lessons with you.

Lesson 1: Inspecting and Validating System Integrity

The first thing I learned is that flight inspection involves way more than ensuring the accuracy of an ILS. Flight inspection is the airborne inspection of all space and ground-based instrument flight procedures and the validation of the integrity of the electronic signals in space transmitted from navigation systems. "Validating signals in space" is far removed from the origins of our air navigation system. The U.S. Postal Service developed lighted airway beacons (bonfires) and placed them 10 miles apart to aid nighttime navigation in the 1920s. Responsibility for the airway system was then transferred to the Department of Commerce who hired the very first "airway patrol pilots" in the 1930s. Fast forward to the present day, when Flight Program Operations flew approximately 14,521 hours to accomplish 15,456 inspection items in 2021. I can't help but wonder what the airway patrol pilots of the 1930s would think of the modern aircraft that flight inspection pilots fly today and the complex air navigation system that they inspect.

Airway radio station circa 1930s.

What do these flight inspections cover? The list of NAVAIDs that are inspected routinely is long and full of acronyms, including ILS, MLS, VOR, DME, TACAN, GPS, RNP, RNAV, NDB, various ground proximity radars, and airport lighting. These flight inspections also cover instrument flight procedures and the verification of obstacles. The FAA flight inspection pilots fly FAA aircraft to ensure that these air navigation systems meet certain tolerances (often measured in microamps) and support the associated instrument flight procedures that pilots use every day. Before a new procedure is established, flight inspection pilots assess the viability or, more to the point, the "flyability" of the procedure to make sure that all segments can be safely and accurately flown and don't create an undue burden on the pilot flying. When visual flight rule (VFR) charts are updated with new obstacle information, that obstacle has been validated by flight inspection.

When an ILS is NOTAM-ed out until it can be fixed, chances are flight inspection filed that notice to air missions (NOTAM). Flight inspection pilots test and verify new technologies (think satellite navigation like ADS-B, Ground Based Augmentation Systems, and Satellite Based Augmentation Systems) to enhance the NAS before approval for public use. My big takeaway from learning about the vast universe of navigational systems and procedures that must be flight inspected is that the universe continues to expand as technology grows. More importantly, all those times I was in a Cessna 172 that flew from VOR to VOR and took advantage of an ILS, I can thank flight inspection for validating the accuracy of those systems. Also, I can thank the FAA Technical Operations organization, which does an amazing job of establishing and maintaining our NAS infrastructure. Without their work, there would be no air navigation systems to flight inspect.

> **Pilots should be watchful and avoid the flight paths of any aircraft using the call sign "flight check," especially at airports underlying and/or adjacent to Class B airspace.**

Lesson 2: Planning and Scheduling

The second thing I learned is that scheduling is a big deal. Flight Program Operations employs schedulers, and these people have a critical and difficult job. They schedule where flights will originate and terminate, make sure aircraft are available, and staff the flights with the right crewmembers. But the job doesn't stop there. Flight schedulers assign the flight inspection tasks that will be completed on each flight, and they strive for every opportunity to check off the work in the most efficient way possible.

With so many NAVAIDs and procedures to check, how do the schedulers decide? Well, the key to flight inspection scheduling is "periodicity." Different NAVAIDs have different required intervals for periodic inspections. If a NAVAID gets beyond this interval, it may be NOTAM-ed out of service. Schedulers look at the various types of flight inspection tasks and schedule based on an order of priority. Here are just a few of the terms I have learned related to types of flight inspections, in my own words:

- **Periodic –** This is a regularly scheduled check to make sure the system meets standards.
- **Commissioning –** This is a check to support a new NAVAID or service. When a new runway is built, there is a lot of "commissioning" that supports it.
- **Reconfiguration –** This check is specific to a facility that already exists but has been upgraded or has been repaired due to damage.
- **Special –** This is a check outside of the normal periodic interval. Has someone reported a malfunction with a system? Let's call for a "special."
- **RFI (Radio Frequency Interference) –** This is a check to confirm or locate interference with systems that are radio-frequency dependent.
- **After Accident –** This is when someone, usually an accident investigator, requests a check after an accident to verify system performance.

Today's flight inspection equipment is complex and specially developed to do its job.

In the 1930s, the first airway patrol pilots evaluated the first practical navigation aids after the bonfires, in the low frequency four-course radio range. Each of the airway patrol pilots inspected 3,000-3,500 miles of federal airways. In today's air navigation system, flight inspection pilots evaluate an estimated hundreds of thousands of air miles in support of NAVAIDs and procedures spread across the United States and internationally for the Department of Defense (DOD) and other entities in far flung locations in Asia, Europe, the Middle East, and Antarctica. Our operation relies on tireless schedulers who prioritize and coordinate the work to ensure service for users of the NAS, the DOD, and the traveling public.

Lesson 3: Flight Inspection Maneuvers

The third thing I learned is that flight inspection aircraft maneuvers seems strange to many, but all are all highly calculated (see list on page 11). I have many friends who are air traffic controllers, and when I told them about my new job with Flight Program Operations, most of them commented about how "flight check" complicates traffic flow and makes their life difficult. They're not wrong. Flight inspection aircraft are often observed flying in a non-standard traffic pattern or opposite direction operations at airports. This leaves many wondering why an aircraft would be flying opposite of the traffic flow preferred due to prevailing winds. Flight inspection aircraft can also be seen flying at altitudes other than standard VFR or IFR altitudes. Flight inspection aircraft sometimes fly many, many large orbits or arcs in the sky over empty cornfields and at the world's busiest airports. Flight inspection aircraft have been reported to the authorities many times for making so many low passes at an airport without ever landing, and one was even reported as a UFO in Hawaii. To be fair, all this maneuvering may seem strange to the casual observer who doesn't understand what flight inspectors are trying to accomplish.

> **Pilot vigilance, patience, and cooperation in allowing uninterrupted maneuvering can significantly help expedite flight inspections and minimize costly, repetitive maneuvers.**

It seemed strange to me too until I came to work for Flight Program Operations and began to learn about the mission. Suddenly I was behind the scenes of that aircraft circling over cornfields and making multiple low passes over runways in Kansas. In order to inspect NAVAIDs and procedures, flight inspection aircraft must conduct specific, uninterrupted maneuvers at very specific altitudes. Flight inspection may fly at nonstandard altitudes because they need to fly at true vs. barometric altitudes. There is a "mission specialist" in the back of the aircraft who uses systems to collect and analyze the data the entire time. I sat down with a mission specialist who graciously explained everything that is done and why we do it. (By the way, none of this would be possible without mission specialists, but that is a story for another day.)

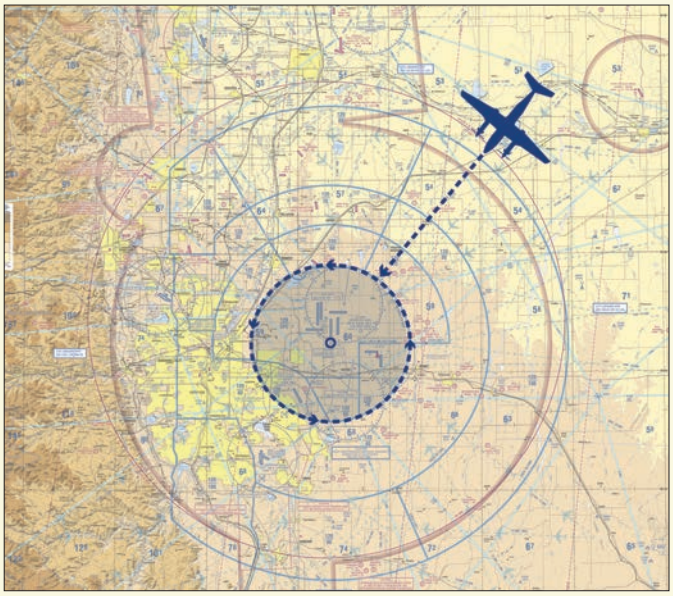
Flight Check Maneuvers Explained

Flight Inspection Arc – This maneuver is specific to measuring the localizer portion of an ILS and is typically conducted 1,500 feet above field elevation, 35 degrees on one side of the localizer course to 35 degrees on the other side (about seven miles on either side of centerline). Crews will reverse course and measure the system in both directions. Of particular importance to other aircraft is that during the recorded portion, aircraft taking off, landing, or taxiing between the localizer antenna and flight inspection aircraft may interfere with the signal and result in a need to repeat the maneuver.

Flight Inspection Holding Pattern – This maneuver is specific to measuring the glideslope portion of an ILS and is typically conducted 1,500 feet above field elevation, from about 1-2 miles from the runway threshold. Of particular importance is that during this portion of the inspection, aircraft in the glideslope critical area during recording may interfere with the signal and result in a need to repeat the maneuver.

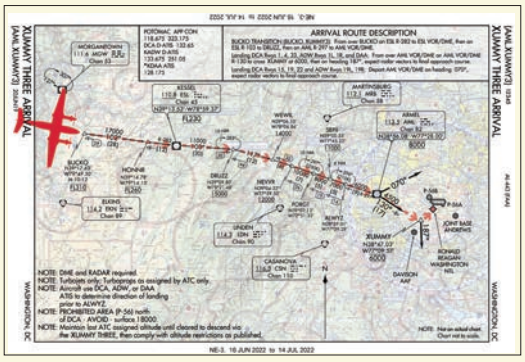
Flight Inspection Low Approach – This is often a test of the RNAV instrument approach procedure and the ILS. It is completed by a low approach 50 feet above the runway all the way to the opposite threshold. This ensures GPS database integrity and ILS signal accuracy. The flight inspection crew also uses this opportunity to inspect the entirety of the approach and runway lighting system.

VOR Orbits and Radial Flight – These maneuvers are conducted on VORs, TACANs, and NDBs to ensure the integrity of the signal at various altitudes. They measure the signal's accuracy, strength, polarization, and modulation. The distance of the orbit is dependent upon the type of inspection being conducted, and some of those orbits can be as far as 70 miles from the facility.



Required Obstacle Check ("ROC" Check) – This is a sweep around the airport circumference looking for new or uncharted obstacles.

Standard Instrument Departures (SID) and Standard Instrument Arrivals (STAR) Procedures – These procedures are evaluated before publication to make sure each can be flown with varying navigation equipment capabilities, is clear of obstacles, and does not cause an undue burden on the flying pilot.



It was intriguing to see the list of flight inspection tasks to be accomplished and to watch the data being collected and analyzed — all visible on screens in front of me. It was daunting to listen to the radios and hear the coordination going on between the pilots, between the pilots and air traffic control (ATC), between the pilots and the mission specialist, and between the mission specialist and technicians on the ground. The skill of these aviation professionals is impressive and I now have a better understanding of flight inspection maneuvers and why they are conducted.

For the data to be usable, flight inspection aircraft must remain on the plotted flight path trajectory. If flight inspection pilots deviate from their course due to traffic, they have to restart the entire maneuver. In fact, flight check aircraft sometimes have to repeat several arcs so that the mission specialists get the data they need. When observers on the ground see our aircraft circling above the terrain over and over, I can't help but wonder what they must think of these activities. I now understand that flight inspection pilots and mission specialists are up there checking off tasks to ensure that navigations systems are accurate and operational for the American public, at airports large and small.

Flight inspection is even conducted in Antarctica, where runways can shift with the movement of the packed snow.

Lesson 4: Flight Check and You

Here is where we get to the fourth thing that I have learned: It is great that I now know more about flight inspection, but we need to increase awareness of this activity among all users of the NAS, especially the GA community. Flight inspection aircraft use the call sign "flight check" to let ATC and pilots know that they are operating in the area. Flight inspection pilots strive to complete their maneuvers as quickly as possible to minimize the impact to ATC and other pilots. When flight inspection is operating in some of the busiest airspace, know that they are checking off tasks or trying to establish a new operational capability for the NAS. Flight inspection aircraft often receive priority handling by ATC and they continuously monitor the proximity of traffic through ATC and TCAS. However, pilots should be especially watchful and avoid the flight paths of any aircraft using the call sign "flight check." This is especially true at airports underlying and/or adjacent to Class B airspace, where there is a heightened alert for aircraft proximity. At non-towered airports, flight check will self-announce their position and intentions on the designated frequency. Pilots should be extra aware when they hear "flight check" on frequency. Pilot vigilance, patience, and cooperation in allowing uninterrupted maneuvering can significantly help expedite flight inspections and minimize costly, repetitive maneuvers. Pilots are encouraged to maintain extra awareness and allow extra distance from flight inspection aircraft when they are conducting the out-of-the-ordinary maneuvers described earlier.

Final Lesson

Finally, the last thing I learned is that flying for Flight Program Operations is a great job to have as a pilot. I have never met a group of public servants more passionate and committed to their craft. When many pilots think of working for the FAA, they think of being an aviation safety inspector who may not regularly fly. Many Flight Program Operations employees are pilots and "flight inspectors." They fly almost every week in unique environments, from the cornfields of the Midwest to the world's busiest airports of Atlanta, Chicago, Los Angeles, and New York, to the far corners of the earth like Guam and Antarctica. This type of flying is much different than commercial or business aviation. Every day is different and presents a new challenge. Whether it be terrain, weather, or traffic congestion, Flight Program Operations pilots train, adapt, and rise to the task. Modern-day flight inspectors traverse the globe to ensure our country's interests are secure at home and abroad. This would make those first six airway patrol pilots so proud (and awe-struck) at the complexity of our air navigation system and our nation's dependency on it.

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LEARN MORE

Flight Program Operations webpage
faa.gov/air_traffic/flight_info/flight_ops/

Flight Inspection History
bit.ly/3uNzhvP

FLIGHT CHECK ON DECK: MAKING THE RIGHT MOVES

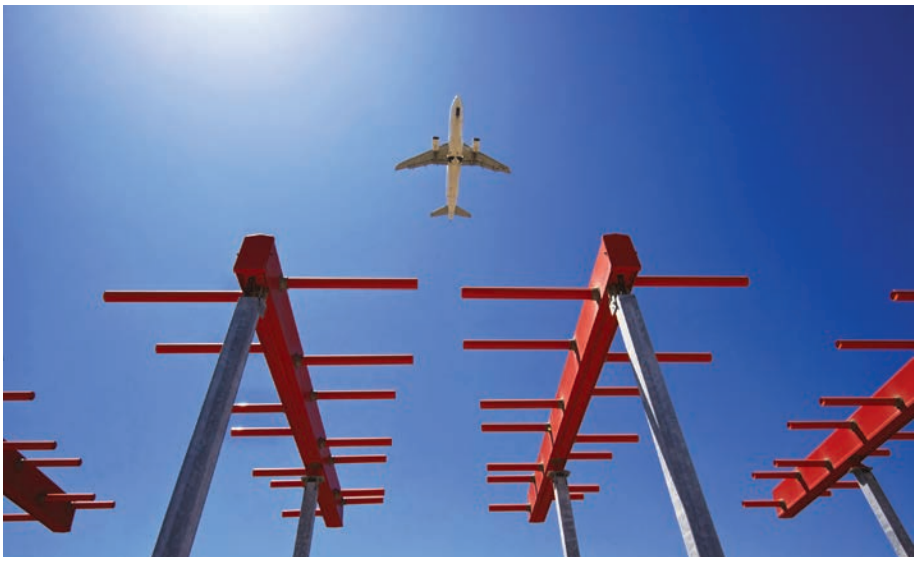
If you use an airport with any sort of instrument navigation capability, an FAA flight inspection team will visit that airport from time to time to inspect and validate the integrity of its space- and ground-based systems. You can find full details of who, what, how, and why in this issue's "Flight Check: Please Keep Your Distance!" feature. But let's focus here on what you need to know if you hear the "flight check" call sign when you are out and about.

Listen Up

One of my favorite maxims is the one about how much of our success in life comes from two simple acts: (1) show up; and (2) pay attention. Paying attention is super important if there's an FAA flight inspection team in your aerial neighborhood. As the feature article notes, these teams may be flying opposite the traffic flow in the pattern or operating at nonstandard altitudes for VFR or IFR. You will need to add the "flight check" aircraft and its maneuvers (more on those later) to your mental map of other traffic. Of course, you will also need to keep that mental map moving to update your situational awareness as flight inspection mission maneuvers progress.

Know the Moves

The feature article offers details of the standard flight inspection maneuvers. If you are working in or near the traffic pattern, you'll especially want to know that low approaches — 50 feet above the runway all the way from one end to the opposite threshold — are SOP for flight inspection. There will be flight check orbits of navigation beacons like VOR, Tactical Air Navigation Systems (TACAN), or even Non-Directional Radio Beacons (NDB) that may be located on or near the field. Other maneuvers in the flight inspection playbook include the ROC (required obstacle check) sweep around the airport circumference, and a flight inspection arc typically conducted 1,500 feet above field elevation and 35 degrees on either side of a localizer course. Knowing what to expect will help you stay clear, stay safe, and stay out of the way.



Move Over

The concept of "first come, first served" is a staple of both popular culture and aviation culture. But unless you have a no-kidding-gotta-get-down-now sort of emergency, giving way to a flight inspection aircraft is a mark of good manners and good airmanship. As the feature article explains, the FAA's flight inspection teams have a critical safety job to do, one that requires management of many moving parts while adhering to a very rigid "script." The quickest way to get a flight inspection bird on its way to somewhere else is to avoid getting in the way of its work. The magic of airplanes is that they can quickly transport us to other places, so why not take advantage of that? Find another aerial place to be until the flight inspection airplane moves on.

Enjoy the Show

While I have flown in some of the country's busiest airspace, I'm sorry to say that my flight activities have never coincided with those of an FAA flight inspection team. Given how we in aviation love watching airplanes, I would have enjoyed perching at one of my old airport's patio picnic tables with a cold beverage in hand, watching the true pros of aeronautical precision make some of those low approaches over the runway. If you have that opportunity, enjoy the show, and offer a salute or a toast to the teams who are keeping our system safe.

Susan K. Parson (susan.parson@faa.gov) is editor of *FAA Safety Briefing* and a Special Assistant in the FAA's Flight Standards Service. She is a general aviation pilot and flight instructor.

SCHOOLHOUSE ROCKS!

Where FAA Inspectors Go to Keep Current

By Allison Krumsiek and Beth Ann Senk

For most pilots, the first and most frequent point of contact with the FAA is air traffic control. The second may be an Aviation Safety Inspector (ASI) at the closest Flight Standards District Office (FSDO), most likely one assigned to the FAA Safety Team (FAASTeam). But ASIs are hard at work all over the country, doing all kinds of work needed to assure safety in the National Airspace System (NAS).

As the backbone of the U.S. civil aviation regulatory system, ASIs are charged with assuring compliance with safety regulations and standards for the production, operation, maintenance, and modification of all aircraft flying today. Some ASIs are involved in the lengthy process of writing or revising rules or policy. Others work directly in safety assurance, whether with individual aviators, schools, charter operators, or airlines. These inspectors also investigate accidents and incidents, and some ASI jobs include conducting checkrides. It is truly a huge variety of work vested in a highly specialized workforce.

First Things First

With that kind of job description, it stands to reason that people hired as FAA Aviation Safety Inspectors come to the agency with a wealth of aviation experience. The formal qualifications for the job — including its specialty areas — are listed in the Office of Personnel Management's (OPM) 1825 Occupational Series. (*As an aside, FAA jargon often uses "1825" as shorthand for someone employed under this series.*) The qualifications list includes things like minimum levels of certification and flight time for a pilot, or specific required qualifications and experience in aviation maintenance for airworthiness jobs. Meeting the job requirements can open the door to employment as an FAA ASI. But nobody walks through without first demonstrating actual ability.

Enter Flight Program Operations. During the interview process for potential ASIs in air carrier or general aviation operations, Flight Program Operations arranges pre-employment flight checks appropriate for the type of work the inspector is applying to do. For example, a GA Operations Inspector may receive a flight check in a PA-44 Piper *Seminole*, while a prospective Air Carrier Operations Inspector is more likely to have a flight check in an FAA-owned Boeing 737 simulator. The simulator is located at the FAA's Mike Monroney Aeronautical Center (colloquially known as "the Academy") in Oklahoma City. Potential GA Ops Inspectors, on the other hand, head for the agency's official flight training facility, more commonly called "the schoolhouse."

ABCs of the FAA Schoolhouse

So, what and where is "the schoolhouse?" As we have explained in other articles, Flight Program Operations is responsible for *all* FAA flight operations, not just things like flight inspection work. In partnership and agreement with the FAA Flight Standards Service, Flight Program Operations has a key role in two important areas: ensuring an applicant's proficiency before they are hired as an ASI and maintaining ASIs' flight currency and proficiency (not necessarily the same thing!) once they join the agency's inspector corps. Accordingly, Flight Program Operations runs a training and checking facility for FAA employees whose jobs include flying.

Located at Fort Worth Alliance Airport (AFW), the FAA schoolhouse is a centralized and standardized facility designed to provide FAA employees with the same high standards of training that the agency expects from aviation industry training providers. When they come to the FAA schoolhouse, aspiring and actual ASIs find a lovingly maintained fleet of FAA-owned aircraft as well as contract aircraft that are representative of the birds a working ASI will encounter on the job.

Beechcraft *King Air* C-90GTis, which are used for turboprop training and checking, are the backbone of the schoolhouse fleet. To provide checking and recurrent training in more typical GA flying, Flight Program Operations contracts with a part 141 training school for Cessna 172 *Skyhawks*, Piper PA-44 *Seminoles*, and a Bell B-206 helicopter. If an ASI's job functions require currency and proficiency in other types of aircraft, Flight Standards and Flight Program Operations work together to identify and schedule flights in aircraft not available in the AFW fleet. Those aircraft can range from tailwheel to seaplanes to gyroplanes and helicopters.

To provide instruction and evaluation at the schoolhouse, Flight Program Operations uses contract instructor pilots. The training and evaluation profile is what you might expect: takeoffs and landings, approaches, air work, ground reference maneuvers, and emergency procedures. For proficiency flying, Flight Program Operations also offers "events-based currency," or EBC. Conducted under the structure of part 141, EBC is required on a quarterly basis for ASIs with job functions that involve flying. EBC provides consistency and standardization in training, while giving the FAA centralized oversight for inspector currency.

At some point in their careers, almost all ASIs end up at Forth Worth Alliance Airport.

King Air C90s are an important part of the fleet that is dedicated to training.

Another benefit is that the centralized delivery of EBC and checking enables ASIs to focus completely on flight proficiency during quarterly visits to the ATW schoolhouse. As Jackson, Mississippi FSDO ASI Joe Carson notes, "I have had nothing but pleasurable experiences during visits to AFW for events-based currency. Staff are very professional and punctual. All the aircraft I have used in training have been well-maintained and are well-equipped. The airport and ATC are very accommodating to the EBC program, even with Amazon and other very busy large operators on the field. The staff at the AFW EBC program runs a tight ship, and I am glad we go there for inspector currency."

Allison Krumsiek is a technical and communications writer for the FAA's Flight Program Operations policy and communications team. She carries a red pen in her purse and can often be found editing signs around the D.C. area to conform to the Chicago Manual of Style guidelines on serial commas.

Beth Ann Senk (beth.a.senk@faa.gov) is the manager for the FAA's Aviation Safety Training Group at Alliance Airport in Fort Worth, Texas.

LEARN MORE

OPM – Qualifications for 1825 Series
bit.ly/Series1825

USA Jobs – Search Listing for 1825 Series
usajobs.gov/Search/Results?j=1825

Keeping It Real

Why and How the FAA Manages Its Own Fleet

By Kate Knorr

The work that FAA's Flight Program Operations does contributes to keeping the National Airspace System (NAS) safe and efficient for operators and passengers. But not too long ago, this work was spread across multiple offices within the FAA, with disparate aircraft fleets that supported the agency's mission in a singular fashion. That changed in 2016, when the agency consolidated the legacy flight programs to form Flight Program Operations under the Air Traffic Organization. Its core business is to conduct safe and efficient flight operations across four primary missions: flight inspection; research, development, test and evaluation (better known as RDT&E) support; aviation safety training; and critical event response/transportation.

Consolidating the legacy flight programs raised operating standards across all of the activities; in fact, all aircraft are now on the Flight Program Operations air operator certificate and authorized to operate under 14 CFR part 135 — consistent with industry operators with similar size, scope, and complexity of operations. The consolidation also increased efficiency, enhanced safety systems, and enabled the development of a comprehensive aircraft fleet management strategy. Before consolidation, the legacy organizations operated 13 different makes and models. Aircraft were specialized for a single activity, and the fleet was rapidly aging. Apart from higher costs for parts and maintenance, older aircraft were increasingly mismatched to their mission in today's highly dynamic aviation environment.

Right-Sizing the Fleet

The 2016 consolidation enabled the FAA to take a fresh look. The first thing Flight Program Operations identified is that having so many different makes and models was unsustainable and inefficient.

Fast forward to today. Flight Program Operations is now flying the following aircraft: Cessna *Citation Sovereign Plus*, King Air C90GTi, King Air 300, Challenger 601, Challenger 604/605, Challenger 604, and Bombardier Global 5000. That is six different makes and models, which is much more efficient.

Some of Flight Program Operations' aircraft rest on the tarmac.

MEET THE FLEET

Let's do a quick meet and greet with a few of the aircraft that are currently part of the Flight Program Operations fleet

FLIGHT PROGRAM OPERATIONS FLEET

Cessna *Citation Sovereign Plus*

Job(s)
Critical event response/transportation, flight inspection

About me
Like many people in this area, I am a transplant to the Washington, D.C., region.

As the workhorse of the FAA's critical event response/transportation responsibilities, these capabilities are absolutely essential for several reasons. My range means that I can go coast-to-coast without stopping. This allows the National Transportation Safety Board's "Go Team" to arrive as quickly as possible to an accident scene. I have a top speed of 613 miles per hour and a maximum range of 3,000 nautical miles. My size and speed also mean that I can get there quickly, and with more relief supplies, in the wake of natural disasters such as Hurricanes Florence, Harvey, Irma, and Maria.

FLIGHT PROGRAM OPERATIONS FLEET

Bombardier *Global 5000*

Job(s)
Critical event response/transportation, flight inspection, and RDT&E support

About me
Although I can handle many missions, RDT&E support is where I really shine. The most recent example is months of flights associated with characterizing the potential risks of 5G telecommunications signals to aircraft instrumentation as new towers were activated near airports and other facilities.

I have a top speed of 683 miles per hour, a maximum range of 5,200 nautical miles, and a maximum operating altitude of 51,000 feet.

FLIGHT PROGRAM OPERATIONS FLEET

Beechcraft *King Air* 300

Job(s)
Flight inspection and RDT&E support

About me
Used in both flight inspection and RDT&E support activities, I have a top speed of 368 miles per hour and a maximum range of 1,570 nautical miles.

FLIGHT PROGRAM OPERATIONS FLEET

Bombardier *Challenger*

Job(s)
Critical event response/transportation, flight inspection, and RDT&E support

About me
I will be a core member of the modernized fleet moving forward. With the ability to quickly shift between the flight inspection configuration and seats, I will be the most versatile aircraft in the fleet. I can reach a top speed of 660 miles per hour and fly a maximum range of 4,123 nautical miles.

My primary focus is flight inspection. Because of my capabilities, myself and the other *Challenger* aircraft in the fleet are responsible for international flight inspections, traveling to, among other places, both the South Pacific and to Europe each year. I am also responsible for flight inspections in Alaska's complex airspace.

Lined up, shined up, and ready to go at a moment's notice.

And The Fleet Goes On ...

While most commercial airlines retire their aircraft when they reach 20 or 25 years of service to maximize efficiency, the current average age of aircraft in the FAA's fleet is still more than 30 years old. Another issue is that aircraft in the FAA fleet have missions and uses that are quite different from those of commercial and general aviation aircraft. With a commercial aircraft, for example, a flight from one airport to another involves just a single instance of moving the engine(s) to takeoff power once and cycling flaps and landing gear. In contrast, a flight inspection aircraft might take off from an airport, fly to another, circle around it multiple times at specific altitudes, and then return to the original airport. Flaps and landing gear might be cycled a dozen times, and engines will be throttled up six times. In addition, aircraft used for flight inspection often have to fly at low, bumpy altitudes, which increases wear and tear.

When fleet modernization is complete, the FAA aircraft fleet will include three makes and models of type rated aircraft.

> **How do you still complete the same amount of (or more) work with fewer aircraft? Flexibility and efficiency!**

The Future is Modular

How do you still complete the same amount of (or more) work with fewer aircraft? Flexibility and efficiency!

Instead of being dedicated primarily to a specific activity, like flight inspection or critical event response, each aircraft in the fleet will be multi-mission capable. In conjunction with fleet modernization, engineers in Flight Program Operations have been working to take the extensive suite of specialty equipment required for an aircraft to conduct flight inspection work and shrink it. Aircraft that are used for flight inspection right now have more than 860 pounds of equipment painstakingly hard-wired into them. Moving forward, aircraft will have tracks installed and a much smaller, much lighter, but equally capable modular mission system weighing approximately 260 lbs. The modular system can be quickly installed or removed to support multiple missions.

Fewer Aircraft, More Possibilities

Pilot training will also be more effective and efficient since the future fleet will include less aircraft types. There will be no need to reposition aircraft or pilots in order to play "find the match" with type ratings and aircraft.

Of course not all the magic will be in the air. Having a streamlined fleet simplifies maintenance. Engineers and maintenance personnel will receive more focused training on each aircraft type. The number of parts that will need to be stored, or procured, to fix aircraft when they do break down will be much smaller. Then again, because the aircraft will be younger, parts will also be easier, less expensive, and faster to find.

We stress the need to keep a safe distance — always important in aviation! But when you hear the call sign "flight check" on the radio at an airport near you, keep an eye out if you can safely do so, and know that the airplane and its crew are working hard to keep the system safe for all of us.

Kate Knorr is a senior advisor to the vice president of FAA's Flight Program Operations and a member of its policy and communications team. She is nearly always writing or editing something, whether it's an email, an article, a program plan, or a policy memo.

The FAA fleet of the future will be capable of flying different kinds of missions on short notice.

FLYING IN FORMATION

How FAA Flight Program Operations Partners with Other Agencies

By Terria Garner and Kate Knorr

As you know from other articles in this issue, the FAA owns and operates a fleet of jet and turboprop aircraft as a 14 CFR part 135 air operator. Our crews use these aircraft to perform unique missions like flight inspection, research and development support, and critical event response. But did you know that these unique missions grew out of partnerships across the federal government? Read on for more!

Getting Defensive

Flight Program Operations is a part of the FAA Air Traffic Organization, and a significant portion of its flight activity involves flight inspection. The flight inspection mission grew and flourished from the FAA's partnership with the Department of Defense (DOD). In fact, the FAA and DOD have been partners in the flight inspection mission for more than 60 years thanks to an executive order signed by President John F. Kennedy in 1962. That order shifted the responsibility for DOD flight inspection missions to include routine inspection of navigation facilities at all military bases worldwide and direct support during wartime or contingency operations to the FAA. While the FAA has responsibility, the agency has partnered with DOD to conduct the actual flight inspection of military navigation facilities for the past 28 years.

This successful, long-running interagency partnership brings significant benefits to the National Airspace System (NAS). Here's how it works. Flight Program Operations issues flight inspection credentials to military pilots and mission specialists after they complete rigorous specialized training. DOD, in turn, supplies the unique military

A King Air 300 gearing up to fly a mission.

equipment needed to conduct DOD flight inspection, and that equipment is installed on FAA aircraft. The FAA/DOD arrangement allows the Air Force to maintain a relatively small operational footprint of less than 50 active and reserve personnel combined, all of whom are focused on the operational conduct of flight inspection. DOD would otherwise need additional personnel to duplicate functions like training, program administration, and maintenance and operational oversight requirements.

For its part, the FAA gains access to an additional number of operational aircrews for day-to-day missions because military crews train for their wartime function by performing flight inspections in the NAS. Once qualified and ready to perform their wartime functions, DOD crews still fly specific flight inspection missions to maintain their proficiency, often alongside their FAA counterparts. The partnership represents a mutually beneficial arrangement for both DOD and FAA.

While there is potential danger associated within any combat zone, there is an element of pride and excitement on flight inspection missions in cooperation with the DOD. Missions have ranged from commissioning an instrument landing system in Iraq to checking a tactical air navigation transmitter in Bahrain, running an alignment check on a VOR for tactical air navigation in Jordan, and conducting a high-altitude radar inspection in Kathmandu, Nepal.

Military members serve a typical tour of four years (albeit with the opportunity to stay up to six years), so there can be significant continuity of personnel on these joint teams. By integrating Air Force crewmembers with seasoned FAA flight inspectors, Flight Program Operations can better prepare military crews for the challenging task of flight inspection in combat environments.

> **Flight Program Operations has launched to support the NTSB Go Team for many accident investigations you've likely heard about.**

Team building, inherent in the integration of FAA and military crews, is another benefit. FAA team members feel a connection to the combat mission and share in the success of the operations, while Air Force team members become well-versed in the complexities of flight inspection. Both FAA and military crews develop an appreciation for the function their counterparts perform in ensuring a safe airspace system. Best practices sometimes emerge across traditional organizational boundaries. Upon their air crews' completion of a flight inspection assignment, the DOD regains highly seasoned aviators with a strong foundation in instrument approach procedures and valuable interagency experience.

Polar Opposites

Another unique partnership involves the National Science Foundation (NSF). Every year since 2008, Flight Program Operations personnel in Alaska are getting ready for the North Pole's busy holiday season while another Flight Program Operations team is just getting back from the literal polar opposite — their annual mission to Antarctica. Through an interagency agreement with the NSF, Flight Program Operations provides flight inspection for navigational aids and instrument procedures that support

Flight Program Operations crew members gather for a group photo at the bottom of the world.

Flight Program Operations crews conduct flight inspections in Antarctica.

McMurdo and South Pole stations. For this task, the team uses the FAA's long range *Challenger* aircraft to inspect the navigation equipment and ice runways that support U.S. scientific interests at these facilities. This mission is always lengthy and complex; planning starts in April in order to have all of the pre-mission work completed for a fall mission. But recent years have been especially complex due to the patchwork of pandemic-related public health restrictions in countries the crew must traverse to get to Antarctica.

All Aboard

Another Flight Program Operations mission is critical event response and transportation. This task involves using FAA aircraft to transport people and equipment on official government business and during times of natural disaster and critical response to restore our aviation infrastructure. This mission has grown due to partnerships.

First formed in 1938 as the Civil Aeronautics Board, the NTSB's investigative function was part of different agencies through the decades. In 1974, Congress re-established the NTSB as a truly independent organization. Today, the NTSB conducts investigations and makes recommendations from an objective viewpoint. The NTSB investigates U.S. civil aviation accidents, as well as significant accidents in other modes of transportation. They work with a variety of technical experts to determine the probable cause of the accidents and issue safety recommendations to prevent future accidents.

Shortly after the NTSB was re-established as an independent agency, it entered into an agreement with the Department of Transportation (DOT) allowing the FAA to "provide air transportation for NTSB personnel to and from the scene of accidents/incidents." The NTSB monitors transportation incidents 24 hours a day, every day of the year, from its response operations center, which recently passed a benchmark of 25 years of uninterrupted service.

The NTSB Go Team's purpose is simple and effective: Begin the investigation of a major accident at the scene as quickly as possible, assembling the broad spectrum of technical expertise necessary to solve complex transportation safety problems.

"When the NTSB must launch to an accident, time is of the essence. Often airline schedules don't fit our needs," former NTSB Chairman Robert L. Sumwalt noted. "Having use of the FAA's planes and crews is critically important to us because it enables us to get on scene as quickly as possible. There's another benefit: having key members of the investigative team on the same plane allows the opportunity for the team to brief pertinent issues and the plan for once we land."

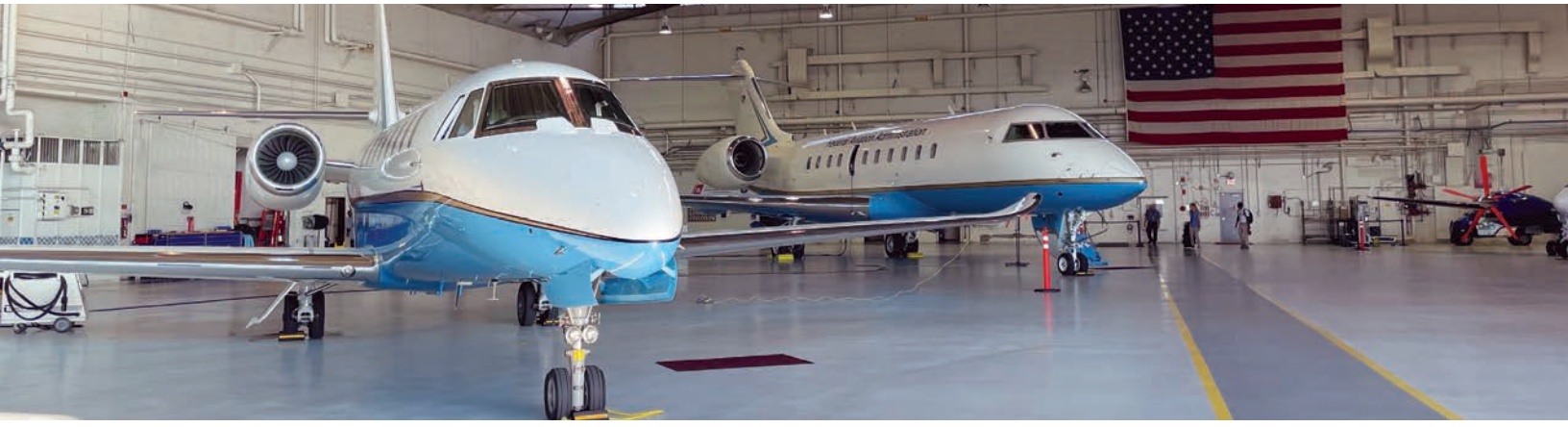
Accordingly, when an incident occurs and the decision is made to send the Go Team, Flight Program Operations personnel at Ronald Reagan Washington National Airport's Hangar 6 begin preflight planning. The FAA also has their own Accident Investigation Go Team that augments the NTSB's team with at least one or two of its investigators on each Hangar 6 launch.

Flight Program Operations also supports the Federal Emergency Management Agency's (FEMA) rapid transportation needs during hurricanes, floods, and wildfires, as well as the needs of the Transportation Security Administration (TSA).

Through the formation and maintenance of these strategic partnerships, Flight Program Operations aircraft and crews meet the mission of not only the FAA, but also contribute to the mission of other federal agencies and the military.

Terria Garner is a senior strategic communications specialist with the FAA's Office of Policy, International Affairs and Environment. She is passionate about contributing to efforts that assist minorities with access and opportunities in the marketing, media, and tech industries.

Kate Knorr is a senior advisor to the vice president of FAA's Flight Program Operations and a member of its policy and communications Team. She is nearly always writing or editing something, whether it's an email, an article, a program plan, or a policy memo.



Aircraft stand ready to meet the needs of FAA partners, whomever they might be.

A WORLD OF OPPORTUNITY

Your Aviation Dreams Can Take Flight in Flight Program Operations

By Kate Knorr and Allison Krumsiek

When you were young, staring dreamily out of your window during school, did you believe you could fly right into the future? Or maybe you dreamed about leaving on a jet plane? Or thought you could fly higher than an eagle?

How did you think you'd get there? Some kids who dream about working in aviation think about becoming a commercial pilot. Maybe they've flown somewhere on vacation and got to peek into or even visit the flight deck, marveling at all the displays and controls. Some people cannot help but gaze at everything flying across the sky and wonder where that flight is heading and if they may be at the controls of a flight one day. There are many pathways to realizing that dream. In civil aviation, it's learning to flight instruct, banner tow, or crop dust. In military aviation, it's flying everything from helicopters to fighter jets to heavy transports. If you're fascinated by flying, but being a pilot isn't for you, maybe you could become a flight attendant, dispatcher, or mechanic.

Let's face it, it's just as easy to daydream as an adult. Only instead of being in class, you're probably in a meeting, or on your eighth Zoom call of the day. Either way, whether you are a chronological kid or just a kid at heart when it comes to aviation, most people don't realize that there's another way for their dreams to take flight — with the Federal Aviation Administration!

Working with the FAA, whether it's as a pilot, a mission specialist, dispatcher, mechanic, engineer, or program manager, has some enticing benefits. Well sure, it does come with the full suite of federal government benefits like healthcare, annual and sick leave, and a surprising amount of work/life balance. But it also offers the opportunity to do work that just isn't done anywhere else or by anybody else. Let's take a look.

Pilots

Nobody flies the way that FAA's Flight Program Operations does. In order to conduct flight inspections, our pilots take off and land, but they also make multiple passes at very specific altitudes in order to assess their targets. Pilots also fly as part of the research, development, test, and evaluation (RDT&E) support and critical event response/transportation missions. For example, if you're flying an RDT&E support mission to evaluate 5G wireless network interference, you might also find yourself flying a team over the Super Bowl, like a Flight Program Operations team did in February 2022. Or you could be headed to somewhere that just experienced the worst day in its history because of a hurricane, delivering emergency relief supplies and the equipment needed to enable first responders to arrive on the scene.

> **Nobody flies the way that Flight Program Operations does.**

Like the airlines, Flight Program Operations does require its pilots to have an airline transport pilot (ATP) certificate or at least 1,500 total hours of flight time. Once pilots get to the FAA, we train them to 14 CFR part 135 standards, including all the usual topics like operational control, weight and balance, weather, principles of navigation, survival equipment, aircraft performance and airport analysis, instrument procedures, airport ground operational safety, crew resource management, and other aviation subjects. Knowing how to fly a plane is one thing, but knowing how to work with teams across the National Airspace System (NAS) in order to perform work like flight inspection, RDT&E support, and critical event response takes some special skills.

One of the unique things about pilots in Flight Program Operations actually is a benefit of the more traditional kind — you're likely to spend most of your weekends at home. That is, of course, as long as you're not on a trip to one of the more remote flight inspection locales that are under the FAA's purview — places like Antarctica, Guam, or Alaska.

King Airs are, and are envisioned to remain, an important part of the fleet. Can you imagine yourself in the flight deck?

Mission specialists need to be familiar with aviation and a lot of specialized equipment to do their job.

Mission Specialists

Are you the type of person who wants to be on the airplane, but is not responsible for flying it? Or maybe you have a pilot certificate, but it isn't at ATP level or you don't have 1,500 total hours of flight time. Then the spot for you could be in the back of the aircraft. Mission specialists have the opportunity to learn and use the highly specialized flight inspection and RDT&E equipment that is housed in the Flight Program Operations fleet. They take the measurements, record the observations, and file the daily flight log at the end of the day. An indispensable part of the team, these folks are around and on aircraft all the time. They know how to work with the pilots so as to accomplish the mission and let the pilots focus on the flying.

Additional pilot development programs under consideration may help mission specialists move into the pilot seat. The program will train these individuals as second-in-command pilots who can earn hours toward an ATP certificate, creating a generation of pilots who understand the mission back to front, not just front to back.

Scheduling and Dispatch

The Operations Control Center (OCC) is definitely the nerve center that keeps the rest of the Flight Program Operations body working at its best. OCC team members manage aircraft flight hours flown in support of our flight operations, improving scheduling processes and increasing scheduling efficiencies. The OCC dispatchers do so much more than release and receive flights. They provide flight following and all the work that one would expect, like initiating, diverting, and terminating flight operations; exercising operational control through flight release and flight locating; verifying pilot qualifications and aircraft airworthiness; advising on weather, and transmitting load manifests, among many other tasks. These positions require a FAA dispatch certificate.

But we're also asking them to think creatively and help us rethink how we plan out our work. This involves collecting new data, looking farther into the future, and doing

New pilots receive in-house training on emergency procedures, as captured by a member of the Policy and Communications staff.

a deeper dive into the analysis to ensure that work is done by the best crew and at the best time — ahead of schedule and without any interruption to the safety and efficiency of the NAS.

Mechanics

While flying missions is incredibly important, the core business of Flight Program Operations is conducting safe flight operations. Safe flights can't happen without a dedicated maintenance team taking care of our fleet. Remember, nobody flies airplanes the way that Flight Program Operations does. That means that our mechanics cannot be complacent. They are constantly called upon to solve hard problems and ensure the availability of aircraft to fly missions when needed. To ensure we are where we need to be in this area, Flight Program Operations holds a certificate as a 14 CFR part 145 repair station, and it's one of the few organizations in the country that has an accepted safety management system (SMS) that covers both a part 135 and a part 145 certificate.

In addition to hiring experienced mechanics, Flight Program Operations has teamed up with the federal Recent Graduate Pathway Program to accept candidates into a two-year maintenance training program. The program's primary goal is to recruit, train, and provide an entry-level experience to a recent graduate, in the federal government, after successfully completing a customized training program. This customized maintenance training helps candidates obtain an aerospace engineering technician position. The two-year training program provides a combination of in-classroom and on-the-job training, with work assignments similar to those done by current aerospace engineering technicians.

Engineers

Have we mentioned that nobody flies the way Flight Program Operations does? It's true, and it's because the work that we do is highly specialized, both in the back of the aircraft and the front. Aerospace engineering technicians in Flight Program Operations need to be able to think nimbly and creatively about how to accomplish the one-of-a-kind missions that we need to achieve. Do you need to be able to outfit an aircraft in short order to help measure potential 5G interference? No problem. Is the cost of fuel hitting the stratosphere? Ask yourself how we can streamline and miniaturize our bread-and-butter flight inspection equipment so that it weighs hundreds of pounds less. Even better, make it easily removable so that aircraft can be fitted with seats instead of equipment racks to more easily support our critical response/transportation mission.

Program Administration

Even the best pilot or mechanic can't get an airplane off the ground if nobody has purchased the fuel. The administration team in Flight Program Operations still has to have, or develop, a lot of specialized knowledge about aviation. They use it to do a little bit of everything, short of actually flying or fixing the aircraft.

From procuring the fuel, to processing travel, to maintaining contracts, to producing data for analysis, to attracting, recruiting, and hiring the best talent, to keeping up with the paperwork on the official partnerships that Flight Program Operations and the FAA enter into, there isn't a lot that doesn't pass this administrative team. Their diverse backgrounds and education allow them to tackle any challenge thrown at them.

Policy and Communications

In addition to following regulations and policy, Flight Program Operations provides the national policy and standards for all FAA flight operations, for both traditional and remote

aircraft systems. That means that anytime anybody flies anything for the FAA, whether they're on board, or controlling it from the ground, they do so according to policy that Flight Program Operations has developed and coordinated. The people who work on policy and communications within Flight Program Operations not only have the opportunity to work alongside aviation subject matter experts to help build policy, they then get to talk about it in plain language, sharing it with larger audiences across the organization, across the agency, and with the American public.

> **Flight Program Operations offers a wide range of aviation career opportunities at many locations throughout the United States.**

Safety and Training

Remember that first-of-its-kind SMS that we mentioned earlier? It was developed by a cross-organizational team from all the parts of Flight Program Operations. But it's administered, along with other crucial safety and safety reporting programs, by a team specifically dedicated to flight program safety.

Team members board one of the Challengers.

Flight Program Operations has almost 400 team members, more than 300 of whom work for Aircraft Operations and Aircraft Maintenance.

Why mention safety and training in the same breath? It brings us right back to the fact that nobody flies like Flight Program Operations. In the end, both flying and maintaining aircraft, as well as the missions themselves, are highly specialized and highly technical. Becoming, and remaining, a pilot or aircraft mechanic is hard. There is a lot of information to remember, and specialized processes have to be repeated the same way every time. In order to maintain safe operations, training and safety have to continuously improve in unison. Sometimes it's standard training to ensure that pilots maintain their currency in a particular aircraft type. At other times it is specialized training on how to perform flight inspections. Our recurrent training is periodically customized to focus on issues identified in our safety system so we can continuously improve.

A Team, Together

Our mantra in Flight Program Operations is, "One Team, One Mission!" We are part of the FAA Air Traffic Organization and offer a wide range of aviation career opportunities at many locations throughout the United States. Even though our team of aviation professionals represents diverse backgrounds, locations, and specialties, they work hand-in-hand to conduct safe operations and accomplish the mission. To learn more about career opportunities available at the FAA visit faa.gov/jobs.

Kate Knorr is a senior advisor to the vice president of FAA's Flight Program Operations and a member of its policy and communications team. She is nearly always writing or editing something, whether it's an email, an article, a program plan, or a policy memo.

Allison Krumsiek is a technical and communications writer for the FAA's Flight Program Operations policy and communications team. She carries a red pen in her purse and can often be found editing signs around the D.C. area to conform to the Chicago Manual of Style guidelines on serial commas.

JOHN MEEHAN

WHO'S WATCHING THE SKIES?

As drone operators, are we screen-watching camera operators, or are we pilots? The FAA says we're pilots, which means we have a responsibility to see and avoid other aircraft (and persons and property on the ground).

Studies on collision avoidance show that it takes, on average, at least 12.5 seconds for a pilot to detect, decide, and act to avoid a collision. (See Advisory Circular 90-48D, change 1 for more information about collision avoidance for pilots). For the drone community, a collision avoidance protocol must include hazard identification and a risk assessment (likelihood and severity) of encountering low flying helicopters or agricultural aircraft that may be operating below 400' above ground level (AGL). This is especially important for those who operate in urban environments near hospital helipads or in rural settings where aerial application activities routinely occur. In reality, an unexpected encounter with a low flying traditional aircraft means there is not much time to react. This is because even an aircraft traveling at a relatively slow 100 knots ground speed covers just over 168 feet per second. In 12.5 seconds, it can cover over ½ mile over the ground before the drone pilot can react, according to those studies.

When we operate our drones, do we see enough of the horizon in all directions, to detect a low flying aircraft, decide what to do, and then maneuver out of the way? If we are screen watching, aren't we really acting as a camera operator and not an aircraft pilot who has the responsibility to "see and avoid"? If we plan to screen watch, that's okay, but only if you have at least one, and possibly more, visual observers (VO) and place them in locations where they can see the airspace down to the horizon so there is time to get the drone out of the way. Remember, even if we have a VO, the drone pilot still needs to be in a position to look up and see the drone and the surrounding airspace to avoid a collision from where they are. Remember, where you choose to fly can have a big impact on how you can see and avoid other aircraft!

When choosing a flying location, consider flying below the height of surrounding structures, since they are likely to keep traditional aircraft higher. In order to operate safely, we need to see much more than just the drone itself.

Drone Controller

As drone pilots, we have a responsibility to see enough of the surrounding airspace to give way and not interfere with traditional aircraft. We should never assume traditional aircraft only operate above 500 feet AGL, and we need to be aware that other aircraft can approach our location unannounced from any direction at very low levels. When operating a drone, it's the drone pilot's responsibility to see and avoid other aircraft. In fact, it is required by regulation!

> **SEEING AND AVOIDING AIR TRAFFIC IS OUR RESPONSIBILITY WHEN OPERATING DRONES.**

Remember, in order to meet our responsibility of "see and avoid," it is imperative that we can see enough of the sky to detect other aircraft and maneuver the drone out of the way. FAA regulations require drone pilots to give way, and never interfere with other aircraft. Conduct a risk assessment and identify potential hazards and ideal site selection in your pre-mission planning. Fly smart! Fly safe!

John Meehan is an aviation safety analyst with the General Aviation and Commercial Division's Safety Outreach Branch.

LEARN MORE

FAA Advisory Circular 90-48D, Pilots' Role in Collision Avoidance
bit.ly/3vIuQ66

Risk Management Handbook
bit.ly/3QbnmkO

ONE TEAM, ONE MISSION: HOW THE FAA MAINTAINS ITS FLEET

Throughout this issue, we've explored in great detail the diverse set of missions performed by the FAA's Flight Program Operations and their significant contribution to the safety of the National Airspace System (NAS). None of these services would be possible without the ability to properly maintain a fleet that performs such a variety of critical services in some of the most extreme conditions and challenging environments on the planet. There is a team of more than 240 people working diligently around the clock, largely behind the scenes, to keep the FAA's fleet of nearly 40 aircraft up and running. Let's take a closer look at this operation and some of the secrets to its success.

The Flight Program Operations maintenance organization is composed of two separate groups: the Maintenance Support Group and Maintenance Services Group. The former operates under the authority of a 14 CFR part 135 air operator certificate. This group includes a combination of federal and contract employees under the following units: Maintenance Control and Planning; Maintenance Program Standards; Quality Assurance; and Training and Engineering. The Maintenance Support Group creates and maintains the programs, technical data, maintenance schedule, and engineering support for the fleet.

Complementing the work of the Maintenance Support Group is the Maintenance Services Group, which operates under the authority of a 14 CFR part 145 repair station certificate. This group is located primarily at the Oklahoma City maintenance facility at the FAA's Mike Monroney Aeronautical Center and has seven satellite stations in Anchorage, Alaska; Sacramento, Calif.; Battle Creek, Mich.; Fort Worth, Texas; Atlantic City, N.J.; Washington, D.C.; and Atlanta, Ga. There are approximately 170 aircraft technicians, a group that includes both federal and contract employees assigned across the line stations and main base facilities. They perform approximately 85% of all scheduled maintenance inspections for the fleet.

As both a certificated part 135 operator and part 145 repair station, the maintenance team is required by regulation to follow the part 135 Continuous Airworthiness Maintenance Program (CAMP) without deviation. This means that the Maintenance Services Group must perform all scheduled inspection, maintenance tasks, repairs, and modifications in accordance with the part 135 job cards, maintenance manuals, engineer orders, or other technical data.

> WE UNDERSTAND THAT CONTINUOUS IMPROVEMENT IS THE NAME OF THE GAME, SO NO MATTER HOW GOOD WE GET, WE CAN ALWAYS BE BETTER.

"As the FAA, we believe that we should set the standard for professional performance," says Michael Bianchi, the director of maintenance for the Flight Program Operations organization. "We understand that continuous improvement is the name of the game, so no matter how good we get, we can always be better."

To support that mantra, Bianchi implores his staff to continually ask what went well, or not so well, after every inspection.

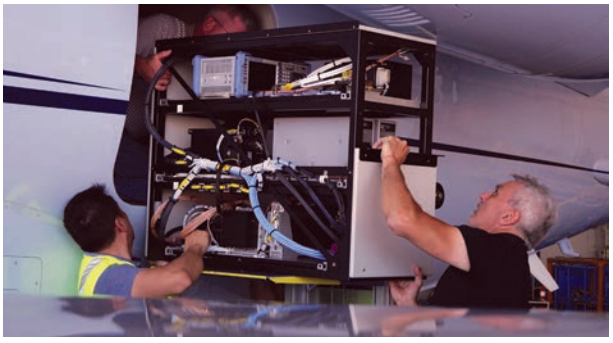
This philosophy has proved critical to the group's success, especially given the variety of aircraft types and the extreme conditions and circumstances under which many of the aircraft in the fleet are flown. There is also the matter of having an average 30-year fleet age, which exponentially increases the discovery rate of corrosion, fatigue cracking, and structural failures during scheduled inspections.

"The aircraft equipment and component failure rates are much higher than those of newer aircraft," says Bianchi, "which may negatively impact our mission and our overall support of the NAS if not addressed."

Despite these challenges, the Flight Program Operations maintenance team has shined in recent months, boasting an impressive average of 20 mission-ready aircraft per day. Bianchi credits this achievement in operational availability to a practice of yield management, where aircraft are generally not flown to zero time left before inspection.

"An 80/20 yield posture works well, which doesn't burn up too much 'green time' and still allows for flexible planning," Bianchi explains.

Further boosting the fleet's efficiency and availability is the development of its Modular Mission System (MMS), a truly novel idea that allows aircraft to more easily transition between activities. The MMS is essentially a compact shelf rack that houses all required equipment for flight inspection, including radio receivers, a spectrum analyzer, and a computer that can quickly be swapped in and out of an aircraft depending on its mission. This is a welcome change in fleet versatility given that the existing equipment on inspection aircraft is hard-wired into the aircraft and weighs about 860 pounds. Moving forward with the MMS will allow the agency to save on several precious commodities: space, weight, time, and money.



Members of the maintenance team unload a new Modular Mission System (MMS) from a Challenger.

Yet another effort to improve efficiency is the maintenance team's planned migration to an electronic record-keeping system. This will help make maintenance operations appear in real-time and will allow for electronic logbook entries. For example, a pilot can make an electronic logbook entry for a discrepancy, which is then retrieved and handled by the appropriate technician. Maintenance control can see in real-time when this is completed and more promptly release the aircraft back to service. The same thing would occur for inspections. Electronic inspection cards will allow planners to see the status of inspections in real-time and plan accordingly to get that aircraft mission-ready as soon as possible. The FAA plans to make this transition in 2023.

Of course, training and education is a core element to any organization, especially when highly technical procedures and the potential for human error is involved. To aid with educating and supporting a positive safety culture among the maintenance crews, Bianchi has set a goal for having 100% of the group's maintenance technicians enrolled in the FAA Safety Team's AMT Awards Program. He aims to receive a Gold Employer Award of Excellence in the first year, and is striving for the Diamond award in the near future. See Advisory Circular 65-25: *Aviation Maintenance Technician Awards Program* for more information on this program that encourages AMTs to seek out recurrent training (see Learn More section for link).

An advocate for thorough communication, Bianchi also develops regular PowerPoint messages that are sent to team members at all the stations across the system. Dubbed the *Monthly Maintenance Message*, these notices keep everyone in the loop on important personal health and safety issues, regulatory reminders, staff news, and a snapshot of the maintenance team's scorecard (metrics) for the month. These messages will become even more far-reaching once electronic record keeping enables everyone to have their own tablet.

> **THE FLIGHT PROGRAM OPERATIONS MAINTENANCE TEAM HAS SHINED IN RECENT MONTHS, BOASTING AN IMPRESSIVE AVERAGE OF 20 MISSION-READY AIRCRAFT PER DAY.**

Managing the maintenance of a diverse fleet that flies more than 14,400 hours a year to all corners of the globe and in weather conditions across the spectrum is definitely no small feat. Thankfully, the Flight Program Operations maintenance team is up to the task by embracing ingenuity and remaining tirelessly dedicated to supporting the greater mission of improving NAS safety.

"We have a very solid team composed of great leaders and public servant aviation professionals," says Bianchi. "They absolutely understand the importance of our noble mission to keep the flying public safe."

Tom Hoffmann is the managing editor of *FAA Safety Briefing*. He is a commercial pilot and holds an A&P certificate.

LEARN MORE

FAA's Flight Program Operations page
faa.gov/air_traffic/flight_info/flight_ops

AMT Awards Program
bit.ly/AMTawards

Repair Station Operators (Part 145)
faa.gov/hazmat/air_carriers/operations/part_145

NEW NAME, CONTINUED FOCUS ON THE SAME: SAFETY

Admittedly, GAJSC is not the kind of "roll off the tongue" aviation acronym like PIREP or NOTAM, but that's just the unfortunate nature of some abbreviations. Attempts to phoneticize GAJSC rendered a few contestants like "Jazz-ic" or "Gah-zic," neither of which stuck. Maybe that's a good thing. However, a change last spring made this moniker a bit more memorable. The GAJSC is now the General Aviation Joint Safety Committee. Perhaps that's what some of you already thought. It was formerly known as the General Aviation Joint Steering Committee. While the name may have changed, what hasn't changed for the 10-plus years since the GAJSC's revitalization is this group's commitment to helping reduce the incidence of fatal GA accidents through forward-thinking, non-regulatory, and proactive safety strategies. It is the *Joint* Safety Committee because it is the GA community, industry, and the FAA working together to reduce the risks associated with fatal GA accidents.

> **THE GAJSC IS NOW THE GENERAL AVIATION JOINT SAFETY COMMITTEE.**

In addition to the name change, GAJSC now sports a newly designed website, GAJSC.org. The intent was to modernize the existing site and ensure relevant safety information produced by GAJSC is made readily available to all stakeholders. The redesign also helped streamline the content and highlight key reports and areas of research.

For example, the Reports and Documents section highlights key safety reports, like the Midair Collision and the COVID-19 Best Practices reports, while the Safety Enhancements (SE) section highlights the GA safety and mitigation strategies derived from the GAJSC's main accident analysis working group areas: Loss of Control - Inflight, System Component Failure - Powerplant, and Controlled Flight Into Terrain. Efforts are currently underway to better organize the risk mitigations and implementation details according to subject area and industry segment (pilot, mechanic, manufacturer etc.). The newest working group is focusing on accidents involving component failures that are non-powerplant related. The final report from this group will help develop additional safety enhancements for this critical accident causal factor.

Since the SEs are really the pointy tip of the safety spear for the GAJSC, the FAA and the FAA Safety Team (FAASTeam) maintain an ongoing focus of these important safety areas with its #FlySafe topic of the month campaign. Our landing page for FlySafe content is medium.com/faa/flysafe/home or you can go to our archive of printable PDF fact sheets at bit.ly/GAFactSheets. These monthly messages are distributed via the FAA's various social media channels (Facebook, Twitter, Instagram, LinkedIn and YouTube). Expect to see some revitalized branding with these safety messages that are designed to provide pilots, operators and mechanics a brief overview of an SE subject area, some useful tips and best practices, and additional resources for greater details. Short on time? Take advantage of the Medium blog page's listen feature that lets you play an audio version of each article. You'll find the play button above the title for each blog post. There's also the *57 Seconds to Safer Flying* video series that covers many of the most common causes of GA accidents. There's more than 25 videos in the archive here bit.ly/57Seconds.

GAJSC
GENERAL AVIATION
JOINT SAFETY COMMITTEE

If you crave something a bit more structured, the FAASTeam produces several webinars and in-person seminars for each FlySafe topic of the month. Just search the Seminars and Webinars section of FAASafety.gov to see what's happening in your neck of the woods.

These are just some of the ways the GAJSC is working to get out its important safety message to help reduce the GA accident rate. We encourage you to check out this information in whatever form you prefer and make it part of your monthly routine to keep your aviation skills sharp. Despite the tongue-twisting name, you can rest assured that the General Aviation Joint Safety Committee isn't tongue-tied when it comes to making GA safer for everyone.

Tom Hoffmann is the managing editor of *FAA Safety Briefing*. He is a commercial pilot and holds an A&P certificate.

EDWIN MILLER

THE PROMISE TO COME HOME EVERY NIGHT

Long ago in a galaxy far, far away, I was an Army first lieutenant attending the *Apache* qualification course in Fort Rucker, Ala. Being a kid who grew up with Star Trek and video/arcade games, I considered myself pretty tech-savvy. But none of that prepared me for the gadgets on the Boeing AH-64A *Apache*. I just had finished watching the movies "Fire Birds" and "Iron Eagle" the week before, but here I was getting into this modern-day helicopter with the latest technology. My instructor was always asking me trivial questions, but this one hit home and has stuck with me for a career of flying: "Why do you have all of these great features on this aircraft?" My answer: "Because the manufacturer designed it like that for maximum effect on the battlefield." His answer: "No lieutenant, it is because the taxpayers want you to bring this aircraft and your crew home every night!" Let that sink in.

The *Apache* I flew in 1993 was equipped with special vision systems that used a head-up display (HUD) attached to the flight helmet to enhance both night and day vision. Fast forward 30 years. Now we are able to display almost all of the helicopter's instruments and symbology onto our helmets or onto a screen so you are always looking outside the aircraft. Having this capability helps you avoid impacting the ground, power lines, or antennas. It also creates a safer flying environment for you and your passengers or crew. Modern advancements in vision system technologies also offer the potential to "see" clearly in degraded visual environments, a common operational challenge for helicopters. These systems help helicopter pilots operate more safely in areas that lack the infrastructure for standard approaches associated with normal airport operations.

The aviation safety community has risen to the challenge, developing a wide array of options that pilots can use to "see" better in their helicopter or airplane. Vision systems comprise a suite of technologies that provide visual data to the pilot to help them see and understand surrounding terrain. These technologies include enhanced vision systems (EVS), synthetic vision systems (SVS), or a combination of the two, known as combined vision systems (CVS). Another term commonly used is enhanced flight vision systems (EFVS), which typically describes a system with an EVS and a heads-up display. The challenge here is that rotorcraft typically have less space for this equipment than many fixed-wing airplanes. But the FAA and industry vision systems developers are working to bring the best solution to the operational user.

At the FAA's Technical Center in Atlantic City, N.J., a team of engineers, human factors specialists, and pilots is working on several different vision systems concepts. Being on the pilot side of this testing is exciting and takes me back to my earlier days as an arcade aficionado. One thing is for sure: technology is getting better, and with it comes marked improvements in flight safety. Working with these great professionals is an honor, but working on accident reduction is an even greater honor. The FAA, the United States Helicopter Safety Team (USHST), and many other industry experts believe that some type of vision systems technology will be a must-have item in the future to improve a pilot's situational awareness. The overall goal is to make sure that everyone comes home to their loved ones every night.

Photos courtesy of the U.S. Army

Edwin Miller is an aviation safety inspector with the General Aviation and Commercial Division's Operations Branch.

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 15,000 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.

Glad for the Gladwell

I have spent significant time and energy developing the curriculum for my flight school to encompass the important concepts of the quest for expert proficiency. Malcolm Gladwell's books have sparked interesting channels of thought with the idea that an expert pilot is foremost a superior decision-maker. Articles in the "Handbook" have supported this. I've been exploring the importance of executive functioning from the discovery flight through CFI training.

My favorite statement to make to prospective customers and current students is that it seems the FAA started embracing this "stuff" decades ago, but so many of "us CFIs" have been so entrenched in the tasks at hand the we keep forgetting to embrace the way we think and process (P-P-P). We've been having great success with capturing students and training safe pilots. I just wanted to pause and thank you for writing your article!

— Paul

Hi Paul — Thanks for your note and for your comments on expert proficiency — glad you liked the Gladwell mention in the Jan/Feb 2021 Postflight department (bit.ly/FAASB-archive). Like you, I am a big fan of his work.

Your ideas for CFI training are intriguing. If I could suggest another item to consider in connection with CFI training, have you ever read "The Experience Economy?" It traces the evolution from agrarian to industrial to service to what the authors call the "experience economy" of the present. The next and final stage would be the "aspirational" economy. I won't try to summarize the book here, but I have always thought that flight schools and their instructors could benefit if they were to structure and market flight training as both "experience" and "aspiration." Customers would benefit as well from training that is more purposeful.

Maintenance — It's Not Just for Manned Aircraft

Drones need maintenance too. Make sure to review the maintenance checks provided by the manufacturer. Perform these drone maintenance checks before and after each flight to keep your drone in top shape. Learn more at bit.ly/3whoUSG.

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

SUSAN K. PARSON

VERIFY, THEN TRUST

One must verify or expel his doubts, and convert them into the certainty of Yes or NO.

– Thomas Carlyle, Scottish Philosopher

The "trust but verify" maxim has been a conversational commonplace since the 1980s. But it gained a whole new meaning for me as we have worked to develop this particular issue of *FAA Safety Briefing*. Flying in bad weather of any kind — to include the storm system I'm watching from the window at this writing — requires reliance on, and trust in, the accuracy of an array of navigational equipment.

ON BEHALF OF THE *FAA SAFETY BRIEFING* MAGAZINE STAFF, I WANT TO THANK EVERYONE IN AND AROUND FLIGHT PROGRAM OPERATIONS FOR THEIR SUPERB SUPPORT AND SHARED PASSION FOR PRODUCING THIS ISSUE.

Like others, perhaps, I was somewhat aware before now that "somebody" at FAA had responsibility for ensuring the necessary precision. Having been around this agency for the better part of two decades now, I probably could have told you that the "flight check people" do that work. Admittedly, though, my knowledge of Flight Program Operations was pretty limited before now. As someone who has always loved both aviation and "behind-the-scenes" glimpses, it has thus been a real treat to learn about the varied functions that my colleagues in this part of the FAA perform to maintain safety in the National Airspace System (NAS) — and to enable those who use the NAS as pilots or as passengers to know we're going to get precise navigational guidance without worrying about how that happens.

Extensive equipment, compact seating in agency King Airs.

Kudos and Shout-outs

It has also been a pleasure for the magazine team to learn and share information about so many other functions that involve our Flight Program Operations colleagues. Their dedication, their passion for what they do, and their enthusiasm for aviation clearly came across in every conversation and interaction we had. So did hints of their apparently bottomless store of personal aviation lore. While production and space constraints limited the scope of content for this issue, I heard enough bits of some awfully interesting "there I was" anecdotes to wish we could all sit down over dinner sometime to hear more. We all hope those sentiments came across in these pages, and that you found plenty of useful tips on safety (e.g., flying around "flight check"), as well as interesting information on how your aviation-loving colleagues at FAA make so many contributions to navigation systems so the rest of us can take accuracy for granted.

On behalf of the *FAA Safety Briefing* magazine staff, I want to thank everyone in and around Flight Program Operations for their superb support and shared passion for producing this issue. Special thanks to Mary Ladner, who made the first contact with us last fall, and to members of her team — Mariellen Couppee, Teria Garner, Kate Knorr, and Allison Krumsiek — whose diligent efforts are visible in this issue's content. Now about that dinner ...!

Susan K. Parson (susan.parson@faa.gov) is editor of *FAA Safety Briefing*. She is a general aviation pilot and flight instructor.

LORRY FABER & JOHN JEFFERS

Pilots, FAA Flight Program Operations

Two pilots, both alike in dignity; in fair airspace, where we lay our scene; from polar ends, a call out of flight check; where civil servants make safe the skyways …. Okay, don't worry — we're not talking about Shakespeare plays here. Rather, we are meeting two exceptional pilots who manage teams critical to keeping our airspace safe.

Let's start our story with Lorry Faber, the current chief pilot for the FAA's Flight Program Operations. She started in high school with a front-seat airplane ride.

Lorry Faber

"I was fascinated seeing the world in 3D," Lorry said. "In that moment I learned there was an exciting and exclusive club privileged to see the world from a different perspective. I wanted in!"

Lorry got in through the military. Flying mostly helicopters, her career spanned the regular, guard, and reserve components of the Air Force before retiring. While flying with the Alaska Air National Guard, she was paired with a pilot who worked full-time with the FAA's Anchorage Flight Standards District Office (FSDO). This pairing propelled Lorry to her next opportunity.

In 1998, Lorry joined the FAA, working in aircraft certification and flight testing at the William J. Hughes Technical Center in Atlantic City. She regularly flies for currency with her airline transport pilot (ATP) and rotorcraft flight instructor certificates.

"I am very lucky to have a career that values my ability to fly," she notes. "My FAA work is about serving the GA community. From testing, implementing, and inspecting GPS approaches to improvements like LED lighting, my team and I have touched the lives of many GA pilots to ensure their world is safe and their concerns are heard."

Next we take you to a farm in Georgia. This is where John "J.D." Jeffers, Jr., manager of the Western Pacific Flight Operations Team that oversees teams out of Sacramento International Airport and throughout Alaska, first got hooked on aviation.

"I watched crop dusters perform an airborne ballet spraying a field of cotton," J.D. said. "I was mesmerized by how gracefully they flew at low altitude while missing towers and power lines." He was also inspired by local WWII pilots through personal interactions.

J.D. started flying at an early age. He owned and flew a Piper J-3 Cub around the state, stopping at every pancake breakfast and hamburger cookout he found. Building flight hours provided opportunities to move into larger, more complex aircraft.

To finance his "fun flying," J.D. became an FAA air traffic controller.

John Jeffers

"I loved ATC and the people I worked with," he notes. "It was exciting, dynamic work, and I flew on my off days."

One random day, an FAA "flight check" crew landed for fuel and lunch. J.D. and other controllers departing after a shift change took the crew to lunch. Conversation led to the realization that J.D. had the right qualifications, and J.D. has spent the last 20 years flying flight inspections. He now lives and flies in Alaska.

Two pilots, two stories — one piece of advice from both.

When you hear "flight check" on the radio, take heed; go hence, to have more talk of these great deeds; when flight check is in the air, do not despair; strange maneuvers fly forth, fly safe, stay calm; avoid the area, we're almost done!

Paul Cianciolo is an associate editor and the social media lead for *FAA Safety Briefing*. He is a U.S. Air Force veteran, and an auxiliary airman with Civil Air Patrol

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Air racer and aerobatic pilot Vicky Benzing dives into the latest safety info with *FAA Safety Briefing*.

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