March/April 2026

FAA Safety BRIEFING

Rotorcraft Safety Insights

Federal Aviation Administration

7 The USHST – What it Means for Safety

16 From Fixed-wing to Whirlybird – How to Become a Rotorcraft Pilot

20 High Stakes at Low Altitudes

U.S. Department
of Transportation

**Federal Aviation
Administration**

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ABOUT THIS ISSUE…

The March/April 2026 issue of *FAA Safety Briefing* focuses on the realm of rotorcraft operations. Articles in this issue focus on the real-world risks helicopters face, along with insights on the FAA's strategy to improve safety in this dynamic operating environment.

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FAA Safety BRIEFING

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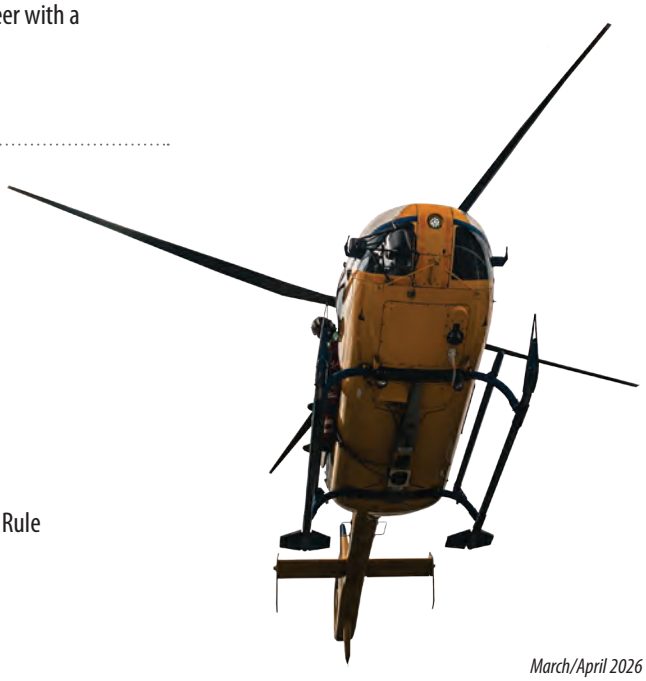


ROBERT RECKERT, ACTING FLIGHT STANDARDS SERVICE DEPUTY DIRECTOR

VENTURING INTO VERTICAL AVIATION

Did you know there are more than 12,000 helicopters and 32,000 helicopter pilots flying in the United States? It's a smaller community compared to fixed-wing aviation, but the rotorcraft world is incredibly dynamic — and absolutely essential. From emergency medical flights and infrastructure inspections to agricultural work, tourism, and rapid response missions, helicopters fill roles no other aircraft can. With that kind of responsibility, safety has to be front and center. That's why this issue of *FAA Safety Briefing* takes a deep dive into vertical aviation and the FAA's ongoing efforts to strengthen helicopter safety.

Before we get into the details, I should introduce myself. I'm Rob Reckert, currently the acting deputy director for the Office of Safety Standards in the Flight Standards Service. I've been around helicopters for most of my life, and I've been lucky enough to experience them from just about every angle. I started out as a helicopter mechanic, then earned my wings through the Army's Warrant Officer Flight Training Program. My active-duty career took me to Korea, Fort Campbell, Ky., and Iraq as an AH 64D *Apache Longbow* maintenance test pilot, and later into the Army National Guard as an HH 60M *Black Hawk* standardization instructor pilot. After leaving active duty, I flew as a part 135 helicopter air ambulance captain. I have also been an aircraft owner, restoring an award-winning airplane.

I joined the FAA in 2008, and since then, I've worked in a variety of roles that let me blend my background with my passion for safety and innovation. Today, I help develop and oversee the policy, guidance, and regulations for civil aircraft operations — work that keeps me connected to the aviation community I care so much about.

I also serve as the government co-chair for the U.S. Helicopter Safety Team (USHST), a group of dedicated volunteers from government and industry who are committed to improving helicopter safety culture and performance. They produce everything from educational videos to the groundbreaking, confidential USHST Peer Pilot Program. You can learn more about their work in this issue's article, "The USHST — What It Means for Helicopter Safety."

Rotorcraft operations cover a huge range of missions, and each one comes with its own challenges. If you're interested in how these segments differ — and what the data tells us about risks and mitigation — check out "Safety by Segment."

> **I ENCOURAGE EVERY PILOT — REGARDLESS OF WHAT CATEGORY OR CLASS OF AIRCRAFT THEY OPERATE — TO LEARN MORE ABOUT THE AIRCRAFT THEY SHARE THE SKY WITH.**

Thinking about becoming a helicopter pilot? Or maybe you're considering a transition from military to civilian flying? We've got you covered in "From Fixed-wing to Whirly Birds," which also highlights some unique career paths you might not have considered.

We're also excited to share some of the cutting-edge research happening at the FAA's Vertical Flight Aviation Safety Technologies Laboratory and Cockpit Simulation Facility. Their work explores how new technology can make rotorcraft training safer and more effective.

Rob Reckert flying an HH-60M *Black Hawk* with the Army over New England.

I know many of our readers come from the fixed-wing side of aviation and may not share my enthusiasm for rotary-wing flight. But I encourage every pilot — regardless of what category or class of aircraft they operate — to learn more about the aircraft they share the sky with. Understanding how other aircraft operate and the hazards they present, can make a real difference. Just as fixed-wing pilots need to be mindful of wake turbulence from large jets, they should also understand the wake hazards created by helicopters. And helicopter pilots, who often enjoy excellent visibility, benefit from understanding how fixed-wing design features can limit a pilot's ability to see and avoid.

At the end of the day, one of the best safety mitigations is a commitment to continuous learning. Use this issue as a chance to expand your aeronautical knowledge, sharpen your situational awareness, and strengthen the sense of community that keeps all of us safer in the air.

AVIATION NEWS ROUNDUP

First National Advanced Air Mobility Strategy Launched

U.S. Secretary of Transportation Sean Duffy announced the nation's first-ever Advanced Air Mobility (AAM) National Strategy, setting an ambitious roadmap to accelerate American aviation innovation and transform our skies for the better.

The strategy and accompanying action plan outline 40 recommendations to safely and efficiently support AAM operations. The strategy will also help advance President Trump's "America First" agenda — unleashing America's economic strength and ensuring the U.S., and not our adversaries, remains a global leader in next-generation aviation.

AAM is a rapidly emerging aerospace sector focused on safely and efficiently integrating highly automated aircraft into U.S. airspace. AAM is not a single technology but rather a range of innovations, particularly new aircraft types that typically operate below 5,000 feet, to transport people and packages more efficiently than ever before. Beyond aircraft, AAM requires a modern support system, including a skilled workforce, upgraded infrastructure, and clear regulatory frameworks.

The action plan gives high-level implementation items across four distinct strategic action phases, referred to as **LIFT**. These phases will advance research, stakeholder engagement, policy development, and technical deployment.

1. **Leverage** existing programs to support innovation and begin operations.
2. **Initiate** engagement with partners, research and development, and smart planning.
3. **Forge** new policy and models responsive to public needs.
4. **Transform** the aviation ecosystem.

Visit bit.ly/AAM_Future for more information.

Runway Safety Bed Stops Skidding Plane

The FAA's commitment to the safety of the National Airspace System (NAS) was on display with an engineered materials arresting system (EMAS) save in September. At Roanoke-Blacksburg Regional Airport (ROA) in Virginia, an airplane was safely stopped by the EMAS bed at the end of the runway. The system, upgraded last year, was used for the first time that day, and it worked exactly as designed.

Thanks in part to the dedicated work of FAA employees, travelers and crews walked away safely. When the FAA shared the story on its X account (@FAANews), the post generated more than 1 million views and drew widespread praise.

Across the country, there are 122 EMAS installations at 70 U.S. airports. These systems, and the people who make them possible, continue to prevent accidents and protect lives. Safety is and will always remain the FAA's top priority. EMAS is just one example of how the FAA workforce makes a real difference every day — keeping travelers, flight crews, and aircraft safe.

Check out the X post at bit.ly/4aSNeP1.

The FAA's engineered materials arresting system makes a save at Roanoke-Blacksburg Airport (ROA).

#FLYSAFE GA SAFETY ENHANCEMENT TOPICS

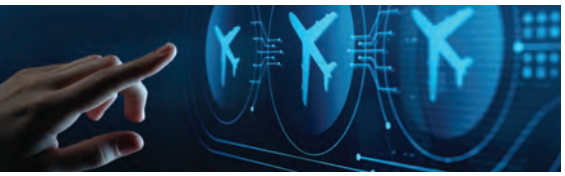
Please visit bit.ly/FlySafeMedium for more information on these and other topics.

MARCH

Human Factors and WINGS

APRIL

Angle of Attack Awareness



Modernizing the Notice to Airmen System

Recently, the FAA deployed the first phase of a brand-new Notice to Airmen (NOTAM) service. The NOTAM service, which provides critical safety alerts about changes in the airspace, was originally built in 1985. It has experienced multiple outages in recent years, including a nationwide failure in 2023. This important deployment milestone was achieved on time and on budget.

The new NOTAM Management Service (NMS) began operations on Sept. 29, 2025, initially distributing NOTAMs to early adopter stakeholders. This initial deployment establishes the framework for the new service, enabling testing and validation with early user adopters. The full transition to the new single-source NOTAM service is on track for late Spring 2026.

NOTAMs communicate temporary changes such as runway closures, airspace restrictions, and obstructions to pilots and flight planners. More than four million are issued annually.

The new NMS has a streamlined, modern interface. It provides near-real-time data exchange, enabling efficient data flows and better stakeholder collaboration. The system is securely hosted in the cloud and has a scalable and resilient architecture designed for high availability.

For additional information on the new system, visit nms.aim.faa.gov.

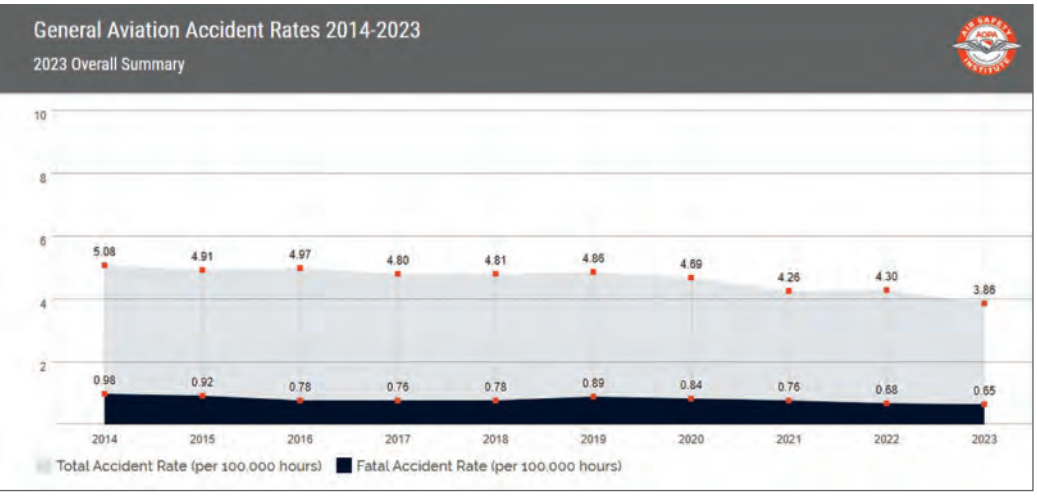
35th Richard G. McSpadden Report

AOPA's Air Safety Institute released the 35th Richard G. McSpadden Report, which analyzes general aviation accidents that occurred in 2023. The report is updated with accident data on a rolling 30-day cycle to provide the most comprehensive review of aviation safety and the latest report shows a decline in general aviation accident rates despite an increase in flight hours.

A total of 1,097 general aviation accidents occurred in the U.S, with 186 of those crashes resulting in death during the reporting period. The overall accident rate fell from 4.3 per 100,000 flight hours in 2022 to 3.86 in 2023 and the fatal accident rate declined to 0.65 from 0.68 the previous year.

Non-commercial fixed-wing aircraft accounted for 929 accidents and 59 were commercial fixed-wing accidents. Non-commercial helicopter operations experienced 70 accidents, while commercial helicopter operations suffered 39 accidents. Mechanical issues caused 187 accidents, and 91 non-commercial fixed-wing accidents that could not be attributed to any specific cause.

Review the report at bit.ly/McSpaddenReport.



(Graph by AOPA)

Spatial Disorientation Training for Pilots

Given that approximately 80 percent of all aviation accidents involve human factors, the FAA recommends a greater focus on spatial disorientation (SD) training beyond the scope of current guidelines and recently published an Information for Operators (InFO) with recommendations and resources.

SD training should emphasize avoidance of conditions where SD can occur, as well as recognition of onset and recovery from SD events. To reduce the possibility of SD accidents in the future, the FAA recommends that operators and training providers incorporate SD theoretical and practical training into their operations. You can review the InFO at bit.ly/SD_InFO and learn more about SD at bit.ly/SpatialDisorientation.

FAA to Overhaul Organizational Structure

A plan to overhaul the FAA's organizational structure was recently announced to enhance safety, embrace innovation, and increase transparency. The comprehensive re-organization includes the creation of a new safety oversight office.

This office, which was supported by Congress in the 2024 FAA Reauthorization, will implement a single safety management system (SMS) and risk management strategy for the entire FAA. Now, instead of different safety metrics siloed in individual offices, the agency will be able to share safety data more freely. Other key changes include:

- Launching an Airspace Modernization office.
- Creating a new Advanced Aviation Technologies office to oversee the integration of drones, eVTOLs, and other advanced air mobility vehicles into the airspace.

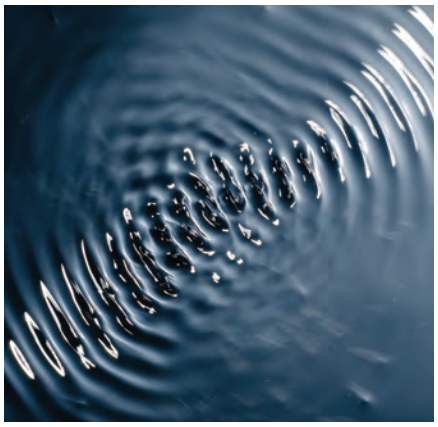
Learn more at bit.ly/NewFAAStructure.

DR. SUSAN NORTHRUP, FAA FEDERAL AIR SURGEON

WATCH OUT FOR BAD VIBES

Vibration is ubiquitous in aviation regardless of the type of aircraft flown. Even hot air balloons have a noticeable vibration when the burner is lit. However, rotorcraft, the theme for this issue, are known for vibration more than others. Helicopter pilots learn early in their training that different frequencies of vibration are associated with problems in different systems, such as the main rotor, engine, or tail rotor. Other vibrations are normal parts of flight, such as the vibration from transverse flow effect as a helicopter accelerates or decelerates and is near ETL (effective translational lift). Regardless of the cause, vibrations can take a toll on the pilot, so it's important to be aware of their impact on your performance.

The medical effects of vibration are well recognized in the occupational medicine community. Musculoskeletal pain in the hands, shoulders, and hips is seen from exposure to vibration. One can develop Raynaud Phenomenon in the fingers, which is associated with numbness, pain, and blanching of the skin (paleness followed by cyanosis — blueish color — and redness). Acute low back pain (LBP) is strongly related to the average flight hours per day, while chronic LBP is linked to cumulative exposure (total flight hours). There is also stress to the cervical spine (neck). Both neck and LBP are aggravated by prolonged sitting and whole-body vibration. The chronic discomfort can be a distraction and degrade performance. Bear in mind that helmets and night vision goggles can aggravate neck pain, even though they are essential to many activities. There is also concern about a possible link to cardiovascular disease, nerve damage,



headaches, and even dizziness and motion sickness. Disorientation and interference with fine visual acuity have also been reported.

While many of these issues are recognized in the military rotary-wing community, there is less discussion in the civilian sector. Potential under-reporting can result since pilots might not recognize the association with workplace vibration or appreciate the potential seriousness of the condition. In addition, many pilots are reluctant to highlight medical issues, especially to their aviation medical examiner, and might not be symptomatic when they are at their primary care doctor's office. You should mention that you fly helicopters and highlight the exposure to vibration, as not all physicians are familiar with the occupational exposures a helicopter pilot faces.

So, what can you do to minimize the effects of vibration? Take breaks as often as feasible, preferably exiting the aircraft and walking around a bit. Pay attention to the flight regimes associated with increased vibration (the yellow arc for some RPM settings, out of trim flight, etc.) and ensure that the aircraft is well maintained and trimmed. Maintain a loose grip, holding controls as lightly as possible to maintain safe control. Avoid poor posture. If there is a second pilot or an autopilot, periodically relinquish the controls and give your hands and arms a break. Stay warm and wear gloves to keep your hands warm; this enables better circulation. While pilots cannot eliminate all vibration in a helicopter, taking steps to minimize its effect is certainly worthwhile.

There are numerous other activities outside of flying that also expose one to vibration, such as hand tools, including drills, sanders, saws, and chainsaws, as well as push mowers and lawn tractors, etc. Avoid/minimize these and other aggravating factors such as smoking, excessive alcohol, etc. For those who fly helicopter air ambulances, you must also think of the patients you transport. Decompression sickness, a hazard for scuba divers or others who are exposed to rapid changes in pressure, can be triggered by vibration. I expect that most of you have seen how rapidly gas can evolve in a carbonated beverage if the container is tapped. The same can happen from the vibration in a helicopter, even without a significant change in altitude.

Although vibration cannot be eliminated in aviation, there are ways to minimize exposure and impact. Early intervention/treatment can help prevent chronic complications. Stay healthy and fly safe.

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 Airlines. She is also an active private pilot and aircraft owner.

FAA SAFETY CENTER FORUMS

April 14–18, 2026

SUN 'n FUN Aerospace Expo

	08:30 – 09:30	10:00 – 11:00	11:30 – 12:30	13:00 – 14:00	14:30 – 15:30	
TUESDAY APRIL 14	**Don't Tell Me What to Do** Dr. Ian Johnson FAA WINGS: BK1 AFS0140353	**Was That for Us? Being Safe round Runways** Dane Guynn Andrew Applegate FAA WINGS: BK2 AFS0140359	**Inspection Authorization (IA) and Aircraft Maintenance** Mike Millard FAA AMT/IA AFS0140360	**Tips to Interpret Wx Data Accurately** Gary Pokodner FAA WINGS: BK1 AFS0140361	**Flying the Fire Boss** Steve Guetter Advanced Flight Training WINGS: BK2 AFS0140364	**Join us for daily forums at the FAA Safety Center**
WEDNESDAY APRIL 15	**Weather or Not to Fly** Jeff Arnold Leidos WINGS: BK1 AFS0140366	**Aircraft Tire Care and Maintenance** Mary Beth Widak Good Year Tires WINGS: BK3/AMT AFS0140367	**MOSAIC Final Rule Overview – Sport Pilots, Light-Sport Category Repairmen, Light-Sport Category Aircraft** FAA WINGS: BK3/AMT AFS0140368	**The Fun and Challenges of Flying Seaplanes** Steve Guetter Advanced Flight Training WINGS: BK3 AFS0140369	**Amphibious Aircraft Safety Systems** Amy Gesch Wipaire WINGS: BK3 AFS0140370	**Tomorrow: Meet the FAA**
THURSDAY APRIL 16	**Was That For Us ? Being Safe Around Runways** Dane Guynn Andrew Applegate FAA WINGS: BK2 AFS0140372	**Straight Talk About Aviation Safety** John & Martha King Schools WINGS: BK3 AFS0140374	**Meet the FAA** WINGS: NA AFS0140375	**Zero to 16 Degrees, An AOA Story** Mark Korin Alpha Systems WINGS: BK2/AMT AFS0140376	**Clear Skies, Sound Decisions: Navigating Weather** Jenna Williamson Leidos WINGS: BK3 AFS0140377	**Mike Millard is back with AMT and WINGS Credits!**
FRIDAY APRIL 17	**Wilderness Survival Techniques (Part 1 of 2)** Mike Millard FAA WINGS: BK3 AFS0140379	**Wilderness Survival Techniques (Part 2 of 2)** Mike Millard FAA WINGS: BK3 AFS0140380	**Aircraft Battery Airworthiness** Chris Holder Concorde Battery WINGS: BK3/AMT AFS0140382	**It's a Risky Business** Ray Heyde FAASTeam Rep WINGS: BK1/AMT AFS0140383	**Aeromedical Updates for Pilots** Dr. Brett Wyrick/ Dr. Susan Northrup WINGS: BK3 AFS0140384	**Tomorrow: MOSAIC is here!**
SATURDAY APRIL 18	**MOSAIC Final Rule Overview – Sport Pilots, Light-Sport Category Repairmen, Light-Sport Category Aircraft** FAA WINGS: BK3/AMT AFS0140389	**How to Fly ODPs and SIDs** Ed Verville DPE WINGS: AK2 AFS0140387	**In-Flight Loss of Control: The Most Frequent Cause of Fatal Accidents** Ed Verville DPE WINGS: BK2 AFS0140388	**Using Augmented Reality and Virtual Reality Tools in Flight Training** Greg Reverdiau Pilot Institute WINGS: BK3 AFS0140385	**Fifty Years of Attention to Human Factors: Not Fixed Yet!** Dr. Bill Johnson Safety Consultant WINGS: BK1 AFS0140390	**Make Better Decisions Through Education**

Access FAASTeam Safety Brochures here:
bit.ly/FAAST_pamphlets

FAA Forums Open Daily at 8:30 a.m. unless otherwise noted.
Schedule is subject to change. For updates, check the QR code to the right or go to Lakeland Forums:
bit.ly/FAA_Forums

THE U-S-H-S-T

Find Out What It Means for Helicopter Safety

By Nicole Hartman

Aviation and acronyms go together like thunder and lightning, and helicopters are no exception to the rule. One important line-up of letters is the USHST, or the U.S. Helicopter Safety Team. Established in 2013 as a regional partner to the International Helicopter Safety Team (IHST), now known as the Vertical Aviation Safety Team (VAST), the USHST is a government-industry partnership focused on reducing helicopter accidents and fatalities in the United States.

The team's vision is ambitious: a civil registered helicopter community without fatal accidents, and they are undertaking a whirlwind of efforts to help achieve that goal. So, let's take a look at the USHST and its role in the helicopter community.

Say "Helo" to the USHST

The role of the USHST is collaboration within the civil helicopter community (industry and government) to prevent fatal accidents through data-driven analysis and the development of voluntary, consensus-based safety recommendations. It identifies safety issues, develops helicopter safety enhancements (H-SEs), and promotes safety culture and performance through outreach and other programs. The USHST also provides a confidential mental health support program for pilots and crew members available at ushstpeer.org.

USHST Steering Committee

Co-Chairs

- Chris Baur: Hughes Aerospace
- Robert Reckert: FAA

Members

- Chris Hill:VAI
- Carsten Hoyt: GAMA
- Seth Buttner: Airbus Helicopters
- Tony Randall: Bell
- Nigel Speedy: Leonardo
- Tim Tucker: Robinson
- Jill Browning: Sikorsky
- Clarke Peasants: MTSU
- Wes Van Dell: UND
- Jorge Castillo: FAA

USHST Support Teams

- Coordination Team
- Safety Assurance Team
- Safety Promotion Team

Helicopter Safety Enhancement Teams

23-01, Promote Conservative go/no-go decision making
Lead: VAI Safety Industry Advisory Council

23-02, Educate hazards of low altitude operations
Lead: USHST Steering Committee

23-03, Improve risk management of night operations
Lead: Engineering Systems, Inc (ESI)

23-04, Imporve fatigue awareness and risk mitigation of scheduling factors leading to fatigue
Lead: Pulsar Informatics

23-05, Training on effects of adverse wind situations
Lead: Air Methods

Link to ASIAS Program

Rotorcraft Issue Analysis Team

Completed Helicopter Safety Enhancements (H-SEs)			
H-SE 13A Utilities and Constructions Practice Guide	**H-SE 19A** Safety Culture and Professionalism	**H-SE 22A** Detection and Management of Risk Level Changes During Flight	**H-SE 28/112** Final Walk Around & Security of External Cargo
H-SE 30 Development of ACS Rotorcraft-Helicopter Series	**H-SE 91** Stability Augmentation System/Autopilot	**H-SE 81** Simulators and Outside-the-Envelope Flight Conditions	**H-SE 82** Helicopter Flight Data Monitoring
H-SE 90 UAS in High-Risk Environments	**H-SE 91** Enhanced Helicopter Vision Systems	**H-SE 116** Make & Model Transition Training	**H-SE 123** Simulations for Safe Decision Making
H-SE 124 Understanding of Basic Helicopter Aerodynamics	**H-SE 125** Pre-Flight Risk Assessment for Student Pilots	**H-SE 127A** Recognition & Recovery of Spatial Disorientation	**H-SE 130** Hazards of Over-the-Counter Medication

Modeled after initiatives like the Commercial Aviation Safety Team (CAST), the USHST has a collaborative, public-private structure featuring a steering committee for strategy, support teams for operations, and safety enhancement (H-SE) teams that develop data-driven solutions to reduce fatal accidents. The USHST also works closely with industry (e.g., trade associations, owners and operators, manufacturers, and schools) and the FAA to develop a consensus-based approach, mirroring structures such as the General Aviation Joint Safety Committee (GAJSC). Check out the Nov/Dec 2025 *FAA Safety Briefing* issue at bit.ly/FAASB-archive for more information on the GAJSC.

The USHST utilizes a system-level safety cycle and data from sources such as the FAA's Aviation Safety Information Analysis and Sharing (ASIAS) Rotorcraft Issue Analysis Team (R-IAT) to identify systemic safety issues. It then creates and disseminates voluntary, risk mitigation recommendations (H-SEs) to improve safety culture and performance. Metrics are tracked by setting specific, data-driven goals, such as reducing the fatal accident rate by a certain percentage over a five-year period.

The USHST has finalized all its original H-SEs, resulting in valuable resources and training programs to address the leading causes of fatal accidents. Some notable initiatives include:

- **Flight Data Monitoring (H-SE 82)**: This enhancement promoted the use of data recording devices and voluntary safety programs to identify hazardous behaviors before they result in accidents. The initiative aimed to engage small operators effectively in safety monitoring.

- **"56 Seconds to Live" Campaign (H-SE 127A and others)**: This major initiative focused on recognizing and avoiding spatial disorientation and unintended flight in instrument meteorological conditions (UIMC). It produced a video series and a free training course, widely considered a significant success in providing pilots with critical decision-making tools.
- **Safety Culture and Risk Management (Outreach SEs)**: The USHST has successfully developed H-SEs focused on "soft" skills, such as improving safety culture and professionalism (H-SE 19A) and managing risk in flight (H-SE 22A). These efforts have been detailed in various podcasts and presentations to disseminate the information widely.

> **The team's vision is ambitious: a civil registered helicopter community without fatal accidents, and they are undertaking a whirlwind of efforts to help achieve that goal.**

The USHST is continuing this vital safety work with five new H-SEs under development:

- **Promote Conservative Go/No-Go Decision Making (H-SE 23-01)**: Help prevent fatal helicopter accidents that can be directly or indirectly linked to preflight judgment errors, decision-making errors, and inadequate mission planning.
- **Educate Hazards Of Low Altitude Operations (H-SE 23-02)**: Pursue better avoidance of obstacles (e.g., wires, towers) in the low-level environment through consideration of identification techniques and both traditional and emerging protection devices.
- **Improve Risk Management Of Night Operations (H-SE 23-03)**: Use the focus areas of training, technology integration, operational procedures, physiological considerations, environmental awareness, and equipment to promote better risk mitigation strategies specific to night flying.

- **Improve Fatigue Awareness And Risk Mitigation Of Scheduling Factors Leading To Fatigue (H-Se 23-04)**: Evaluate the sources of fatigue risk in helicopter operations, develop a framework for fatigue risk management, and provide practical resources to support fatigue risk management program implementation.
- **Training On Effects Of Adverse Wind Situations (H-SE 23-05)**: Better illustrate the hazards posed by adverse winds on rotorcraft performance, especially when operating at low air speeds.

Visit ushst.org/h-se-details for information on all the H-SEs.

These enhancements produce numerous safety-focused outputs, all intended to help realize the vision of zero fatal civil helicopter accidents. These products generally fall into the categories of guidelines, training materials, best practices, videos, and recommendations for new technology.

Guidance and Best Practices

- **Recommended Practices for Preflight, Final Walk Around, and Post-flight Inspections (H-SE 28)**: These guidelines emphasize a thorough check of the aircraft to ensure it is in a condition for safe flight.
- **Utility Patrol and Construction (UPAC) Recommended Practice Guide (H-SE 13A)**: A specific guide tailored to the unique hazards of utility operations, to include human performance considerations.

> **The USHST makes rotorcraft safer by identifying key causes of accidents and developing solutions that improve safety through technology, training, and risk management.**

Training Material and Courses

- **Simulations for Safe Decision Making**: Increased use of relevant simulations to rehearse at-risk scenarios (H-SE 123).
- **Make/Model Transition Training**: Ensure familiarity and understanding of new "model specific" equipment (H-SE 116).
- **Fatigue Awareness**: Materials designed to improve awareness and mitigation of risks associated with fatigue in scheduling (H-SE 23-04).

ushst.org/podcasts

Technology and Equipment Recommendations

- **Stability Augmentation Systems (SAS) / Autopilot**: Recommendations for developing and installing these systems in light helicopters to reduce LOC-I accidents (H-SE 70).
- **Enhanced Vision Systems**: Promoting the use of enhanced helicopter vision systems (H-SE 91).

Formal Publications

- **Airman Certification Standards (ACS)**: The USHST contributed significantly to the development and publication of the new ACS rotorcraft-helicopter series, which replaced older Practical Test Standards (PTS) (H-SE 30).
- **Formal Reports and White Papers**: Detailed reports and guidance documents are published on the USHST website for public access.

These products are continually developed and distributed to the aviation community through various channels, including the USHST website, industry events such as VERTICON (verticon.org), and collaborations with partners like the FAA.

Mental Health = Safer Skies

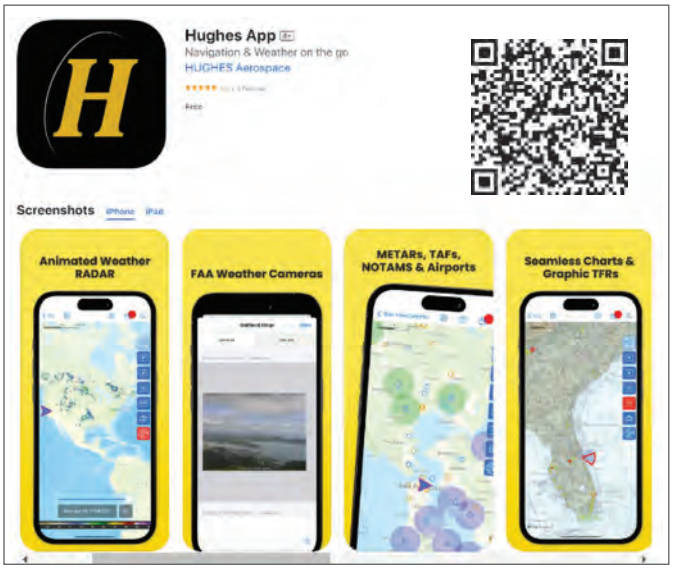
The USHST also aligned itself with broader changes in the aviation industry. Pilots of all types of aircraft have an incredible responsibility every time they take to the air and face a unique combination of pressures — high-stakes decision-making, irregular hours, extended periods away from home, and the constant demand for peak performance under stress.

The USHST recognized that prioritizing only technical training and physical health is insufficient; pilot mental health matters for the pilot's quality of life and for the safety of the National Airspace System. To reduce barriers to help-seeking behavior, it established the Peer Pilot Program (PPP). The PPP is a volunteer-driven initiative that offers free peer support, creating an environment where aviation professionals can find guidance and support from those who understand the exceptional stresses of their profession. It addresses the human factor head-on by offering understanding, connection, and timely guidance before small issues become crises. The USHST Peer Pilot Program is available to help at ushstpeer.org.

Pilots interested in becoming a peer pilot volunteer can contact the USHST at info@USHST.org (be sure to include "PPP Volunteer" in the subject).

The HUGHES App — Free to USHST Members

Hughes Aerospace provides the updated *Hughes App* at no cost to USHST members. Available for iOS users on both iPhone and iPad, it provides valuable information to support safety and decision making, including charts, navigation, weather and weather cameras, and the PPP. The app also features a new VFR prediction tool. Scan the QR code to check it out.

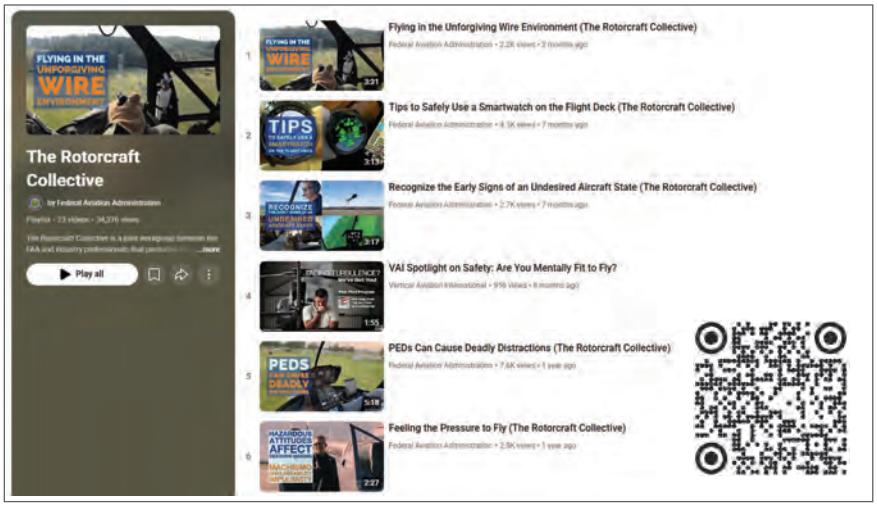


ushst.org/ushst-membership-card-with-the-hughes-app

But Wait, There's More

The USHST is full throttle when it comes to conducting outreach and education, offering a comprehensive suite of communication products across multiple platforms. This accessible, expert-driven safety content includes:

- Health & Safety Education: in-depth documents/white papers on specific safety topics
- Videos/Reels (Rotorcraft Collective): productions of varying lengths focused on accident prevention
- Podcasts (Push to Talk): featuring discussions on H-SEs and safety culture
- Training & Events: free courses, safety challenges at expos, and webinars
- Checklists & Posters: practical tools for flight crews
- USHST Newsletter: sign up to receive this quarterly email



bit.ly/RotorYT

The USHST is also part of "The Rotorcraft Collective," a series of short safety videos produced by the FAA. These videos provide information on topics such as preflight inspections and passenger briefings, wire strike avoidance, preventing loss of control inflight, and fatigue, and have garnered nearly 600K views. You can view the video series on YouTube at bit.ly/RotorCollective. You can also view the series on the Aeroverse streaming service and its website at bit.ly/aero-rc. Check out the Forum section of this issue to see what others are saying about the series.

A key component of this outreach effort is promoting safety culture. The USHST encourages a proactive approach to safety by advocating that pilots make safety a personal responsibility, use risk management checklists, and set personal minimums. It also engages with industry groups to increase safety awareness and learn about impediments to safety improvements. For more information on USHST's culture and safety information, visit ushst.org.

The Results Are In

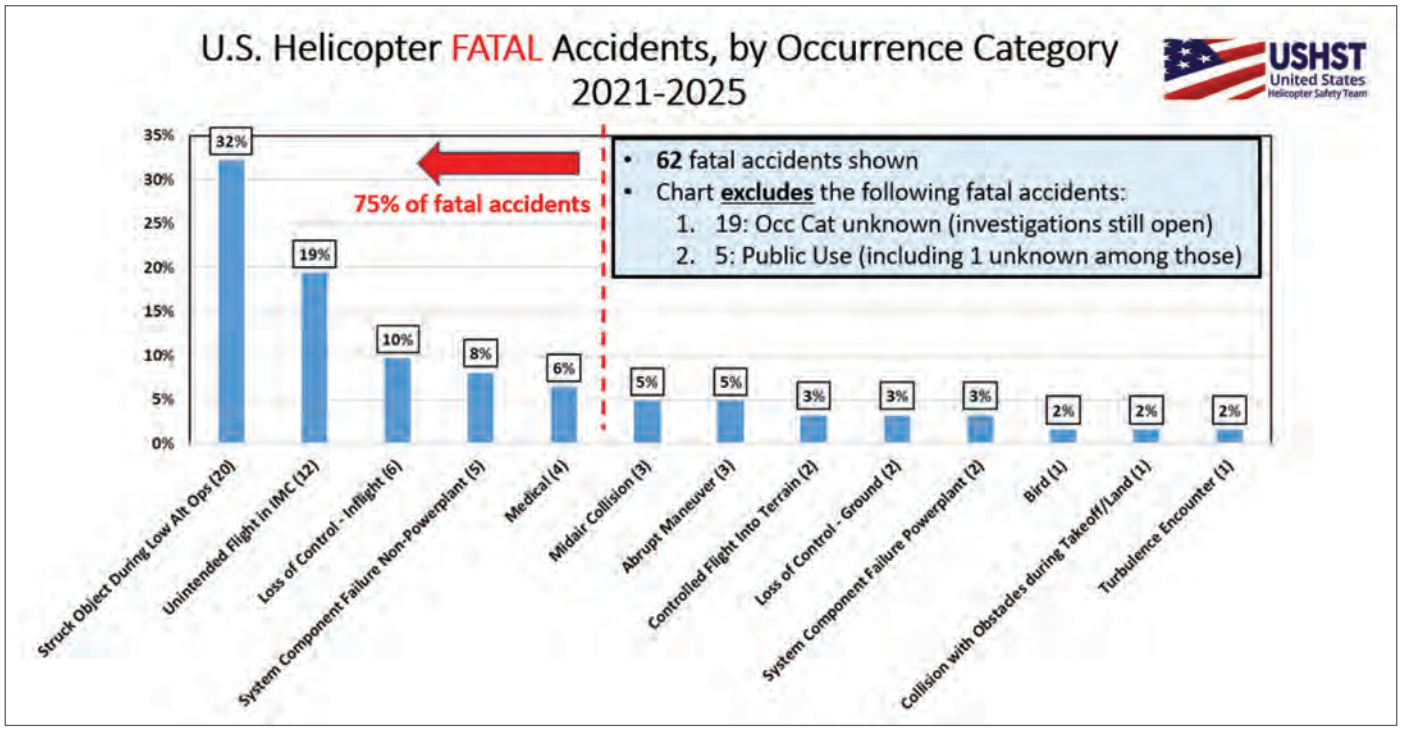
The USHST makes rotorcraft safer by identifying key causes of accidents and developing solutions that improve safety through technology, training, and risk management. Evidence of this is the fact that fatal accidents have been down significantly (over 35%) since 2013, when the USHST was formed. In 2024, the industry achieved its lowest fatal accident rate (0.45 per 100K hours) and overall accident rate (3.05 per 100K hours) in 25 years, alongside the second-lowest total accidents (88).

These efforts to develop, deliver, and promote valuable safety resources focused on improving the U.S. helicopter community's safety culture and performance should have you saying — the USHST, that's the acronym for me!

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

LEARN MORE

ushst.org



SAFETY BY SEGMENT

Navigating the Diverse Risks in the Rotorcraft Community

By Lee Roskop

The ways a helicopter can be used are limited only by the imagination. (Well, that and safety.) While the uses may seem endless, most helicopter operations are conducted under one of four parts of Title 14, Code of Federal Regulations (14 CFR): part 91 for general aircraft ops, part 133 for rotorcraft external-load ops, part 135 for commuter and on-demand ops, and part 137 for agricultural aircraft ops. Each one of these segments comes with its own set of safety risks. That is why, when the U.S. Helicopter Safety Team (USHST) set a goal to reduce the five-year accident rate, they examined the safety risks unique to each of the four 14 CFR parts for helicopter operations.

Different Goals Driven by Different Risks

In early 2025, USHST's leadership set their latest five-year helicopter accident-reduction goal and examined accident-causal factors by part. This goal was tailored to reduce the five-year average fatal accident rate by segment. The idea of setting goals based on the different operating parts was to acknowledge the hazards specific to each operation and the differences in public expectations for acceptable risk. There are certainly common hazards across each operating part, but each also has unique hazards that drive distinct risks that may lead to fatal accidents. The USHST based this conclusion on its review of the aviation occurrence categories that defined what happened in fatal accidents.

Operating Part	Baseline: 5-Yr Avg 2018-2022	Reduction Goal	Goal: 5-Yr Avg 2025-2029
Part 91	0.81	10%	0.73
Part 133	1.73	10%	1.56
Part 135	0.33	50%	0.17
Part 137	1.11	10%	1

Five-year helicopter fatal accident reduction goals per 100K operations.

Part 91 (General Aircraft Ops)

Part 91 operations account for about 55% of annual U.S. helicopter flight hours. This includes helicopter industry segments such as aerial observations, instruction/training, business travel, authorized air tours, and flights conducted for personal use. For the five years studied, the highest percentage of helicopter part 91 fatal accidents were in the occurrence category of unintended flight into instrument meteorological conditions (22%), followed by low altitude object strikes (15%), and loss of control inflight (12%).

Part 133 (Rotorcraft External-load Ops)

Operations under part 133 account for about 6% of the annual U.S. helicopter flight hours. These operations include industry segments such as utility patrol and construction companies that support building and maintaining the national electrical grid. Other segments include aerial firefighting as well as heavy-lift flights used to transport equipment. Part 133 had a much larger percentage of low altitude object strikes (40%) and system component failure due to non-powerplant issues (20%).

Part 135 (Commuter and On Demand Ops)

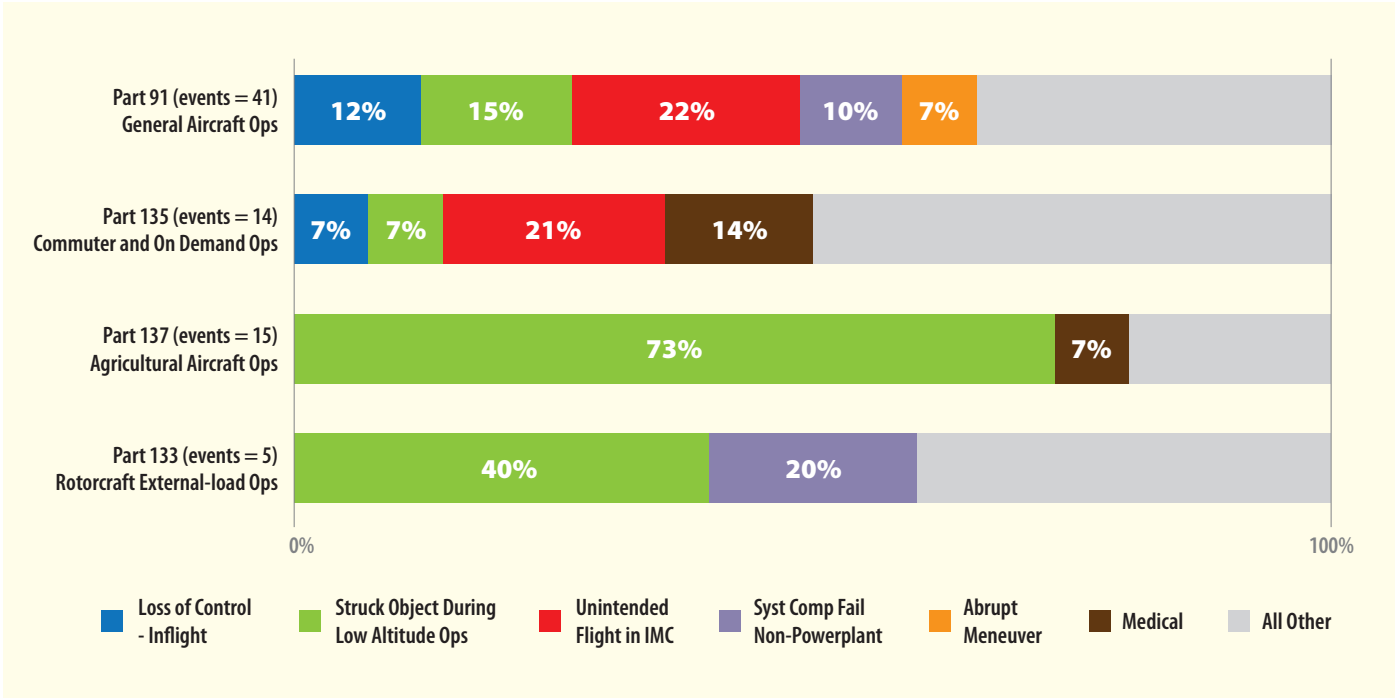
Part 135 operations account for about 31% of the annual U.S. helicopter flight hours. These operations include industry segments that are typically more familiar and visible to the public, such as helicopter air ambulance patient transport, movement of offshore oil and gas crews, and air tours. Particularly in the helicopter air ambulance segment, a large percentage of the hours are flown at night.

The reduction rate goal for part 135 was set higher than any other category. This reflects a lower acceptable risk for these types of operations, which typically involve on demand passenger services. Public expectations for these operations are higher, and, as such, the risk tolerance is lower. The fatal accident data showed that unintended flight into IMC percentage was the highest occurrence category (21%), followed by medical events (14%). Smaller but still noteworthy occurrence categories were loss of control inflight (7%) and low altitude object strikes (7%).

The reduction rate goal for part 135 was set higher than any other category.

Part 137 (Agricultural Aircraft Ops)

Part 137 operations account for about 8% of the annual U.S. helicopter flight hours flown. These operations include what is commonly known as "crop dusting," as well as other product dispensing activities related to soil treatment or forest preservation. Most part 137 fatal accidents occurred



Results of a USHST study that show a breakdown of fatal accident causal factors by operating part from calendar year 2020 to 2024.

in the low altitude object category (73%). When spraying crops, almost the entire flight takes place at low-altitude—often near power lines that can both surround and pass through the area of operations.

Enhancing Safety by Segment

Regardless of the different industry segment uses, preventing fatal helicopter accidents is something everyone can get behind. To encourage industry's efforts to improve safety and reduce fatal accidents across the four operating parts, the FAA and industry steadfastly pursue safety education and outreach. Working together through the USHST has led to the development of voluntary risk mitigation materials, referred to as safety enhancements.

Various FAA and industry members from the USHST who participated in researching fatal accident reports also created the materials for 16 completed safety enhancements. These resources are available to everyone at ushst.org/h-se-details. Several new helicopter safety enhancements are also currently in development for the following areas:

- Improving in-flight decision making;
- Education on the hazards of operations in the low altitude environment;
- Identifying mitigations for risks that are common to night operations;
- Addressing more objective methods to detect and mitigate human fatigue; and
- Accounting for the effects of flight during adverse winds.

The safety enhancement resources are just part of the strategy to prevent future fatal accidents. The FAA Safety Team distributes analyses, reports, and safety enhancement materials produced by the USHST, including packaging them into short educational videos as part of an initiative called The Rotorcraft Collective (on YouTube at bit.ly/RotorYT). The FAA's Aircraft Certification Service also maintains a public-facing Rotorcraft Accident Dashboard (bit.ly/RotorDash) that is updated weekly and also produces a monthly accident briefing summary for distribution to the industry to ensure consistent awareness of developing safety trends.

The Rotorcraft Issue Analysis Team (R-IAT), a key component of the Aviation Safety Information Analysis and Sharing System (ASIAS), is moving beyond "reactive" safety that comes from analyzing fatal accidents. This team, co-chaired by an FAA and an industry representative, was formed to study data voluntarily provided by participating operators to proactively identify vulnerabilities and recommend actions before more severe events occur. In addition to monitoring low-severity events related to loss of control inflight, unintended flight into IMC, and low-altitude object strikes, the R-IAT has used ASIAS to improve predictability of potential bird strikes and helicopter-to-drone encounters.

Safety For All Operations

The USHST has not forgotten about safety improvements that would simultaneously benefit all the operating parts. The team continues to advocate for a greater presence of tools that have already proven helpful in improving pilot decision-making, such as weather cameras. These cameras (online at weathercams.faa.gov) provide better information about current or developing weather in remote areas where more traditional weather reporting capabilities do not exist. The success stories of weather cameras in states such as Alaska and Colorado show the safety value of continuing to expand the program.

Mental health is also an ongoing focus area, and the USHST offers free confidential support through its Peer Pilot Program. The program partners with leading specialists in this field and is governed by the highest standards of confidentiality. It offers resources, videos, and even a link to speak to a peer. By talking to someone who is not only a trained listener but also understands the pressures of the profession, a peer pilot knows that many seemingly insurmountable issues can be reduced or resolved well before they become a problem. Confidential resources are available at ushstpeer.org.

Touchdown

Helicopters are amazing machines capable of amazing feats. The professionals from the FAA and industry who work in the USHST continue to strive to improve the safety of civil helicopter operations, pursuing a vision of a civil helicopter community without fatal accidents. Studying safety goals by operating part recognizes the variety of operations in the helicopter community. It represents the latest step on the journey to ensure all helicopter operations continue to flourish in the safest manner possible.

Lee Roskop is an aviation safety coordinator specializing in rotorcraft fleet safety for the FAA's Aircraft Certification Service. He is a former Air Force helicopter pilot and has worked with the USHST for over 10 years.

FROM FIXED-WING TO WHIRLYBIRD

Lift Your Flying Career with a Helicopter Rating

By Rebekah Waters

Have you ever wondered what it would be like to fly backwards, turn in place, or even pause mid-flight? Do you want to challenge yourself mentally and physically and broaden your career options as a pilot? Then maybe a helicopter rating is for you. Helicopters offer unmatched freedom, allowing pilots to operate in environments that fixed-wing aircraft simply can't. Beyond the thrill of more versatile flying, this rating unlocks a wide range of career opportunities. Whether you're transitioning from fixed-wing flying to whirlybirds, or moving from military to civilian flying, or even if you're starting from scratch, earning your helicopter rating is a challenging and exciting process.

Birds of a Different Feather

Part of what makes a transition to helicopters challenging is the key differences in the way fixed-wing aircraft and helicopters operate. Airplanes achieve lift from airflow over fixed wings. Helicopters use spinning blades, known as rotors, to generate lift. The control inputs for each are also different. Helicopter flight controls are operated by the pilot's hands and feet. The cyclic (right hand, controls direction/rotor disc tilt), collective (left hand, controls altitude/power threw a twist-grip throttle usually on the collective) for fuel delivery, and anti-torque foot pedals controlling the tail rotor for yaw. The cyclic tilts the rotor disc to move the helicopter forward, backward, left, or right, while the collective changes all blade angles for ascent/descent. The anti-torque pedals control yaw, turning the helicopter 360 degrees while in a hover. This requires constant hands-on coordination for stable flight. In general, fixed-wing aircraft are more stable, giving pilots more time to identify and respond to issues or even radio for help. Helicopter pilots must rely on memorized emergency procedures since there is less time to act.

> **Knowing why you want a helicopter rating and how you intend to use it is essential.**

Overall, helicopter flying is more complex than fixed-wing flying. If you're starting from scratch, you'll need to master the intricate skills required to operate a helicopter safely. If you're used to fixed wing flying, you're faced with the added challenge of unlearning and relearning certain flying skills that may have become habits. Luckily, most pilots find the transition from fixed-wing to helicopters a worthwhile endeavor!

Why Whirlybirds?

Since flying a helicopter is a challenging skill to master, it's important to know why you want to do it. Maybe you're in the market for an adventurous hobby or want to check an item off your bucket list. There could be many reasons why the vertical life calls to you, but one motivator could be the broad range of careers available to helicopter-rated pilots. Here is a list of just some of the options:

- Flight Instructor — A good option for helicopter pilots with a passion for teaching, and can be a good way to build up flight time.
- Air Tour or Sightseeing — Enjoy amazing scenery. Also, another way to build up flight time.
- Utility — Deliver personnel and cargo to remote and/or rugged locations, often suspending the cargo on a long-line beneath the helicopter.
- Offshore Oil and Gas — Transport personnel and equipment to and from offshore oil platforms all over the world
- Corporate, Charter, or Air Taxi — People-centered flying focused on passenger safety and comfort.
- Survey — Low altitude flying for infrastructure inspection, route flying for mapping, environmental monitoring, and more.
- Crop Dusting, Fish Spotting, or Livestock Herding — Rural settings and agricultural operations.
- Electronic News Gathering — Fly with reporters (traffic, weather, breaking news).
- Motion Picture and Television — Help with filming for movies and TV shows.
- Helicopter Air Ambulance — Transport medical crews and patients — often providing time-sensitive, critical life-saving care.
- Law Enforcement — Airborne public safety and surveillance operations.
- Search and Rescue — Assist with land or sea rescue operations in otherwise difficult-to-reach locations.
- Firefighting — Includes aerial surveys, transport of firefight crews, and fire suppression efforts.
- Test Pilot — Requires advanced training and a strong safety record.

As you can see, helicopter career options are numerous and varied! Pilots seeking adventure might like flying long-line operations, while those who prefer a fixed schedule might be drawn more to corporate flying or sightseeing operations. If helping others is what gets you out of bed in the morning, perhaps you're more suited for emergency services or law enforcement flying.

Making the career transition from fixed-wing to helicopter flying might not seem like much of a leap. But, even if you're starting from scratch, a helicopter career is still within reach. Jessica Meiris, a Colorado helicopter pilot and FAA Safety Team (FAASTeam) Representative, started out as a mountain guide — not a pilot. After 15 years of climbing mountains, she needed a job that was less physically demanding while still mentally challenging and engaging. Helicopter flying was the answer. Meiris has had more than one of the jobs previously mentioned, but her favorite was long-line operations flying. "I love the challenge of long-line flying. It is so engaging and so hard, and you're always busy!" says Meiris. This type of flying comes with a rotating schedule, which, for Meiris, was just another plus. "I really like working multiple days straight followed by concentrated time off, but these types of schedules aren't for everyone."

Meiris has also worked as an air tour pilot and helicopter air ambulance (HAA) pilot. Both offer new challenges and benefits. As an air tour pilot, her "office" is the great outdoors. Flying an ambulance lets her give back to her community in the same mountains where she was a guide all those years ago. Whether flying is your first career or, like Meiris, your second, the right training and experience are key.

> **Helicopters will take you places that fixed-wing flying can't.**

From Aspiration to Certification

Obtaining your helicopter rating can be a demanding and costly endeavor. Knowing why you want a helicopter rating and how you intend to use it is essential. Leah Murphy, commercial helicopter pilot and FAASTeam Representative, states: "Helicopter training is a significant investment, so knowing where you want to end up can help shape smart decisions early on." Murphy's advice to prospective helicopter pilots? "I highly suggest taking a discovery flight and finding out if this is something they enjoy and want to pursue."

Once you know where you want to go, the next step is figuring out how you're going to get there. Whether you're transitioning from fixed-wing or military, or starting from scratch, be prepared to chart a path that yields the best return on this investment.

If you're starting from scratch, you'll need a student pilot certificate, which means making sure you meet all the minimum eligibility requirements. For a private pilot helicopter certificate, you must:

- Be at least 17 years old;
- Be fluent in English (reading, writing, and speaking);
- Provide proof of identity; and
- Qualify for a third-class medical certificate.

For a helicopter commercial pilot certificate, you must already have earned a helicopter private pilot certificate, be at least 18 years old, and qualify for a second-class medical. These requirements are the same for fixed-wing and helicopter pilot certificates, so pilots transitioning from fixed-wing have already met them. Once you've checked all these boxes, it's time to find a good training program.

At the time of this writing, there are more than 160 helicopter flight schools in the United States. Some people opt for standalone flight schools, while others look for universities or colleges offering aviation degrees. You'll need to decide which training path is right for you. While time and money are usually big factors in this decision, determining what you want to do with your helicopter rating can help narrow down which program is right for you.

Murphy, a regular contributor to *FAA Safety Briefing*, began her aviation journey at Embry-Riddle Aeronautical University, where she earned her degree in aeronautical science in conjunction with ratings through flight instructor. Her ultimate goal was to become an air ambulance pilot. After graduation, she worked as a flight instructor and air tour pilot to gain experience and build up her flight time. Today, she is truly honored to be a part of the HAA community. Murphy shares, "When people need air transport, it's usually on the worst day of their lives, and I appreciate the opportunity to be a part of making it better."

It's also important to choose a program that suits your learning style. Helicopter pilot, director of training, and host of the Helicopter Training Podcast, Jay Bunning chose the Leading Edge Flight Academy in Bend, Oregon. This flight school partners with Central Oregon Community College, which allows VA-funded students to complete all their ratings through instrument flight instructor while earning a degree. While Bunning wasn't VA-funded and already had a non-aviation degree from the United Kingdom, he enrolled anyway. He decided he wanted an aviation degree and a learning environment where he could find some "study buddies." "From the flight training environment to the friendly mountain town vibe, it was the perfect fit," says Bunning.

> **One important tip to help you on your path to becoming a helicopter pilot is to seek out advice and knowledge from others who have successfully completed this journey.**

Meiris tried three different flight schools searching for the right fit. She cautions prospective students to be wary of schools that might drag out flight training. Trying out a few different schools let her compare the pacing each one offered. "In the long run, it made me a more well-rounded pilot," says Meiris. She encourages students to seek out a mentor not affiliated with their school's program. This way, they can have unbiased guidance as they complete their education. She also emphasizes the importance of being your own self-advocate, adding, "Don't let the school push you into systems and courses you don't need."

Pilots transitioning from fixed-wing to helicopter flying most likely have experience with flight schools and training programs. They also have the advantage of knowing where to look for answers about what training they need. "Open up the regulations and find out exactly what requirements you will need to earn your add-on ratings," Murphy urges. "Having a strong understanding of what is required will help you use your time and money more efficiently."

No matter what flight program you choose, helicopter training requires a lot of practice. While it's helpful to know the minimum hours required by regulations, it's important to keep in mind that it will likely take longer. For instance, a student pilot working towards a private pilot helicopter certificate is required to log a minimum of 40 hours of flight time — 20 hours with an instructor and 10 hours of solo flight time — the completion of one solo cross-county flight of at least 100 nautical miles with landings at a minimum of three points, night operations, and 3 hours of preparation for the practical exam. It could take almost twice that time to gain the proficiency needed to pass the

practical exam. Transitioning pilots may apply some of their existing hours toward a helicopter rating to meet the regulatory training and pilot-in-command requirements. The actual amount of flying time needed to master the skills and become proficient varies from person to person.

Testing is the final step. Student pilots will need to take and pass a written knowledge test and a practical exam. The written exam isn't a requirement for pilots transitioning from fixed-wing, but they are required to demonstrate the knowledge for that helicopter certificate during the practical exam. For more information on flight time and testing requirements for private and commercial certificates and add-on ratings, see the Learn More section at the end.

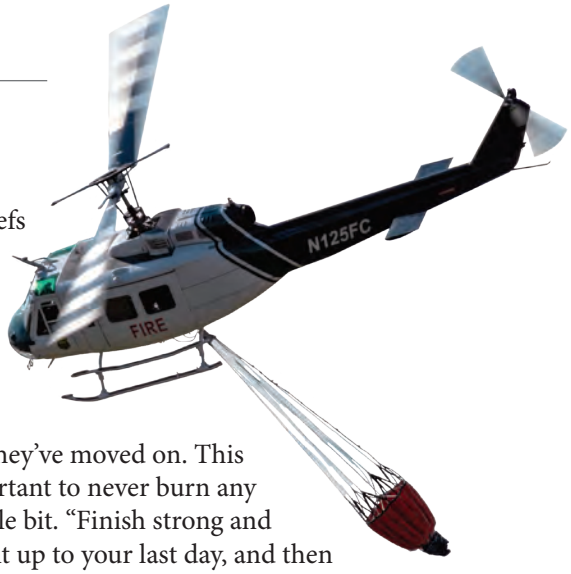
The path for military pilots transitioning to civilian flying is a little different. These pilots can use their military qualifications in place of the traditional training requirements. If this is the route you are taking, start by making sure you have all the necessary records to document your military training, ratings, qualifications, and proficiency checks. After that, prepare for and pass the military competency knowledge test at an FAA testing center. The Commercial Pilot – Military Competence (FAA-S-ACS-10B) has more information about making this transition. You can find this ACS at bit.ly/FAAACS.

Words of Wisdom

One important tip to help you on your path to becoming a helicopter pilot is to seek out advice and knowledge from others who have successfully completed this journey. Here are a few words of wisdom from some seasoned professionals to get you started.

Jessica Meiris: Meiris emphasizes understanding the differences between fixed-wing and helicopters — especially when it comes to reaction times. When things go wrong in a plane, even with an engine failure, the plane will often glide for miles. The pilot has time to grab a checklist and make a radio call. Certainly, there are some cases when this is not true, but for the most part, a plane is inherently stable, and there is time to think. Not so in a helicopter. If you have an engine failure, you have seconds to diagnose the issue and enter the proper maneuver (called an autorotation) before gliding to the ground. "Depending on your starting altitude, you'll be on the ground in less than a minute," says Meiris. Most helicopter panel lights and warnings require precise and quick action. "All your emergency procedures and your knowledge of system sounds must be committed to memory," adds Meiris.

Jay Bunning: Bunning assures pilots starting out that it's normal to move through several companies while building airframe time and experience. He advises pilots to always leave their chief pilots with "a good impression that they will remember the moment your name comes up." The helicopter world is tiny. "It's basically three degrees of separation or less," says Bunning. Chiefs and employers call each other all the time, asking about former employees — sometimes many years after they've moved on. This is why it's so important to never burn any bridges, even a little bit. "Finish strong and do great work right up to your last day, and then move on with gratitude," says Bunning.



Leah Murphy: Because of the inherent risks and challenges of flying helicopters, Murphy wants prospective pilots to make sure their motives are right. "Flying helicopters should never be about looking cool or showing off," says Murphy. Mastering flying skills is about more than passing exams. It is about keeping yourself, your passengers, and everyone on the ground safe. "Be committed to maintaining proficiency and take the responsibility of being a pilot seriously," adds Murphy.

Those who are undaunted by the unique challenges of flying helicopters, the added time and expense for training, and the smaller margins for error when dealing with emergency and unexpected situations will be rewarded with fulfilling and adventurous career opportunities. Helicopters will take you places that fixed-wing flying can't. Regardless of the flight path you choose, the right training and experience are essential to achieve your goals. With proper training and lots of practice, you'll be lifting off vertically before you know it!

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

LEARN MORE

Vertical Aviation Career Pathways, Vertical Aviation International
bit.ly/4psUYeg

How to Become a Helicopter Pilot, Ep. 001, Helicopter Training Podcast
bit.ly/49K05kp

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helicoptertrainingvideos.com

Making the Military to Civilian Transition, Vertical Aviation International
bit.ly/Mil2Cil

14 CFR § 61.73, Military pilots or former military pilots: Special rules
bit.ly/milComp

So You Want to Be a Helicopter Pilot, *FAA Safety Briefing*, Jan/Feb 2012
bit.ly/45BRoXR (PDF)

HIGH STAKES AT LOW ALTITUDES

FAA Oversight in the Demanding World of Medical Helicopter Operations

By Jahrod Coates

Whenever a helicopter air ambulance (HAA) is dispatched to the scene of a motor vehicle accident or to a critical trauma patient, the flight must be airborne within minutes. But unlike commercial airline flights, there's no co-pilot, no familiar airfield, and no established routes. In some cases, the pilot may be headed to an isolated canyon or roadside they've never seen before, perhaps one that no aircraft has ever landed on, and sometimes in the middle of the night.

"That's one of the biggest challenges," said Kurt Skultin, an aviation safety inspector and former emergency medical services pilot. "These are almost entirely single-pilot operations. The workload and responsibility fall heavily on that one individual who's making critical flight planning decisions within minutes of the call."

Before working for the FAA's General Aviation and Commercial Division, Skultin was part of the certificate management team that oversees the nation's largest 14 CFR part 135 HAA operator. At the time, he also served as the FAA representative for their Aviation Safety Action Program (ASAP).

The goal of ASAP is to enhance aviation safety by preventing accidents and incidents. Its focus is to encourage voluntary reporting of safety issues and events that come to the attention of employees of certain part 121 air carrier and part 145 repair station certificate holders. However, any operator, like an air ambulance service, may establish an ASAP with the FAA. There are currently more than 1,300 participants, including many operating under parts 91 and 135. Details about the program are online at bit.ly/faa-asap.

"When a pilot submits an ASAP report, I could better understand their decision-making process," explains Skultin.

Fast-paced Flights, High-stakes Decisions

Medical helicopter operations are challenging for both pilots and FAA safety inspectors alike. HAA pilots provide rapid medical transport for critically ill or injured patients

when ground transportation is unavailable or too slow. The helicopters carry medical professionals and advanced medical equipment, allowing for in-flight care to be provided. The aim is to quickly and safely transport patients to a medical facility within the "golden hour," the first sixty minutes after a trauma, when rapid transport can significantly improve a patient's chance of survival. Unlike part 121 air carrier operations, HAA missions are unscheduled and can be unpredictable.

"In air ambulance, you get a call at 2 a.m., and you may be heading into unfamiliar terrain. You may not have ever landed there before," notes Skultin.

Despite the urgency, HAA pilots are required to conduct a pre-flight risk analysis before takeoff. Under 14 CFR section 135.617, pilots must review hazards, terrain, weather, Notices to Airmen (NOTAMs), fuel, weight and balance, and more.

"This risk analysis has been a great step forward for safety," Skultin explains. "It formalizes a process that many experienced pilots used instinctively but brings it into a structured framework."

Still, the analysis, along with other safety planning, must be completed rapidly — often in less than 10 minutes. Pilots typically receive support and confer with an operational control center, but the bulk of the decision-making remains on the pilot's shoulders.

Building Trust, Reducing Risk

Providing oversight for such a dynamic environment is a significant undertaking. Not all air ambulance bases are alike, and no two missions are the same. Traditional surveillance tools, such as scheduled ramp checks or in-flight observations, don't easily apply.

"HAA oversight isn't like standard 121 or 135 operations," Skultin explains. "The pilots are flying into unfamiliar, off-airport environments. It's diverse, and sometimes unpredictable."

The Denver Flight Standards District Office (FSDO) has been proactive in fostering transparency and collaboration with HAA operators. That trust is vital in an operation where mitigating risk is key. While technological tools like terrain awareness systems and night vision goggles are great safety tools, culture and communication are equally important.

"We've seen progress where there's open dialogue," he notes. "When pilots know the FAA isn't just there to check the box, but to understand the operation, they're more likely to share concerns and engage in safety reporting."

"It's not just about checking manuals or processes," he continues. "It's understanding what the pilot is experiencing when they get that request in the middle of the night to respond to a call."

And while every mission is different, the goal remains the same: ensuring that the people who respond in moments of crisis can do so safely, confidently, and effectively.

Jahrod Coates is a contractor supporting the FAA's Office of Aviation Safety (AVS) as a writer for the *AVS Flyer*.

LEARN MORE

Don't Fly Fatigued Video
bit.ly/fatiguevideo

USHST Peer Pilot Program
ushstpeer.org

(FAA photo by Amanda Werner)

A Virtual Approach to the Real Future

Researching Virtual Reality to Make Helicopter Training Better

By James Williams

The weather is closing in; you push forward, hoping to slip in before anything worse comes along. No such luck. As the rain pounds heavily, your visibility drops, and you lose sight of the airport. You realize your mistake was not turning around 10 minutes ago when you had a clear path of retreat. But now, as you look around, all you can see is trouble. You attempt to turn around, but the controls feel heavy. Is it the rain? Is it just your imagination and the stress? The last thing you see is a stand of trees rushing up to meet you, then darkness. "Okay, let's try that again," a voice says over the headset as the image in front of you resets.

Simulation has long been a key tool in aviation training, and it's easy to understand why. As with any high-stakes endeavor, the consequences of a mistake in flight can be fatal, so we seek ways to reduce risk through training where errors are common. The challenge is often how realistic we can make that training. While even low-fidelity simulations can be beneficial, higher fidelity simulation solutions have been out of reach for most of the general aviation world due to their significantly higher costs.

However, the convergence of more affordable computing power, high-resolution virtual reality (VR) equipment, and enhanced commercial flight simulation has made high-fidelity simulation possible in places that were previously inconceivable. The question is: How can we better utilize this technology to further enhance pilot training?

A Virtual Hypothesis

In part to answer that question, the Vertical Flight Aviation Safety Technologies Laboratory and Cockpit Simulation Facility (VFAST/CSF) at the FAA's William J. Hughes Technical Center for Advanced Aerospace (WJHTC) conducted research to determine the benefits of using VR simulation to train new helicopter pilots before flying the real aircraft through a formal research study: VR-HeliSTART (Virtual Reality-Helicopter Simulator Training for Airplane to Rotorcraft Transition). The underlying research question of this work was "while VR simulation certainly increases immersion at a significantly lower budget, does that immersion translate into more effective training?"

"Like many large-scale applied research studies, the biggest challenge in designing and executing the VR-HeliSTART pilot transition study was the unknown," explains Cliff Johnson, vertical flight safety research lead/engineer and co-principal investigator of the study with WJHTC. "Going into the study, there were questions about how the pilots would respond to the training, how the instructors (Nick Mayhew and Stephane Rebeix) would teach using VR technology, and how the skills would transfer to the actual helicopter, if at all." VFAST/CSF is ideally positioned to investigate this issue, as it is a cutting-edge facility dedicated to enhancing flight safety through advanced simulation and flight technologies. VFAST/CSF utilizes a range of helicopter, general aviation, commercial, and powered lift simulators, including traditional and virtual reality platforms, which can be integrated with other simulation and flight test platforms at the FAA, Department of War, and industry. The lab conducts groundbreaking research, including experimental studies on future pilot training using rotorcraft loss of control, enhanced vision systems, vertiport symbology, and cybersecurity for position, navigation, and timing. The laboratory collaborates with industry, academia, and government partners to revolutionize flight training, improve pilot/air traffic control routing/procedures, and increase overall safety standards within the National Airspace System (NAS).

Like many large-scale applied research studies, the biggest challenge in designing and executing the VR-HeliSTART pilot transition study was the unknown.

(FAA photo by Cliff Johnson)

Study participants attend a ground school lesson.

The VR-HeliSTART study examined the benefits of conducting primary transition training equivalent to a typical commercial add-on program for airplane pilots transitioning to rotorcraft. The study recruited 11 students from Marshall University in Charleston, W.Va. The participants had varying levels of airplane experience, including student pilots to private pilots, commercial pilots, and flight instructors. During the 15-week experiment, pilots were provided both ground and simulator flight instruction in a three-stage course format. A typical week consisted of one 2-hour ground lesson and two to three 1.5-hour simulator lessons. Every fifth week, participants flew a stage check in the university's Airbus Helicopters H125 simulator, which was followed by a stage check in an actual H125 helicopter. Pilot performance data from all of the stage checks were recorded and analyzed to determine if the use of VR flight simulation provides positive transfer of training and skills equivalent to meet existing Airman Certification Standards (ACS).

"VR is a new technology, and with any new technology, there are benefits and limitations which become apparent after time is spent working with the devices both in a laboratory and training environment," said Stephanie Stead, a computer scientist with VFAST/CSF, when asked about any limitations of VR technology. "We have several studies underway to help uncover what those limitations may be and how to better address them." She continued, "Currently, the FAA qualifies flight simulation training devices based on standards developed prior to the introduction of VR technology. Therefore, our research efforts use the expertise of our team

(FAA photo by Amanda Werner)

An example of the VR simulator used in the study.

(FAA photo by Cliff Johnson)

and capabilities at the VFAST/CSF laboratory, along with our industry partners, including simulator manufacturers (e.g. Loft Dynamics, CAE, ACME, ASTi) to update these standards to allow for virtual reality device qualifications." Stead notes that the efforts have already contributed to the qualification of three virtual reality devices (Loft Dynamics's H125, Tru Systems Bell 505, and Leonardo's AW119) as Level 7 flight simulation and training devices within the last year, with additional systems and levels expected in the near future.

The Results Are In . . .

While the final report is still pending, we do have some preliminary results that show promise. They indicate that the protocol used in this experiment produces pilots with skill levels that enable them to operate a helicopter safely, with the majority of students performing at or above the private pilot ACS standards for most maneuvers. The team also discovered the benefits of safely experiencing many fatal accident causal factors, such as loss of control, unintended instrument meteorological conditions, and low-altitude operations, in a high-fidelity simulation environment.

"We were surprised at the level of proficiency that the pilots obtained in such a short time," explains Dr. Eleni Sotiropoulos, a co-principal investigator for the study, an engineer at Rowan University, and a core member of the team. "With tailored simulator instruction, most of the pilots, [even some without an airplane private pilot rating] were hovering in the helicopter during their first stage check flight, even though they had little or no prior experience flying a helicopter."

"Instructing in the VR environment demands a different approach but in many ways is more efficient, especially when teaching low-speed and hovering maneuvers," explains Nick Mayhew, one of the study instructors. "The instructor sits offboard with mouse pointer control in the VR headset, can play dynamic pre-recorded maneuvers, and has full access to all the controls with the ability to isolate individual controls, including the cyclic in lateral and fore/aft direction."

It may seem self-evident that new technology would offer previously unavailable advantages, but it is not always that simple. Rigorously and impartially determining efficacy is critical before attempting to modify standards, policies, or guidance. Another key consideration is how to utilize the benefits effectively. Resources are finite, especially time, and finding the optimal use strategy for a given technology enables operators to maximize the number of pilots trained while improving both the quality of training and the safety of the operation, potentially reducing costs as well. Well-structured and executed studies, such as the one discussed here, are an essential part of that process.

> **We were surprised at the level of proficiency that the pilots obtained in such a short time.**

The Flight Path Ahead

The VFAST/CSF team is looking ahead to build on this experience. They intend to expand on this preliminary research to investigate aspects of offboard training, simulation training, and other related topics as they apply to a full rating for a comparable helicopter. This information will help develop new standards for commercial and initial training for the next generation of rotorcraft and powered-lift pilots using virtual reality flight simulation.

"Our team continues to move the future of vertical flight forward by investigating how to safely integrate new technologies to enhance rotorcraft/vertical flight safety," Johnson said. "Some of the areas that are on our horizon include engineering and training aspects of virtual reality and simulated air traffic control environments for both initial, add-on, recurrent, and advanced ratings, modifying criteria for instrument approach and departure procedures to allow operations that permit IFR to the surface, as well as supporting all of the U.S. Helicopter Safety Team's active and planned future safety enhancements."

With the large-scale expansion of vertical flight expected soon, demand for competent, safe pilots is likely to surge. Therefore, improving our current training system will enhance our ability to meet that demand without compromising safety.

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

LEARN MORE

Vertical Flight Aviation Safety Technologies Laboratory (VFAST)
vfast.faa.gov

Modernization of Special Airworthiness Certification (MOSAIC) Fact Sheet

- Building upon the foundation of the 2004 final rule Certification of Aircraft and Airmen for the Operation of Light-Sport Aircraft, **MOSAIC** responds to evolving aviation and airmen needs, providing for future growth and innovation while maintaining the highest level of safety.
- **MOSAIC** increases the availability of safe, modern, and affordable aircraft for recreational aviation, flight training, and certain aerial work.
- **MOSAIC** provides broad regulatory relief to the public based on 20 years of safety data.

Key Components of MOSAIC:

1. Light-Spot Category Aircraft Certification

2. Sport Pilot Certification

3. Maintenance and Repairman (Light-Sport)

4. Operations

Publication and Effective Dates

MOSAIC final rule was published on July 24, 2025, with two effective dates:

October 22, 2025 (90 days after publication)

- Pilot training and certification rules and privileges
- Repairman certification, maintenance rules, and tow-hitch installation
- Class G airspace and right-of-way rules

July 24, 2026 (365 days after publication)

- Removal of “light-sport aircraft” definition from 14 CFR § 1.1
- Airworthiness certification requirements
- Changes in operations, including operating limitations

1 Light-Sport Category Aircraft Certification

MOSAIC amends 14 CFR part 21 and adds part 22 to:

- Adopt more performance-based rules to expand and enable innovation in the classes of aircraft that may be certificated as light-sport category aircraft using consensus standards. This includes emerging aircraft types.
- Allow manufacturers of light-sport category aircraft to design and manufacture a broader array of aircraft, including rotorcraft and powered-lift.
- Remove prescriptive weight limits that hinder incorporation of safety-enhancing designs and equipment.
- Increase the maximum stalling speed for light-sport category airplanes (61 knots V_{SO}) and gliders (45 knots V_{SO}).
- Allow faster, higher-performing aircraft for personal travel.
- Enable more capable and robust aircraft for pilot training.
- Allow for increased capacities for passengers, fuel, and cargo.
- Allow new types of propulsion systems (like electric), any number of engines, new propeller types, and retractable landing gear.
- Allow aircraft with simplified flight controls, enabling reduced flight hours for pilot certification.

2 Sport Pilot Certification

MOSAIC 14 CFR part 61 Subpart J § 61.316 changes performance and design limitations, expanding what aircraft sport pilots can operate.

- Removes aircraft weight and airspeed limitation.
- Permits use of any powerplant type except turbo-jet powered.
- New V_{S1} maximum stalling speed (flaps retracted) of 59 knots CAS.
- Allows operating aircraft with retractable landing gear.
- Allows operating airplanes with manual controllable pitch propeller.
- Allows use of 4-seat airplanes but retains 2 occupant limitation.
- Night operation privileges.

NOTE: the aircraft must meet the above requirements at the time of original certification.


2 Sport Pilot Certification Cont.

New Simplified Flight Controls Designation and Required Training

- The FAA created a new type of aircraft with simplified flight controls which can be operated by any pilot at any certification level. This aircraft will have the automated ability to control the flight path using the available power and prevent loss of control under likely circumstances, regardless of pilot input. (§ 22.180)
- Model specific training and endorsement is required for pilots seeking to act as pilot-in-command of aircraft with the simplified flight controls designation. Pilots must possess the appropriate category and class rating or privilege.
- Simplified flight controls endorsement is available to all pilot certificate levels. (§ 61.31(l))
- Both part 61 subpart H and subpart K flight instructors are required to obtain the make and model endorsement prior to conducting flight instruction in that make and model of aircraft with simplified flight controls designation. (§ 61.195(m) and § 61.415(m))
- Sport pilot certification experience requirements are found under part 61 (subpart J) and flight instructor certificate with sport pilot rating experience requirements are found under part 61 (subpart K).

New Sport Pilot Practical Tests

The FAA published new sport pilot testing standards in § 61.14 titled:

- ***Sport Pilot Rotorcraft Category Helicopter — Simplified Flight Controls Privileges*** Airman Certification Standards.
- ***Flight Instructor with a Sport Pilot Rating for Rotorcraft Category Helicopter — Simplified Flight Controls Privileges*** Airman Certification Standards.

  Sport pilots or flight instructors with a sport pilot rating seeking to **add** an airplane privilege or helicopter simplified flight controls privilege to an existing pilot certificate or flight instructor certificate must take a practical test with a pilot examiner.

3 *Maintenance and Repairman (Light-Sport)*

Changes to Maintenance of Light-Sport Category Aircraft

- Airworthiness Directive (AD) compliance is mandatory, while compliance with manufacturer-issued safety directives (SDs) is recommended.
- Major repairs and major alterations must be authorized by either the manufacturer or a person acceptable to the FAA.
- Authorization for minor repairs and minor alterations is not required.
- Major alterations and major repairs must be performed and inspected in accordance with maintenance and inspection procedures developed by the manufacturer or a person acceptable to the FAA.

Changes to Light-Sport Repairman Certificate Eligibility and Privileges

(Reference 14 CFR §§ 65.107 and 65.109)

- U.S. citizenship not required.
- Certificate privileges are defined by aircraft category: Airplane, Glider, Rotorcraft, Powered-lift, Weight-Shift-Control, Powered Parachute, and Lighter-Than-Air (LTA).
- Certificate limitations, based on training, are issued by aircraft class: Rotorcraft-gyroplane, Rotorcraft-helicopter, LTA-airship, and LTA-balloon.
- Certificate privileges for experimental aircraft now also include:
  - **Amateur-built aircraft (EAB)** – § 21.191(g)
  - Kit-built light sport – § 21.191(k)
  - Former light-sport category – § 21.191(l)
- Inspection-rated repairmen may only work on aircraft they own; N-Number and serial number are no longer listed on the certificate.

NOTE: EAB aircraft with operating limitations issued prior to Oct. 22, 2025, must obtain revised operating limitations that permit a light-sport repairman to perform the annual condition inspection.

NOTE: EAB Repairman Certificates issued under 14 CFR § 65.104 were not addressed in the MOSAIC rulemaking. Eligibility, privileges, and limitations for these certificates are found in 14 CFR § 65.104 and have not changed.

Changes to Light-Sport Repairman Training Course Acceptance

- Codified requirements for training course providers:
  - Administer a course test
  - 70% passing test score per § 65.17
  - Issue a certificate of completion
  - Have appropriate facilities, equipment, & materials
  - Have appropriately qualified instructors
- Training course acceptance issued based on aircraft category, and class when applicable (e.g., Airplane, Rotorcraft-Gyroplane).
- Maintenance rating training courses must include applicable content from the mechanic Airman Certification Standards (ACS). FAA-acceptance is based on course content instead of specified course hours.
- Course content that was FAA-accepted and being taught before the MOSAIC final rule continues to be “appropriate” content.

4 Operations

MOSAIC Changes: Part 91 Flight Operations

New Experimental Aircraft Operations

- Allows the FAA to issue operating limitations for certain aircraft with experimental airworthiness certificates to conduct operations over densely populated areas, in congested airways, or both, for all phases of flight.
- Allows former military aircraft that have an experimental airworthiness certificate to operate under certain new purposes, like repositioning the aircraft for operation as a public aircraft.

New Flight Operations

- Restricted category aircraft
  - Allows relocation to exhibitions, trade shows, and other events.
- Light-sport category aircraft
  - Allows aerial work operations for certain light-sport category aircraft.
  - Specifies additional requirements to tow a glider or an unpowered ultralight vehicle IAW § 91.309 and § 21.190 for compensation or hire.
  - Allows a maximum limit of 4 occupants for airplanes and 2 occupants for other aircraft (sport pilots are still limited to 2 occupants).
- Experimental aircraft space support vehicle flights
  - Codifies space support vehicle flight operations for certain experimental aircraft to conduct space support flights.
  - Allows for carriage of persons or property for compensation or hire without an air carrier certificate or exemption.

New Operating Rules

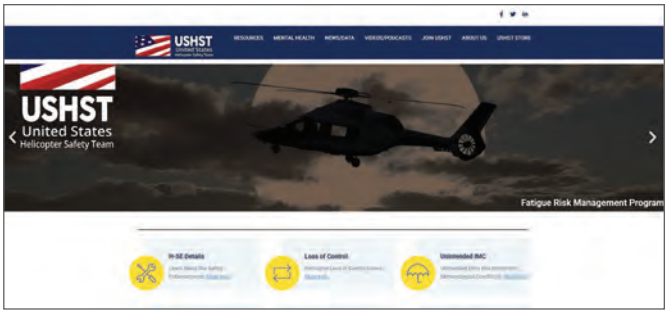
- Towing: gliders & unpowered ultralights
  - Clarifies allowable process to attach a tow hitch to eligible light-sport category aircraft.
- Right-of-way rules
  - Clarifies and revises operating rules to include more aircraft, including those with non-traditional forms of propulsion.
- Operations in Class G airspace
  - Includes more aircraft and improves aircraft separation by considering operational needs, aircraft configurations, and speeds to enhance avoiding dissimilar aircraft.

Spotlight on Safety verticalavi.org/safety/spotlight-on-safety

VAI SAFETY

JAMES WILLIAMS

VERTICAL VALUE



Time is by far the most critical resource we have. Always ticking away and never recoverable (unless you have a spare flux capacitor and Delorian lying around). Given the critical nature of this resource, it can sometimes be challenging to find a reliable source to stay up to date with the latest safety information quickly. While we certainly recommend reading *FAA Safety Briefing* regularly, our rotorcraft coverage is usually limited. However, several other excellent sources are available. First, the U.S. Helicopter Safety Team (USHST) provides a valuable resource for quickly accessing reliable information on key topics.

> THE *HELICOPTER FLYING HANDBOOK* IS THE FAA'S OFFICIAL REPOSITORY OF BASIC KNOWLEDGE ON HELICOPTER OPERATIONS.

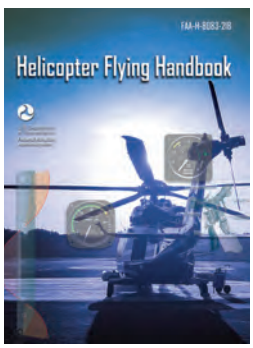
Join the Team

As explained in "The USHST: Find Out What It Means for Helicopter Safety" on page seven of this issue, USHST is a volunteer group comprising government and industry stakeholders formed to enhance the safety of civil helicopter operations. USHST employs a multifaceted approach to achieve that objective. That approach has generated a wealth of resources for the helicopter community, which are housed on their website. Given the varied nature of helicopter operations, not every resource or format will be best suited to any particular operator. That's why USHST provides information on a range of topics in various formats to reach the widest possible audience.

The USHST produces helicopter safety enhancements (H-SEs) that address key safety issues for the rotorcraft community. These H-SEs are available in their normal report format but can also be explored as podcasts or short online videos — some even boasting their own mini-website. USHST also focuses on pilot mental health in the helicopter world. To help prioritize mental health in the community, USHST launched its Peer Pilot Program. It offers a confidential, non-punitive, and professionally supported system where helicopter pilots can speak freely with trained volunteers. By providing a peer to speak with, the hope is to remove barriers that might otherwise obstruct seeking help. All this and more is available at ushst.org.

It's in a Book

If you're not already a helicopter pilot and maybe just a bit whirlybird curious, or you're already familiar with rotorcraft but want to brush up on some of the basics, there's always the *Helicopter Flying Handbook* (HFH). The HFH is the FAA's official repository of basic knowledge on helicopter operations. It covers everything from the basic history and uses of helicopters to advanced flight maneuvers. The HFH is no replacement for effective ground training, but it can be a force multiplier.



The HFH is a free, authoritative resource that you can use either before or as a part of your training. It's a 200-page-or-so head start that can help you identify areas to focus on in your time with your instructor. At the very least, a good grounding in helicopter anatomy will be an excellent time-saver, particularly if you're coming from the fixed-wing world.

These are just a couple of resources available to you at no cost. I encourage you to look at both of them. As a fixed-wing pilot, these resources have enabled me to explore a world that has always fascinated me but was previously out of reach. I've always enjoyed discussions of helicopter flying and how different the approach to similar situations can be. And who hasn't been stuck in traffic and thought about zipping right over it and setting down right next to your destination. Additionally, arriving by helicopter is likely one of the most impressive ways to travel. Hopefully, these trusted resources can save you time and make all your helicopter adventures safer.

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

LEARN MORE

U.S. Helicopter Safety Team (USHST)
ushst.org

FAA *Helicopter Flying Handbook*
bit.ly/FAAHelicopterHandbook


FROM
THE
FLIGHT
DECK
FEDERAL AVIATION ADMINISTRATION
PRODUCTION
KNOW BEFORE YOU GO.
FAA.GOV/GO/FROMTHEFLIGHTDECK
FAA
NOW PLAYING
YouTube

REBEKAH WATERS

PROCEDURAL PITFALLS

In January 2014, a Eurocopter EC130 helicopter departed the Boulder City Airport (BVU) for a post-maintenance check flight. The flight only lasted ten minutes. On final approach, the pilot observed a "low pressure" warning light followed by a sudden complete loss of engine power. At 200 feet, the pilot initiated an autorotation, and the aircraft came to a rest on its side. The post-accident investigation determined the maintenance technician didn't follow appropriate procedures. Despite continued training and focus on procedure following, failure to follow procedures (FFP) remains a leading human factors challenge in aviation maintenance.

Investigations estimate that FFP contributes between 40.5% to 87% of all maintenance-related events. In the example above, the maintenance technician used an alternative procedure to replace a part. The technician removed the fuel tank to access the "dog bone" (bi-directional suspension crossbar) instead of removing the transmission/gearbox. This led to a loose B-nut and missing safety wire, causing a loss of fuel flow and a forced landing. Luckily, the pilot was okay, but the helicopter sustained substantial damage. The NTSB listed FFP as a contributing factor.

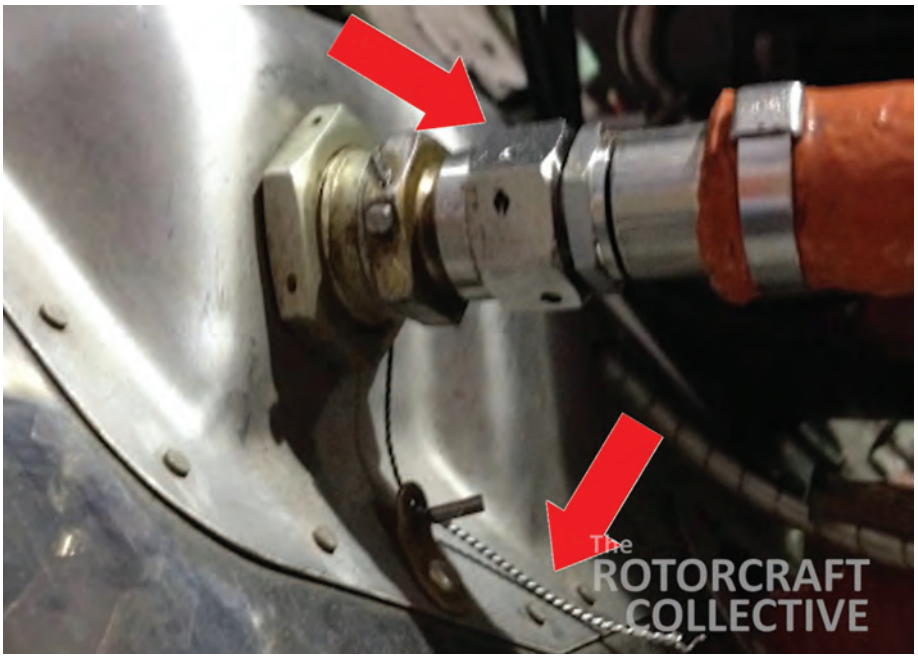
> FOLLOWING PROPER MAINTENANCE PROCEDURES IS AN IMPORTANT SAFETY PRACTICE, NO MATTER WHAT TYPE OF AIRCRAFT YOU MAINTAIN.

Maintenance technicians have the technical knowledge to perform their jobs safely, yet the FFP problem persists. There is no one cause of FFP; rather, numerous factors contribute to it. For example, schedule and production pressure or physical environmental conditions can contribute to an FFP event. Other factors that lead to FFP include the complexity and difficulty of understanding or applying the written procedures themselves.

> THE FAA OFFERS TRAINING AND TOOLS FOR MAINTAINERS AND ORGANIZATIONS LOOKING TO REDUCE FFP AT BIT.LY/STOPFFP.

The FAA offers training and tools for maintainers and organizations looking to reduce FFP at bit.ly/StopFFP. You can also find tools like task cards and decision aid guides. One great training resource is the FAASTeam course "The Buck Stops With Me" available at bit.ly/AMTbuck, which offers credit in the AMT Awards Program.

Following proper maintenance procedures is an important safety practice, no matter what type of aircraft you maintain. Reducing FFP events and improving safety culture requires continuous effort, a shared commitment to championing safety, and a culture of procedure following.



In this video still, the top arrow points to a loose B-nut on the fuel line, and the bottom arrow shows the safety wire hanging from the B-nut.

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

LEARN MORE

Deviating from Maintenance Procedures Can Be Deadly Video, The Rotorcraft Collective
bit.ly/DeadlyDeviations

ADS-B

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- Find out if your ADS-B Out equipment is working properly
- Review the top five things pilots should know about their ADS-B system
- Learn more about the FAA's Privacy ICAO Address program
- See aircraft equipage levels by category
- Report an issue with TIS-B, FIS-B, or other aspect of the ADS-B system

FOR MORE INFORMATION:
WWW.FAA.GOV/GO/EQUIPADSB

Federal Aviation Administration

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 nearly 17,000 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.

The Rotorcraft Collective

The Rotorcraft Collective is a joint workgroup between the FAA and industry professionals that produces short helicopter-focused safety videos in collaboration with the FAA Safety Team (FAASTeam) and the U.S. Helicopter Safety Team (USHST). Team members include engineers, pilots, mechanics, accident investigators, and communication specialists from various FAA offices, Vertical Aviation International (VAI), Helicopter Institute, Airbus Helicopters, Hughes Aerospace, Pilot Institute, City of Charleston, and Helicopter Training Videos (HTV).

Check out the playlist to see what everyone is talking about and pick up some helicopter safety tips.

bit.ly/RotorYT

Flying in the Unforgiving Wire Environment

Many pilots mistakenly believe they will have sufficient reaction time if they encounter power lines and other wires. Yet wire strikes have been among the top three causes of fatal helicopter accidents for more than a decade. Chris Hill, a wire-strike survivor and Vertical Aviation International's senior director of safety, talks about technologies to supplement your obstacle-avoidance efforts, along with wire-strike avoidance techniques.

Great intro to the wire environment.
— @dfeers

Very informative presentation, it was nice to know. Thanks!
— @annat5736

PEDs Can Cause Deadly Distractions

Using a portable electronic device while flying can be distracting. Nonessential usage adds risk to your flight. The discussion here is not about the legality of using these devices in the cockpit; it's about when and under what circumstances to properly use them. Using an electronic flight bag for navigation is common these days, but it, too, can cause a distraction severe enough to wreck the situational awareness it's supposed to enhance. Watch this video for some tips on managing the use of portable electronic devices to a reasonable level.

Great PSA. Great lesson. Thank you. Note to others... if you are being distracted by your smartwatch notifications, in the settings, simply turn off the feature.
— @Eltoca21

Speaking of which …

Tips to Safely Use a Smartwatch on the Flight Deck

Many pilots wear smartwatches while flying. With GPS capabilities, aviation-specific watches can serve as emergency navigation tools and even find the nearest airports, complete with maps, NEXRAD, current weather, and radio frequencies. This video discusses the benefits and tips for safely using a smartwatch in the air.

The Garmin D2 series is a pilot focused watch. You can use them to do a Direct-To to nearby airports, read the METAR/TAF, and a good bit more. Mine logs my flights when I take off.
— @mweb586

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

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

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

A BEGINNER'S GUIDE TO ROTORCRAFT TERMINOLOGY

Gyrodyne photo from May 19, 1938.

In preparing for this rotorcraft-themed issue of *FAA Safety Briefing*, I explored several compelling resources regarding the vertical aviation industry. Despite logging 1.2 hours at the controls of a Robinson R-44, it became clear that there is a lot still to learn. I made it a quest of sorts to run down some definitions and gain a clearer understanding of the rotorcraft realm and what makes this sector of aviation so unique.

A Similar but Different Spin

Let's start with some of the basics. Although you might hear the terms "rotorcraft" and "helicopter" used interchangeably, there is an important distinction between the two. "Rotorcraft" is a broader category of heavier-than-air aircraft that uses rotors to provide lift. A "helicopter," on the other hand, is a specific class of rotorcraft that depends principally on its *engine*-driven rotors for its horizontal motion. All helicopters fall under the category of rotorcraft, but not all rotorcraft are helicopters.

Another class of rotorcraft you may be familiar with is the autogyro or gyroplane. A gyroplane is a rotorcraft whose rotors are free-spinning and not engine-driven (except for initial starting), and whose means of propulsion is independent of the rotor system. A gyroplane may have wings, be either tractor- or pusher-configured, and can be either turbine- or propeller-powered.

A third and relatively lesser-known rotorcraft class is the gyrodyne. A gyrodyne is basically a hybrid of the gyroplane and helicopter; it uses engine-driven rotors for takeoff, hovering, and landing, and conventional propulsion systems (propeller or jet engines) during cruise portions of flight. Although gyrodynes are more of a legacy concept from decades past, their "best of both worlds" design concept is being revitalized to some degree with certain electric vertical takeoff and landing (eVTOL) designs.

> ALL HELICOPTERS FALL UNDER THE CATEGORY OF ROTORCRAFT, BUT NOT ALL ROTORCRAFT RE HELICOPTERS.

As the Rotor Turns

Many helicopters employ a single main rotor design, but there are actually several different configurations that offer their own advantages. Tandem (or dual) rotors use two large horizontal rotor assemblies. These counter-rotating rotors cancel each other's torque and eliminate the need for the tail rotor you see on single rotor designs. Having two blade sets allows tandem rotors to carry more weight, putting them among the most powerful and fastest designs. A good example is the iconic Boeing CH-47 *Chinook*.

Other configurations include coaxial rotors (two stacked rotors turning opposite directions on the same mast) and intermeshing rotors (a set of two rotors set at an angle to each other that intermesh without colliding). The latter design provides stability and heavy-lifting and can also operate without a tail rotor.

It's a Collective Effort

As a fixed-wing flyer, my first time at the controls of a helicopter was bewildering to say the least. My hands and feet were equally busy learning how to finesse the controls that seemed more intricately interconnected than what I was used to. Changes to pitch, power, or yaw were all part of a delicate balancing act, with each having some effect on the other. Instead of making the familiar aileron, elevator, rudder, and throttle inputs, I was maneuvering the cyclic (commonly a joystick between the legs, or in my case, a T-bar configuration), the collective (a lever down by the side of the pilot's seat), and the antitorque pedals.

The cyclic functions much like a fixed-wing yoke, center stick or with inputs tilting the main rotor disk to provide forward, back, and side-to-side motion. The collective changes the pitch angle of all the main rotor blades at the same time (collectively) to control altitude and airspeed. In many cases, the throttle is integrated with the collective to increase power and offset the increased drag on the rotor blades. And much like rudder pedals, the antitorque pedals provide a yawing motion around the vertical axis by changing the pitch on the tail rotor blades.

While my feeble first attempt at mastering these controls during a hover likely amused my instructor, the ability to "pause" in mid-air is a sensation unlike any other I've experienced in aviation. Even if you don't have the chance to take a chopper for a spin, expanding your knowledge of rotorcraft flight dynamics can sharpen your understanding of airflow, energy, and control inputs and elevate your airmanship to a new level.

Did You Know? . . . the word "helicopter" is adapted from the French word *hélicoptère*, coined by Gustave de Ponton d'Amécourt in 1861. It is linked to the Greek words *helix* or *helikos*, meaning spiral or turning, and *pteron*, meaning wing.

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

TOM HOFFMANN

BRIAN SEIBEL

Aviation Safety Inspector, FAA's General Aviation and Commercial Division

A native of Sacramento, Calif., Brian Seibel got his first taste of flying in a UH-1 Huey helicopter during an ROTC orientation weekend mini-camp at the University of Colorado, Boulder. "I never had much interest in aviation before, but after that first flight, I was hooked."

While nearsightedness kept him from pursuing a military aviation career, he completed his civil engineering degree at CU Boulder and served 4 years in the Air Force stationed at Vandenberg Air Force Base. While there, he spent his weekends taking lessons at the local helicopter flight school, ultimately earning his commercial, instrument, and flight instructor helicopter certificates.

After the Air Force, Brian worked as an instructor and then as an offshore oil and gas helicopter pilot for five years, before pivoting again to a career in the helicopter air ambulance (HAA) industry. "I chose an HAA career because I liked the thought of helping people in need, and how this challenging environment suited my personality and skill set." Brian took a job in Alaska as an HAA pilot, eventually transferring to Cheyenne, Wyo., and then to Northern Colorado.

Twelve years and two children later, Brian realized the challenge of balancing sleepless nights with the fatigue factor of an already difficult career field. "I saw an opening for an aviation safety inspector at the Denver FSDO and applied," said Brian. "My hope was that I could use my 20 years of helicopter flying experience to give back to the aviation community by ultimately helping effect change, both inside and outside the FAA."

> **AS HELICOPTER PILOTS, WE NEED TO BECOME MORE EDUCATED ABOUT THE ENTIRE NATIONAL AIRSPACE SYSTEM AND EMBRACE THE POSITIVE SAFETY CULTURE THAT IS EVOLVING RIGHT NOW.**

Brian later joined the FAA's General Aviation and Commercial Division in 2025 and recently began a new role to help update the Flight Standards General Aviation Safety Promotion Policy. "The desired goal is for us to be able to use real-time data to identify specific high-risk areas in the GA community, then focus our outreach efforts to address the identified issues, while being able to evaluate our effectiveness in reducing the risks based on measurable outcomes," explained Brian. Brian is expanding these safety promotion efforts within the rotorcraft community and is strengthening collaboration with the U.S. Helicopter Safety Team (USHST).

As an experienced helicopter pilot, Brian understands the challenges airmen face in this unique aviation subculture and the value of safety education support networks. "As helicopter pilots, we need to become more educated about the entire National Airspace System and embrace the positive safety culture that is evolving right now," said Brian. "Part of that responsibility is speaking up about safety concerns related to our industry, along with proposing any potential controls, mitigations, or corrective actions to help address them." This is especially important with the integration of powered-lift, optionally piloted aircraft, and unmanned aircraft systems.

While Brian no longer actively flies, he does look forward to joining a flying club in the future. In the meantime, Brian and his family enjoy attending local air shows and fly-ins, grabbing lunch at the nearby airport restaurants, and watching the local hot air balloon festival from lawn chairs in his backyard.

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