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SEPTEMBER 2021 THE MAGAZINE OF HELICOPTER ASSOCIATION INTERNATIONAL



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CONTENTS

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HAI/MARK BENNETT

FEATURES

24 Randy Rowles: Moving Forward

World-class instructor and aviation leader steps up to guide HAI.

By Paul Koscak

32 The Return of Schweizer

New manufacturer offers iconic aircraft and commitment to customer service.

By Jen Boyer

40 Adding UAS to Your Helicopter Operation

For the right mission, drones are a low-cost, safe, effective choice.

By David Hughes

46 Man vs. Mosquito

Another case of helicopters saving lives (in this case, human, canine, and equine ones).

A photo essay by Mark Bennett

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ON THE COVER: In this Mark Bennett photo, Randy Rowles, president of Helicopter Institute in Fort Worth, Texas, surveys the city while at the controls of his company's AS350 B2. The 2021-22 chairman of HAI, Rowles will lead the association as it navigates several challenges, including the COVID-19 pandemic and workforce shortages. Read more about Rowles and his plans for the coming year in the From the Board column on p. 6 and in a profile beginning on p. 24.

DEPARTMENTS/COLUMNS

6 From the Board

The Value of Membership

By Randy Rowles

7 President's Message

Seeing Aviation from All Sides

By James A. Viola

8 IMHO

5G Interference: A Helicopter Air Ambulance Perspective

By Rick Kenin

10 Advocating for You

Why Representation Matters

By Cade Clark, John Shea,
and Emma Taylor

15 ROTORWash

▸ *HAI Briefs*

▸ *HAI on Social*

▸ *One Question, Many Answers:
How Do You Control FOD
in Your Operation?*

▸ *Rotorcraft Events*

22 FlyOver

*Deputy Steve Timlin and a
Eurocopter AS350 B2*

58 Flight Path

Faith Lorenz

60 Recent Accidents & Incidents

63 Accident Recovery

Out of Character

By David Jack Kenny

66 Fly Safe

Seeing Clearly

By Zac Noble

68 Keeping Up

*How Do You Keep Your Training
in Check?*

By Matt Presnal

70 Last Hover

▸ *Shawn Coyle*

▸ *Bob Whitson*

71 Index of Advertisers

72 Last Look

*Vertical Aviation Technologies
S-52L Hummingbird*

By Mark Bennett

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Mark Bennett worked for McDonnell Douglas Helicopter/Boeing for a decade, then in 1999 cofounded an aerospace-only marketing agency. With

30-plus years of photography and design experience serving the aerospace and defense industries, he founded AeroMark Images to shoot and write for both industry and media.



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Jen Boyer is a 20-year journalism and public relations professional in the aviation industry, having worked for flight schools, OEMs, and operators. She holds a

rotorcraft commercial instrument license with CFI and CFII ratings. Jen now runs her own public relations and communications firm.



Cade Clark

HAI's VP of government affairs, Cade Clark has directed association advocacy programs for more than 20 years. Growing up,

Cade worked at an FBO where he learned to fly, washed planes, got in the mechanics' way, idolized the old-timers and their stories, and deepened his love for all things general aviation.



Jaasmin Foote

Jaasmin Foote joined HAI as the association's social media manager in March 2020, just a week before the COVID-19 pandemic lockdown.

She holds a bachelor's degree in English and is currently pursuing her master's in marketing. Jaasmin is responsible for all the cool posts on HAI's social media platforms. Follow us, drop by, and say hi!



David Hughes

David Hughes has been writing about aviation for 40 years. As a US Air Force Reserve pilot, he flew the C-5 and C-141 and logged 20 years writing and editing at

Aviation Week & Space Technology magazine. He then joined the FAA to write about NextGen and today is a freelance writer.



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David Jack Kenny is a fixed-wing ATP with commercial privileges for helicopter. He also holds degrees in statistics. From 2008 through 2017, he worked for AOPA's Air

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Paul Koscak

Paul Koscak is a freelance writer and an aviator. He holds CFI, CFII, and MEI (multi-engine instructor) ratings and has 2,500 total flight hours. A former newspaper

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Gina Kvitkovich

Gina Kvitkovich joined HAI as director of publications and media in 2011 after decades of honing her skills in writing, editing, and publishing. As editor of ROTOR,

she is responsible for every error in the magazine that you're reading—and for some of the good stuff, as well.



Zac Noble

Zac Noble, HAI director of maintenance and technology, has over 37 years of experience as a pilot and mechanic. He spent 11 years flying in the air medical

sector before coming to HAI and is a veteran of the US Army, where he flew helicopters and multiengine airplanes. Zac is a dual-rated ATP, a dual-rated CFII, and an A&P mechanic with IA privileges.



Matt Presnal

Matt Presnal is the chief theoretical knowledge instructor at Coptersafety in Helsinki, Finland. Coptersafety offers a full range of helicopter training courses on

H125, H145, AW139, and AW169 full-flight simulators.



John Shea

John Shea joined HAI as director of government affairs in 2019. He came to HAI from the National Association of State Aviation Officials (NASAO), where he was

interim president in 2018 and lead government affairs representative since 2017. Previously, as a legislative staffer, John advised multiple members of Congress on transportation policy.



Dan Sweet

Dan Sweet joined HAI as director of communications and public relations in 2017. He previously served in the US Navy as a photojournalist. After leaving the

Navy, he worked for Oregon-based Columbia Helicopters, performing public relations, communications, and trade show management work for more than 22 years.



Emma Taylor

Emma Taylor joined HAI as a policy analyst in 2020. She graduated *cum laude* from Villanova University in December 2019 with a major in political science. Driven

by her passion for public policy and advocacy, Emma is thrilled to start her career at HAI and has since developed a deeper appreciation for the vertical lift industry.

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The 2022 Salute to Excellence Awards will be presented at HAI HELI-EXPO 2022 in Dallas, March 7–10 (exhibits open March 8–10).



By Randy Rowles

The Value of Membership

Being an HAI member is a winning proposition.



An FAA pilot examiner for all helicopter certificates and ratings, Randy Rowles holds an FAA ATP and Gold Seal Flight Instructor Certificate, and in 2013 received HAI's Flight Instructor of the Year Award. Chairman of the HAI Board of Directors for 2021–22, Randy operates the Helicopter Institute, a Texas flight school.

I'VE BEEN AN HAI MEMBER SINCE 1993, AND I VALUE MY MEMBERSHIP now more than ever. Working with various HAI committees (now working groups), I've found great satisfaction in having my voice heard and being an effective member of our vertical lift community. Just like the rest of the world, our industry is in a recovery period as we maneuver through worldwide COVID restrictions. We need a robust support system to maintain operations in such a challenging landscape, and HAI continues to provide that.

Over the past few years, the face of HAI has changed. Some changes were reactive measures to survive an economic downturn. A pandemic will do that! A more positive change is the vision of HAI President and CEO Jim Viola. Supported at all levels by the HAI Board of Directors, Jim has brought forward new ideas and methods while cultivating relationships that will carry HAI beyond US borders and enhance the international aspect of our mission.

We also need to ensure we are meeting our responsibilities to our current members. As an HAI member, I felt that a lack of transparency existed about HAI's day-to-day operations and finances. Recognizing this, the HAI Board of Directors created a Finance, Risk, and Compliance Committee (FRCC) to maintain and honor HAI's fiscal responsibility to our members. Members of the FRCC, as well as other board members, now meet monthly with a financial consultant from outside HAI, adding a layer of member review to association finances. As an HAI board member for the past five years, I'm pleased to say that HAI is financially strong, in part due to a healthy investment portfolio. In addition, when HAI HELI-EXPO 2021 was canceled due to COVID, HAI staff enacted timely measures to mitigate the financial effects, allowing HAI to minimize any losses while we renegotiated our contractual obligations.

As the 2021–22 HAI chairman, I want to pursue opportunities for HAI members with insurance and employee-benefit providers. Additionally, to combat rising insurance costs, I'd like to investigate having our operator members participate in a consortium for aircraft insurance.

Pre-COVID, the airlines were running well-organized, well-funded recruitment campaigns for new personnel, with one of their targets being our licensed and trained pilots and maintenance technicians. With that industry recovering, our workforce is again being recruited for airline employment, in many cases leaving helicopter operators without qualified replacements. The economics of the situation may appeal to our up-and-coming helicopter pilots and mechanics—and that's my point. We must examine the ways in which we have erected barriers to working in the rotorcraft profession, including the cost of training and the time required to meet minimum qualifications, that make it difficult to engage in the opportunities our industry has to offer. It's a competitive marketplace for talent—does our industry have a winning proposition?

Since the helicopter entered commercial aviation in 1946, our industry has successfully overcome challenges through a pioneering spirit that is very much alive today. HAI has been our partner on that journey, sharing our love for vertical flight, our desire to use these amazing aircraft to do great things, and our can-do spirit. I'm excited to work with the HAI Board of Directors, along with HAI leadership and staff, to continue this long-standing tradition, and I look forward to seeing you all at HAI HELI-EXPO 2022 in Dallas, Texas. And in the meantime, stay safe out there! 

A handwritten signature in blue ink that reads "Randy".

By James A. Viola

Seeing Aviation from All Sides

Out of the office and (finally) into the cockpit!



James A. Viola is HAI's president and CEO. After a career as a US Army aviator, he joined the FAA, where he served as director of the Office of General Aviation Safety Assurance before joining HAI. A dual-rated pilot, Jim holds ATP ratings in both airplanes and helicopters and is a CFII. Jim can be contacted at president@rotor.org.



WATCH
Jim Viola fly an SA 315B Lama at Eli-Fly in Italy

WHILE THE PANDEMIC HAS SLOWED EVERYONE'S cross-border operations, I have had the chance to visit HAI members, including Leonardo's facility in Philadelphia, GrandView Aviation in Maryland, and Brainerd Helicopters in Florida. In August, I not only crossed state lines but traveled internationally and visited [Eli-Fly](#) in Esine, Italy.

During my visit to this Italian helicopter operator, I was joined by Peter Moeller, the chairman of the [European Helicopter Association \(EHA\)](#). Capt. Francesco Comensoli provided us with some background on Eli-Fly and its charter, tour, and aerial work operations. We also discussed the near-term challenges of the pandemic, as well as future concerns. HAI, working in concert with EHA, committed to taking action on some European issues and through our working groups will also address global questions.


Another avenue for HAI's leadership in the worldwide helicopter community is our role in the [International Federation of Helicopter Associations](#). This group of national associations, activated in 1993 through the joint efforts of EHA and HAI, represents the global helicopter industry at the International Civil Aviation Organization (ICAO). Today, HAI staff are key connectors to several ICAO working groups, most notably the Flight Operations Panel, where we keep an eye on global trends in civil aviation.

Safety is another area in which HAI has taken on an international leadership role. HAI and ICAO are the two senior advisors to the [Vertical Aviation Safety Team](#), which comprises the regional safety teams and other global VTOL stakeholders who have joined together to improve safety in our industry. International cooperation and collaboration will be necessary to achieve our goal of zero fatal accidents.

My July visit to EAA AirVenture 2021 in Oshkosh, Wisconsin, provided me with the opportunity to transition from policy discussions to the cockpit—and to experience how the two intersect. Flying cross-country in an R44 was a good opportunity to get back to basics. However, my installation of ADS-B In gave me a beautiful picture of what was going on in the airspace around me. As I closed in on KOSH, seeing the trail of ADS-B targets for miles on arrival made deconfliction decisions easy.

Because I was landing at Appleton International Airport (KATW), I climbed to a mere 2,500 ft. to be above the airplanes. As I looked below the airplane trail, I saw another airplane painting the fields below the trail—an agricultural aviator at work. This is a good example of how modern technology enables us to share the airspace safely, allowing each of us to get to where we are going and get the work done. For those of you who have not yet taken advantage of ADS-B In, I highly recommend it.

The flexibility of aviation, and more specifically, vertical aviation, enables it to provide solutions for many of society's needs. As we prepare to launch new markets for aviation through advanced air mobility, be ready for their arrival—you are the experts at operating safely, effectively, and efficiently in the environment they will be moving into.

I continue to seek input and vectors from you, our members, to ensure that HAI is taking on the issues that keep you up at night. Your association is here to help, so please help me to understand your problems. Connect with me via email at president@rotor.org. 

A handwritten signature in blue ink that reads "James".

By Rick Kenin



Rick Kenin joined Boston MedFlight in 2014 after completing a 30-year aviation career in the US Coast Guard. Rick's early years with Boston MedFlight focused on developing a sound safety culture and earning the FAA's Part 135 air transport operating certificate for the company. Now, as the company's COO, he manages both air and ground ambulance programs. Rick's passion is finding better ways to operate helicopters safely, as reflected in his election to HAI's Board of Directors this year and his previous service as chair of HAI's Safety Working Group.

5G Interference: A Helicopter Air Ambulance Perspective

Maintaining safety is too important to leave to others.

WE SEE IT EVERY DAY ON TV: "AT&T has the largest 5G network!" "Verizon. The leader in 5G!" 5G is a good thing, right? It promises clearer cell phone and data signals in more remote locations and better connectivity and voice communications. But for the helicopter industry, and for helicopter air ambulance (HAA) operators in particular, the 5G rollout could severely disrupt our operations.

As an HAA operator, my greatest concern is the safety of my crews and the patients we transport. One way we mitigate the inherent risks in our work is to provide pilots with effective tools to manage flight safety. Anything that lessens the effectiveness of these tools should concern all of us. And that's exactly what will happen in December 2021 with the introduction of 5G cellular networks.

The US Federal Communications Commission (FCC) sold a portion of the radio frequency spectrum for more than \$80 billion to telecommunications companies so they could expand their services in what is called the 5G, or 5th generation, mobile network. Unfortunately, the frequencies that the 5G network operates in are directly adjacent to the frequencies our aircraft radio (or radar) altimeters use to help pilots find their location and avoid hitting the ground. Studies show that this proximity will cause radio altimeters to display scrambled, delayed, or missing data, particularly when close to 5G transmission towers and below 500 ft. above ground level.

Our industry, and in particular Helicopter Association International, has been working behind the scenes to seek a resolution to this problem. Regulators and civil aviation authorities in other countries, including Canada's Innovation, Science and Economic Development (ISED) department, have formally acknowledged 5G interference with radio altimeters and are taking steps to mitigate safety concerns.

In the United States, the FCC has authority over spectrum policy, but they have done very little to address the issue. The FAA has no authority over spectrum, but the agency has acknowledged interference issues with radio altimeters, stating that it will ensure safety in the National Airspace System after 5G goes into operation on Dec. 5 by employing the same tools it currently uses, including NOTAMs, airworthiness directives, and updated technical standard orders. While certainly helpful in maintaining safety, using NOTAMs across the country to cordon off airspace identified to present a 5G radio interference concern is far from an ideal scenario.

The real-world impact of 5G interference with radio altimeters in HAA operations is worrisome for a couple of reasons. First, our operators are not always going from known location to known location. We land on highways and in ball fields, parks, and meadows to rescue the sick and injured and deliver them to advanced medical care. Radio interference simply won't be avoidable in some situations. When it does happen, any number of aircraft systems that are integrated with radio altimeters can become unreliable, cause a distraction, or trigger a misinformed decision.

Further, our operators are dispatched when every second counts. Altering a flight path to avoid known interference areas will lessen our ability to provide the most important benefit a helicopter can deliver: speed in medical care.


So you're asking: isn't there a technical fix for this? Unfortunately, interference-resistant radio

altimeters are not readily available. Manufacturers are working to change this, of course, but the FAA's rigorous certification process will take years.

Filters have been identified as one option, but their effectiveness will vary, depending on the type of radio altimeter and the type of aircraft operation. In any case, retrofitting radio altimeters with out-of-band filters by Dec. 5 is a practical impossibility and does not offer a comprehensive solution to mitigate the risks. And more to the point: why should I, an HAA operator, pay for a new piece of technical equipment so that another corporation in another industry can profit?

So what can we, the helicopter operators and helicopter support industry, do in the face of this looming bureaucratic mess? I urge everyone reading this to visit rotor.org/radalt, where you can sign up for HAI Legislative Alerts and learn more about our industry's efforts to talk sense to those that work in the FAA and FCC.

Inflation, regulation, COVID, climate change: these are the threats we hear about daily. Like all of you, the introduction of 5G mobile networks was nowhere on my radar scope—but it is now! The thought of shooting a nighttime approach to a dark field in the wooded hills, with my radio altimeter going off unexpectedly, is not the level of safety I want for me or my passengers.

Visit rotor.org/radalt TODAY. Solving this issue is too important to leave in the hands of others. 

For the helicopter industry, the 5G rollout could severely disrupt our operations.

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Why Representation Matters

If you aren't at the table, you're on the menu.

THERE'S BEEN A LOT GOING ON in the legislative and regulatory arena for the vertical lift industry. We have an infrastructure bill moving through the US Congress that provides opportunities for us to invest in both infrastructure and workforce development. Unfortunately, our industry is also staring down the December 2021 deployment of 5G networks, which, as we'll discuss, will destabilize current components of aviation safety.

Infrastructure Moves (Kind of)

At first, they said no way. Then, somehow, they did it. Yes, the US Senate actually passed a bipartisan infrastructure bill. Despite long odds, President Biden came away with a victory in the Senate.

Now the bill goes to the House, where it faces some complex dynamics. House Speaker Nancy Pelosi (D-Calif.) announced that the House wouldn't vote on the infrastructure package until the Senate also passed a \$3.5 trillion spending package. For those who love to

watch political intrigue, this two-pronged legislative approach promises to provide interesting theater.

With the House insisting that both packages be addressed and an evenly divided Senate, we witnessed senators working together to find compromise and a path forward. Should we celebrate adults actually collaborating in a professional manner to get the job done that they were elected to do? Well, it's Congress, so yes.

What's important to note in this recent Senate vote is how different factions came together to achieve their goals. Did everyone get what they wanted? Absolutely not. But by working together, they all got something.

The infrastructure bill is still far from making its way to President Biden's desk. It'll take many twists and turns as it winds its way through the House and then goes to conference, where differences between the

two chambers are hammered out.

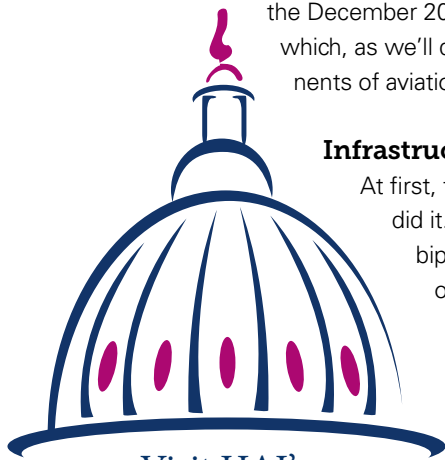
HAI advocated for several aviation measures included in the Senate's Infrastructure Investment and Jobs Act. The legislation includes the Strengthening Mobility and Revolutionizing Transportation (SMART) Challenge Grant Program, which authorizes \$100 million annual investments to cities over the next five years to conduct projects focused on advancing smart-city technologies that will improve transportation efficiency and safety. The bill also includes \$500 million for general aviation airport funding and \$5 billion for the FAA over the next five years to be used for towers and air traffic control facilities in the National Airspace System.

The infrastructure legislation also includes provisions from another piece of legislation, the Promoting Service in Transportation Act, which will build a more dynamic transportation workforce by promoting career opportunities in the transportation sector and advocating for more industry diversity through workforce outreach programs. There may be some additional opportunities in the House infrastructure bill to push other initiatives HAI has advocated for. Stay tuned!

Normally, in these articles, we highlight the legislative successes we've been able to achieve as an industry. We wanted to take a different approach this time and focus on why representation matters. As the famous saying goes, "If you aren't at the table, you're on the menu." And right now, there is a lot on the menu.

Congress is currently debating a \$1 trillion infrastructure package, followed by a \$3.5 trillion spending package. Legislators are raising policy questions and looking to trusted resources for information. As the trade association advocating for the vertical flight industry, HAI serves as that trusted resource, educating Congress on the economic and social importance of vertical flight and advocating for your interests.

We also need *your* voice to help raise awareness. Your elected officials need to hear directly from you to understand the issues your company faces and hear your proposed solutions.



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Legislative Action Center
rotor.org/lac

Preventing Spectrum Interference

Another critical issue we would like to highlight is spectrum. This is another example of why HAI represents your interests before legislators and regulators, and why you need to speak out to protect your interests.

In the June 2021 edition of ROTOR, we provided an [overview of the actions by the Federal Communications Commission](#) (FCC) to repurpose spectrum adjacent to that used by some safety-related aviation equipment, creating these effects:

- Interference with the L band, which is used by GPS units and satellite-to-ground

communications

- Interference with the C band, which is used by radar (radio) altimeters.

As we previously reported, both the Senate and the House introduced legislation, the RETAIN GPS and Satellite Communications Act (S. 2166 and H.R. 4634) to address the issue of L band–GPS interference. However, Congress hasn't yet acted to prevent C band interference with radar altimeters.

Interference with Radar Altimeters

While HAI has long been working to develop actionable mitigations to radar

altimeter interference, time is a luxury we no longer have. The deployment of 5G networks operating in C band frequencies next to those used by radar altimeters is expected to occur on Dec. 5, 2021.

HAI's initial opposition efforts date back to 2017 when the FCC first released a notice of inquiry about repurposing C band spectrum. As you'll see in the graphic below, we and other aviation stakeholders have been working to address that policy's safety implications since that time.

Even though the FCC has proceeded with its plans, you shouldn't assume that HAI's efforts have been wasted. This is a

HAI Actions to Limit 5G Interference with RADAR ALTIMETERS

2017

AUG ✓ FCC releases [Notice of Inquiry](#) about repurposing C band spectrum

FALL ✓ Aviation industry files public comments outlining safety concerns

MAY ✓ HAI files [public comments](#) outlining safety concerns

2018

JUL ✓ FCC commissioners adopt [Order and Notice of Proposed Rulemaking](#) to repurpose 3.7–4.2 GHz band for terrestrial fixed and mobile broadband use

DEC ✓ HAI and other stakeholders brief the FCC on the aviation industry's concerns regarding harmful interference

✓ HAI and other stakeholders reiterate concerns in [ex parte filing](#)

2019

JUL ✓ HAI advocates for measures to preserve safety-critical equipment in 5G legislation considered in Congress

NOV ✓ House Transportation Committee Chairman DeFazio sends FCC Chairman Pai a [letter](#) outlining his growing concern over the proposal to repurpose C band spectrum

FEB ✓ FCC [votes](#) 3–2 to move forward on making 280 MHz of C band spectrum available for 5G

MAY ✓ HAI [files petition to reconsider](#) C band order to protect aviation safety

OCT ✓ RTCA releases [technical analysis](#) documenting C band interference for radar altimeters

NOV ✓ HAI briefs congressional leaders on C band interference findings from RTCA report

DEC ✓ Chairman DeFazio sends [letter](#) to FCC urging the agency to postpone spectrum auction, citing concerns from the aviation industry

✓ FCC conducts [C band auction](#), netting \$81 billion

2020

MAR ✓ Congressional leaders in transportation hearing [question](#) FCC and DOT on spectrum safety issues

MAY ✓ HAI joins [ex parte filing](#) to FCC commissioners, disputing claims made by the wireless industry

✓ HAI asked to co-chair newly formed industry working group consisting of scores of aviation organizations

JUL ✓ HAI presents [industry position](#) at FAA Radar Altimeter and Compatibility with 5G Industry Forum

✓ HAI sends [letter](#) to DOT and DOC stressing the importance of interagency cooperation

2021

AUG ✓ HAI presents [industry position](#) in meetings with FCC commissioners and the FCC's Office of Engineering and Technology, Wireless Telecommunications Bureau, and International Bureau

✓ HAI joins multiple [ex parte filings](#) further detailing concerns and proposing a path forward

✓ HAI shares key points of recent ex parte filings with congressional leaders

DEC ✓ 5G deployment begins



regulatory issue involving multiple US government agencies. Turning that ship takes time, and more importantly, we had to first try every method of regulatory relief possible. During that time, we kept Congress informed. But before potential legislative remedies could be engaged, we needed to show our elected representatives that we were working through proper channels in a good-faith effort to arrive at a resolution with the FCC.

International Actions on Spectrum Interference

Spectrum interference, of course, doesn't respect geographic boundaries, and HAI is addressing this issue on the international front as well.

In October 2020, the Radio Technical Commission for Aeronautics (RTCA), an organization that works with the FAA and global stakeholders to develop standards for aviation electronics, released a report confirming that spectrum interference with radar altimeters would be harmful to civil aircraft operations. Following the publication of this report, spectrum and aviation regulators around the world recognized the dangers that interference could pose to aircraft operations. Many acted quickly to both further refine the data and issue advisories.

Several countries and regions are now using the information provided in the RTCA report to further research the issue of spectrum interference. The European Conference of Postal and Telecommunications Administrations and the European Union Aviation Safety Agency (EASA) are collecting information directly from radar altimeter and aircraft manufacturers to further develop their studies.

Other countries, such as Japan and France, have already taken preventive measures to protect their national aviation operations. Additional international studies

independent of the RTCA report performed by the International Civil Aviation Organization (ICAO) show that interference with radar altimeters is possible, which prompted a letter from ICAO to states to investigate the issue further.

Transport Canada Civil Aviation, that country's civil aviation regulator, released a [regulatory proposal](#) addressing the radio altimeter interference issue. The proposal explores various spectrum mitigations, including restrictions of 5G in the 3,450–3,650 MHz band near major and minor commercial airports. The document's release initiated a 15-day technical consultation on proposed amendments to technical requirements for fixed and mobile systems operating in the band that can affect radar altimeters. Additional studies are underway in Canada and other countries to further assess the potential effects of radio altimeter interference from 5G systems.

The industry coalition Technical and Operations Working Group, co-chaired by HAI, is evaluating Canada's regulatory proposal alongside other international guidance to conduct further research on options to mitigate spectrum interference.

HAI's Proposed Solutions

The aviation coalition has petitioned the FCC to reconsider its decision to repurpose C band spectrum. However, the reality is that 5G deployment is coming, and there's little to no chance of preventing its Dec. 5 deployment. The fight now is to ensure it's done in a way that protects aviation safety.

The FCC should, at a minimum, partner with the FAA to jointly oversee a forum where the telecommunications and aviation industries will discuss a mutually agreeable, viable, and minimally disruptive path forward on 5G deployment. This should be done in an atmosphere of

transparency that is focused on finding solutions.


The aviation industry coalition continues to provide helpful information to inform regulators and lawmakers about the impact of 5G interference on radar altimeters. The same cannot be said of the telecommunications industry. HAI, as co-chair of the Technical and Operations Working Group, is also working to develop mitigations, but without further data from the wireless industry, our solutions are limited.

The other elephant in the room is the cost. Retrofits will be needed to maintain safety, which will require the purchase and installation of new equipment for what could be the majority of aircraft in operation today.

The federal government sold the spectrum adjacent to the C band for \$80 billion. HAI believes our industry and aviation as a whole shouldn't be obligated to cover the costs associated with the wireless industry's gain. HAI is working with key authorizers and appropriators on Capitol Hill to find an equitable path forward.

We Need YOUR Support

HAI is working on behalf of you and our industry to ensure the needs of our community—such as working radar altimeters—are addressed. Very shortly, we'll issue an HAI Advocacy Call to Action asking you to contact your elected officials with requests for their assistance on the spectrum problem. At that time, we'll provide all the information you'll need to reach out and present your input to your representatives.

Look for additional updates in *HAI Washington Update*, our members-only [Legislative Action Center](#), and this column in ROTOR. In the meantime, we encourage you to visit rotor.org/advocacy and sign up for HAI Legislative Alerts. Working together, we'll move our industry forward! 



Visit HAI at
rotor.org/join

“HAI is our industry advocate; they need to hear from you so they know what to fight for and what is important to you as a pilot or organization.”

– Grayson Barrows, repair station general manager



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FOR MORE THAN 70 YEARS, HAI HAS REPRESENTED ALL ASPECTS OF THE VERTICAL flight industry, promoting safety, professionalism, innovation, and economic viability.

Current HAI priorities include:

- Ensuring COVID relief for operators
- Advancing industry integration of unmanned aircraft systems and advanced air mobility aircraft
- Developing the global vertical flight workforce
- Strengthening safety collaboration within the international vertical flight industry



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ROTOR WASH

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HAI BRIEFS

HAI Seats 2021–22 Board of Directors

HAI'S OPERATOR MEMBERS ELECTED two new directors to the association's board this past spring. Both directors and a new slate of officers took office on Jul. 1, 2021.

Joining the board this year are Brian Jorgenson of Timberline Helicopters, Sandpoint, Idaho, USA; and Rick Kenin of Boston MedFlight, Bedford, Massachusetts, USA. Both Jorgenson and Kenin were elected to fill commercial operator seats. Board members elected by the member representatives of HAI's helicopter operator companies serve three-year terms as directors.

Jorgenson is a helicopter pilot with over 17,000 flight hours and more than 20 years of industry experience. He currently serves

“Coming out of a pandemic year, we have a very ambitious slate of projects ahead of us, and it is good to know that we can rely on our directors and officers to help guide HAI as we move forward.”

– James A. Viola, *President and CEO*

as chief operating officer at Timberline Helicopters, a utility helicopter company he owns with his wife, Ammy. Beginning in 2004 with a single helicopter, the two now

operate a fleet of eight aircraft, including an MD Helicopters MD 530, a Kaman K-Max, and five Sikorsky UH-60 Black Hawks.

Kenin has flown helicopters for over 20 years, in both the US Coast Guard and the civilian sector. He is the chief operating officer of Boston MedFlight, managing the operational aspects of a patient-focused, safety-minded, critical-care medical transport company. A long-time member of HAI, he had served as chair of the HAI Safety

Working Group.

“We're grateful to add two individuals with such a broad range of experience to our board,” says Stacy Sheard, a current ➤



The hottest pic this fire season! The heart and fire emojis in the comment sections of both HAI's Facebook and Instagram pages, coupled with almost 50,000 aggregate impressions and 3,000 aggregate engagements, proved that this pic of a Sikorsky S-64E Skycrane in firefighting configuration for San Diego Gas & Electric really heated up our feed this month. Thank you to all the helicopter crews and support teams who take on the difficult, dangerous mission of aerial firefighting to help those in need!

HAI

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► director and the 2020–21 chair of the HAI Board of Directors. “Their expertise will make the board even stronger and more versatile than it is today.”

The directors also selected their slate of officers, who will serve a one-year term, ending on Jun. 30, 2022. Heading the 2021–22 officers is Chairman Randy Rowles, of Helicopter Institute, Fort Worth, Texas, USA; you can read more about Rowles and his plans for the coming year in his column on p. 6 and in a profile beginning on p. 24. Other officers include Vice Chairman Jeffery Smith, of R.O.P. Aviation, Teterboro, New Jersey, USA; Treasurer Jack Matiashevich, of Southern California Edison Co., Chino, California, USA; and Assistant Treasurer B. Adam Hammond, of the Tennessee Valley Authority, Knoxville, Tennessee, USA. The entire HAI Board of Directors is listed on the opposite page.

Leaving the board after completing their terms are Douglas Barclay, of Kachina Aviation, Nampa, Idaho, USA; and Jan Becker, of Becker Helicopter Services, Marcoola, Queensland, Australia. “We’re grateful to both Jan and Doug for their dedicated service to our industry,” says James A. Viola, president and CEO of HAI. “Every helicopter operator benefits when people like Jan and Doug share their vast knowledge and experience with us.

“Coming out of a pandemic year, we have a very ambitious slate of projects ahead of us, and it is good to know that we can rely on our directors and officers to help guide HAI as we move forward,” adds Viola.

“HAI is constantly working to improve our safety programs and do everything we can to reduce accident rates in our industry. We also want to extend our outreach to the international vertical lift community and help our industry prepare for the coming expansion of aircraft types, as drones and advanced air mobility platforms are integrated into the airspace.”

HAI BRIEFS

HAI Aerial Firefighting Safety Conference Returns to In-Person Format

THE HAI AERIAL FIREFIGHTING SAFETY Conference will return to Boise, Idaho, this Nov. 16–17, welcoming representatives of helicopter operators, vendors, and US wildland fire management agencies. The highlight of the two-day event is the inter-agency briefing by the US Department of the Interior and the US Forest Service; the schedule will also include a firefighting safety forum and plenty of networking opportunities.

“This conference has always been an important meeting for the aerial firefighting industry,” says James A. Viola, president and CEO of HAI. “Our fire seasons are now longer, the fires are getting bigger, and they are more active in the urban interface. We also have more operators working on these fires, and this meeting provides our industry with the opportunity to meet the people who manage the fires and the firefighting contracts.”

Visit rotor.org/firefightingconf for more information and to register online. A limited number of sponsorships is also available.

HAI BRIEFS

HAI Now Accepting Scholarship Applications

HAI IS NOW ACCEPTING APPLICATIONS for its 2022 scholarship program. Available to aviation students worldwide, these scholarships support HAI’s mission to educate the next generation of helicopter professionals.

Scholarships for maintenance personnel are open to students earning their initial mechanic/engineer certifications or those who seek additional training. HAI also offers scholarships for rotorcraft pilots who

have their private licenses and wish to earn their commercial ratings, as well as the Michelle North Scholarship for Safety, designed to help a commercial pilot attend a course in safety management.

Visit rotor.org/scholarships to learn more and apply online. All scholarship materials are due by midnight eastern time (UTC-5) on Dec. 3, 2021.

HAI BRIEFS

ROTOR Magazine Wants Your Helicopter and Drone Photos

IF THERE IS ANYTHING PEOPLE in our industry like more than flying, it might be looking at pictures of aircraft. And now it’s time to show us the best of what you’ve shot by entering the annual ROTOR Magazine Photo Contest.

This year, in addition to the usual contest categories of helicopters/drones at work, in the military, and with people, and digitally enhanced photos, we’ve added a new one: wrench turners. To celebrate the unsung heroes who keep our aircraft flying, we’d like to see pics of you or your maintenance crew turning wrenches inside and outside your hangar, as well as cool shots of mechanics/engineers with the helicopters they keep running.

Amateur or professional photographers may enter any or all of the five categories in the contest. The best photo in each category will win \$100, and the best overall image will win \$500. HAI must receive your entries by Dec. 1, 2021; winners will be announced on Feb. 1, 2022.

You don’t need to be an HAI member to enter. However, you must own the copyright to all photos submitted, and each entry must show all or part of a helicopter or drone.

Visit photo.rotor.org to see the complete contest rules, view past winners and the competition, and upload your winning photos! 📷



WATCH
HAI Board's Thank-You
to Firefighters

HAI 2021–22 Board of Directors



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ONE QUESTION MANY ANSWERS

By Christine A. DeJoy

How Do You Control FOD in Your Operation?

AS ANY OPERATOR KNOWS, FOREIGN OBJECT DAMAGE (FOD) CAN ENDANGER not only your helicopter and its components but, more importantly, the safety of your employees and customers as well. Tack on increased operating costs due to aircraft damage or potential incidents and accidents, and you have the makings of a true business liability.

To learn how our readers tackle FOD in their organizations, in August ROTOR conducted an anonymous survey through HAI's ROTOR Daily newsletter and the association's various social media channels. Many of the 42 rotorcraft professionals who responded mentioned four key measures they or their companies use to control FOD:

- **Pick up and dispose of debris** when you see it near, in, or around aircraft
- **Clean as you go** rather than waiting until tasks are complete
- **Train all members of the organization**, not just pilots and maintenance techs, about the importance of continually watching out for and eliminating FOD
- Adopt—and follow—a **tool and hardware accountability program**.

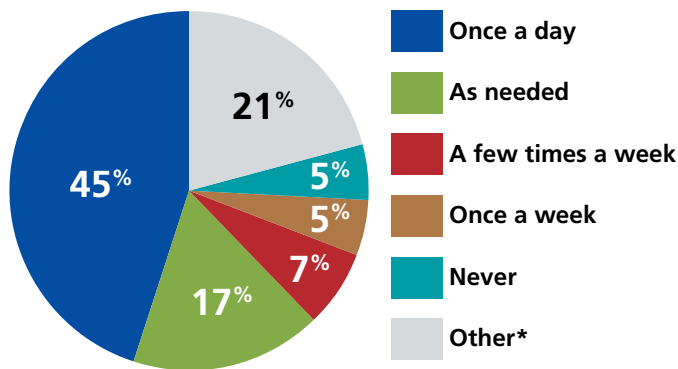
When asked what kinds of FOD they had seen, several readers mentioned plastic bags being ingested by engines or becoming

caught in rotor blades; plywood being blown into ground-support vehicles or narrowly missing an aircraft; and pebbles or rocks damaging blades, engine cowlings, and windscreens. Other hazards cited included nuts and bolts, tin plates, work rags, and even a loose plastic fence that became a projectile!

Yet despite this awareness among our respondents, many in the vertical flight industry don't always focus on FOD in their operations. "Helicopter operators don't always give FOD the attention they should, because they're used to operating in a contaminated environment, such as agricultural fields, logging areas, parking lots, and so on," says Zac Noble, HAI's director of maintenance and technology.

What about your company? Does it make eliminating FOD part of your safety culture? Read on to see what your peers are doing to tackle the problem in their organizations, and how their solutions may differ from your own.

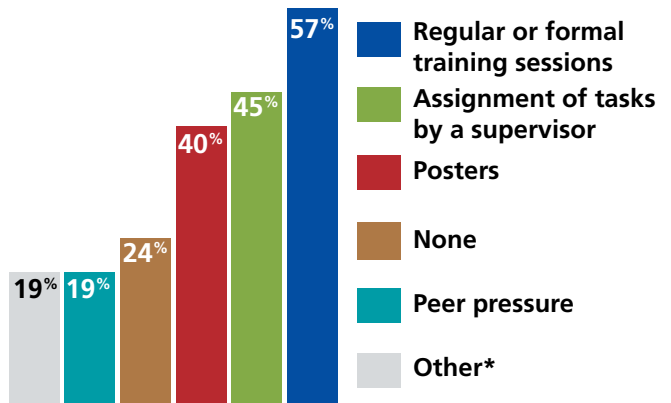
How often do you or a colleague conduct FOD walks/checks of your aircraft, landing site, or hangar?



Note: Respondents were asked to choose only one answer.

*Responses included "before and after every flight," "constantly throughout the day," and "every six hours."

What methods does your company use to train staff to deal with FOD?



Note: Respondents were able to choose as many answers as applied to their organizations.

*Responses included "operations manual that includes FOD hazards," "shaming slobs and lazy pilots," and "informal discussions."

How does your organization prevent FOD?

Nearly half (**44%**) of respondents **secure all tarps** and **other loose items** that can't be removed from the work site that could be drawn into the rotor system.

79% double-check **work areas and aircraft** after task completion to make sure no hardware, safety wire, or similar materials are left on the ramp to potentially become projectiles.

38% use **sweepers** to pick up foreign objects.

We train staff to follow a thorough set of **inspection procedures**, using a checklist that includes areas on the aircraft where work has been performed, and floors and ramps in the area where the aircraft is being worked on, say **56%** of respondents.

Only **15%** of respondents say their organizations use **magnets** to detect debris.

18% **don't allow vehicles** on their ramps, taxi areas, or runways, to prevent objects such as rocks and pebbles from outside the airport from entering high-aircraft-traffic areas.

When asked what products or services help in their anti-FOD efforts, respondents listed:

- Bright white epoxy flooring in the hangar
- Checklists
- Dustpan and brush
- FOD containers at each workstation
- LED hangar lighting
- Nonslip tool trays
- Posters
- Toolbox inventory/control programs

What's the best way to prevent or control FOD?

“Have fortnightly/monthly briefings of all aviation stakeholders in your organization about FOD—its origin, its impact on flying, and mitigation processes. Hold a FOD “parade” or inspection of the helipad/heli-strip by all aviation personnel prior to the first flight of the day to remove any FOD present.”

“[Ensure that] everyone in the organization takes it seriously, and that a just culture exists that doesn't penalize honest mistakes or human error.”

“Have designated landing areas and FOD-free zones.”

ROTORCRAFT EVENTS

2021

SEP. 20–21

5th VFS Workshop on eVTOL Infrastructure (Virtual)

Vertical Flight Society
Learn more at vtol.org

SEP. 25

7th Annual Girls in Aviation Day

Women in Aviation International
In-person events worldwide
Learn more at wai.org

OCT. 2

14th Annual KOUN OU Max Westheimer Annual Aviation Airport Open House/Aviation Festival/Fly In

Aircraft Owners and Pilots Association
Norman, Oklahoma, USA
Learn more at pic.aopa.org

OCT. 5–6

Helitech Expo 2021

London, England
Learn more at helitech.co.uk

OCT. 10

2021 PDP Course: Aviation Security and Awareness Training

National Business Aviation Association
Las Vegas, Nevada, USA
Learn more at nbaa.org

OCT. 10–11

2021 PDP Course: Building and Leading Highly Effective Teams at Work

National Business Aviation Association
Las Vegas, Nevada, USA
Learn more at nbaa.org

OCT. 10–11

2021 PDP Course: Aviation Leadership

National Business Aviation Association
Las Vegas, Nevada, USA
Learn more at nbaa.org

OCT. 10–11

2021 Tax, Regulatory & Risk Management Conference

National Business Aviation Association
Las Vegas, Nevada, USA
Learn more at nbaa.org

OCT. 11–13

AUSA 2021 Annual Meeting & Exposition

Association of the United States Army
Washington, DC, USA
Learn more at ausa.org

OCT. 12–14

2021 NBAA Business Aviation Convention & Exhibition (NBAA-BACE)

National Business Aviation Association
Las Vegas, Nevada, USA
Learn more at nbaa.org
Visit HAI at Booth #3830

OCT. 13–14

UAS Summit & Expo

UAS Magazine and BBI International
Grand Forks, North Dakota, USA
Learn more at theuassummit.com

OCT. 18–22

Public Safety Drone Expo 2021

Airborne Public Safety Association
Reno, Nevada, USA
Learn more at publicsafetyaviation.org

OCT. 26–27

41st Annual PA Aviation Conference

Aviation Council of Pennsylvania
Lancaster, Pennsylvania, USA
Learn more at acpfly.com

OCT. 27-28

Rotorcraft Structures & Survivability Technical Meeting

Vertical Flight Society
Hampton, Virginia, USA
Learn more at vtol.org

OCT. 30

Haunted Helicopters

American Helicopter Museum
& Education Center
West Chester, Pennsylvania, USA
Learn more at americanhelicopter.museum

OCT. 31-NOV. 2

SHIFT AMTC21 Conference

Association of Air Medical Services
Fort Worth, Texas, USA
Learn more at shiftamtc.com
Visit HAI at Booth #1106

POSTPONED

NOV. 3-5

9th Asian/Australian Rotorcraft Forum (ARF)

Vertical Flight Society and Nanjing
University of Aeronautics and
Astronautics
Location/ format TBD
Learn more at vtol.org

NOV. 16-17

HAI Aerial Firefighting Safety Conference

Helicopter Association International
Boise, Idaho, USA
Learn more at rotor.org

NOV. 16-18

European Rotors 2021

General Aviation Manufacturers Association
Koelnmesse, Cologne, Germany
Learn more at gama.aero
Visit HAI at Booth Hall K-H8 / A-182

DEC. 6-9

Ag Aviation Expo

National Agricultural Aviation Association
Savannah, Georgia, USA
Learn more at agaviation.org/convention

2022

JAN. 18-20

Commercial UAV Expo Europe

Commercial UAV News
Amsterdam, Netherlands
Learn more at expouav.com/europe

JAN. 25-27

Transformative Vertical Flight 2022

Vertical Flight Society
San Jose, California, USA
Learn more at vtol.org

FEB. 15-17

International Military Helicopter

Defence iQ
London, England
Learn more at defenceiq.com/events

MAR. 7-10

**EXHIBITS OPEN MAR. 8-10
HAI HELI-EXPO 2022**



Helicopter Association International
Dallas, Texas, USA
Learn more at heliexpo.com

MAR. 17-19

33rd Annual International Women in Aviation Conference

Women in Aviation International
Nashville, Tennessee, USA
Learn more at wai.org

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TACTICAL FLIGHT DEPUTY: DEPUTY DAMIAN PEYINGHAUS

PHOTO BY MARK BENNETT







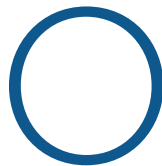
Randy Rowles: Moving Forward

World-class instructor and aviation leader steps up to guide HAI.

By Paul Koscak



WATCH
Randy Rowles
on Preflighting



N JUL. 1, 2021, RANDY ROWLES BECAME the new chairman of HAI's board of directors. Being elected by your peers to lead an industry trade association is a huge achievement, but it's an even greater feat considering that Randy quit high school in his first year and started a family as a teenager. He ultimately earned an MBA and now operates an internationally renowned helicopter flight-training school.

But to appreciate how Randy reached the summit of the helicopter community, let's start from the beginning.

Early Challenges

Randy's father ignited an aviation spark in his son that quickly blazed when they visited an air show near West Palm Beach, Florida, where Randy grew up. Just 14 at the time, Randy took a ride in a Bell 47J Ranger. He liked it so much, he took another ride—all on his father's dime, of course.

"Something struck me about it," he recalls. "I just knew I wanted to fly."

His first challenge wasn't learning to master the aircraft but, rather, how to pay for the training. Bernoulli's principle may give helicopters their lift, but students know money keeps them in the air. "My father told me, 'I'll pay for the first lesson, but you'll need to figure out how to pay for the rest.'"

Fortunately, the senior Rowles had some good advice about where Randy could accomplish that, telling his son to hang out where he could learn more about flying—at the airport. So Randy pedaled his bike after school and on weekends to Palm Beach County Park Airport (KLNA). He roamed the ramps, getting to know people and doing odd jobs, such as washing airplanes and cleaning hangars, and then trading his sweat equity for flight time. That approach eventually paid off, earning the aspiring aviator his airplane private pilot certificate at the age of 17.

Randy was riveted on making it in aviation—but in school, not so much. He hated high school so much that he dropped out in his first year. To add to his challenges, he and Samantha Hoban, his girlfriend, whom he met in seventh grade, married

and became parents at 18.

Luckily, a local pilot and community college aviation instructor took an interest in the teenager and insisted he take the GED (General Educational Development Test). He passed, earning a high school equivalency diploma, and his mentor invited Randy to take aviation courses at the community college.

There, Randy met many aviation professionals, leading to his first aviation job as a fueler for Aircraft Service International Group at Palm Beach International Airport (KPBI). Although only 17, Randy claimed he was 18 to get the job. "I was fueling for Delta Air Lines, driving a 10,000-gallon fuel truck," he recalls. "I had several jobs to pay the bills."

Randy credits the management of another company, Aircoastal Helicopters, for working out the deal of a lifetime, which enabled him to realize his dream of working with rotorcraft. "I didn't like working with airplanes, and a worker at Aircoastal didn't like working with helicopters, so the companies swapped us," he says. "That single trade of employees really changed my life."

At Aircoastal, Randy got his first taste of the helicopter industry, at times tagging along on company flights. But he still needed training to move ahead. Sweeping floors and fueling helicopters didn't bring in enough money to fly them.

His next big break happened in that same hangar. Palm Beach Helicopters leased space from Aircoastal and ran a flight school. Wisely, Randy added the flight school's office to his cleaning routine, eventually becoming friends with the owner. "I asked him if he knew any students willing to help pay for my flight lessons. He had a lot of high-end students—doctors and lawyers."

His timing couldn't have been better.

The owner of Palm Beach Helicopters was willing to invest in Randy's aviation training in exchange for his help in establishing a crop-dusting company in Georgia. Randy earned his helicopter commercial certificate and one week later was applying the low-altitude, aerobatic yank-and-bank skills of crop-dusting.

Now 19 years old with some flying experience, Randy

returned to Aircoastal Helicopters. Over the next several years, he worked as a line pilot, check pilot, and chief pilot while also starting the company's flight school. "I was not only a pilot, but I learned to manage an aviation business," says Randy.

Taking It to the Limit

While Randy's ambition soared, his stamina was tested. Because of his experience flying Robinson helicopters, he was approached by the FAA to become a designated pilot examiner (DPE). In that role, he met instructors who trained pilots for the nearby sheriff's department. One instructor flew a vintage Sikorsky helicopter that Randy learned to fly.

Next, Randy became an S-76 instructor at FlightSafety International. He was also a freelance pilot for businesses and air medical operations, including flying a Trauma Hawk for the Health Care District of Palm Beach County as well as flying for the South Florida Water Management District—all while employed by Aircoastal.

"Samantha used to bring me my flight suit between jobs. I was probably filing seven or eight W-2s a year," he says.

In 2001, Randy started his own helicopter school, Palm Beach Helicopters, using with permission the name of his former employer, which had since closed its doors. Next, he added turbine training to the school's curriculum.

The doors kept opening. He was approached by Bell Textron because the company's retiring chief flight instructor recommended Randy for an instructor position at the Bell Training Academy. It was an offer he couldn't refuse, even though it meant relocating to Texas, walking away from his business and other jobs.

At Bell, in addition to his role as a flight instructor, he was selected for the company's High Potential Employee Program. That involved reporting to executive leadership, including the CEO, to provide guidance on how the company could improve its customer service and pilot training programs.

One day, while meeting with the vice president of commercial programs, Randy noticed the executive's Harvard T-shirt and asked if he had attended the school. The vice president said he had only been at Harvard for a leadership class and then asked where Randy had gone to college.

When Randy replied that he had quit school in the ninth grade and only had a GED, "he looked at me like I had a third eye and asked how I was able to get hired at Bell," says Randy. "I told him I was already hired for my flying background, and I completed an application afterward. He told me I had just hit a glass ceiling and that I needed an MBA."

Going from a GED to an MBA is a staggering leap, but Randy had always found ways to clear major hurdles. This was no different.

Randy credits his wife, Samantha, for providing that all-important ingredient in a successful aviation career: family support.



CHARLIE FOWLES PHOTO



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Bell recommended he attend the executive MBA program at Texas Christian University. There, his extensive business experience along with his position at Bell were credited toward a bachelor's degree, which allowed Randy to directly enter the MBA program. But getting in wasn't easy. Randy compares the MBA entrance interview to "the Spanish Inquisition."

After earning his degree in 2008, Randy was eager to gain some leadership experience and that opportunity came about at Silver State Helicopters in Nevada. He accepted the challenge of working in a company that some thought would create a new model for helicopter flight training. Still, he had an agreement with Bell that he could return if things at Silver State didn't pan out.

That didn't take long. Upon his arrival at Silver State, "it was evident there were major issues," he recalls. Silver State had created extensive programs to recruit students and then provide them with loans structured to be paid back in 10 months, well before the 18-month training program concluded. The company

anticipated that most students would quit, since their schools were about 45% over capacity. If that happened after 90 days, under the terms of the loan agreement, Silver State then kept the money.

Rather than invest in staff and resources, Silver State repeated this cycle again and again. In addition, the company financed most of its operation, so there was tremendous debt, Randy explains.

"They were committing fraud," he says. Randy gave his notice and returned to Bell. Shortly after, Silver State went bankrupt, its students got fleeced, and lawsuits flourished.

Randy's next assignment at Bell was in the government program management office. Sitting in an office chair didn't suit him—he wanted to fly. Then the recession hit, and Bell cut jobs, including Randy's.

Although Randy has held many full- and part-time jobs during his career, he credits his wife, Samantha, for her support because gaining all that experience meant time away from his family. "If it weren't for my wife, I wouldn't be

able to do this. She's been there for me," he says. Randy insists family support is essential for an aviator's career, where many positions require time away from home, uncertain hours, and frequent schedule changes, conditions that have led to many family breakups.

Looking back, Randy's biggest regret was taking the job at Silver State rather than pursuing his dream job as director of the Bell Training Academy. "But you don't stop fighting, you keep moving forward," he says.

Appropriately, for someone with that mindset, the best was yet to come.

Building Back

In 2009, Randy and Samantha launched the Helicopter Institute. At first, they concentrated on providing checkrides. Then things began looking up.

Thanks to a referral from a former Bell colleague, Randy received a call from the Tennessee Valley Authority asking for helicopter training. Then another organization called, and another, and another as the business thrived.

Randy Rowles on Autorotations and Hovering

As a highly experienced DPE and trainer, Randy has some tips for pilots attempting to master two challenging helicopter maneuvers.



“Instructors have different approaches to teaching hovers. I use a long, smooth taxiway during calm winds. We start with pedals and collective manipulation. Then we introduce the cyclic, using a slow, forward hover over the taxiway. The centerline becomes a reference point. Once the centerline can be held between the skids of the helicopter, we slow the helicopter and begin stationary hover practice.”

“Applicants will enter autorotation too aggressively and wonder why the rotor rpm responds rapidly or even overspeeds. The controls should be moved smoothly with an expected energy transfer. The deceleration during entry will drive the increase in rotor rpm. This is more prevalent in low-inertia rotor systems. The more stable the entry, the more predictable the outcome.”

Today, Helicopter Institute is a worldwide leader in helicopter training, with 19 employees and seven aircraft: a Bell 206B-3 and 407, a Eurocopter AS350 B2, an MD 500, two Robinson R22s, and an R44. The organization provides factory-alternative training for Airbus, Bell, MD Helicopters, Robinson, and Sikorsky aircraft owners. Rotorcraft training is offered from the private-pilot to ATP levels, as well as training for CFI, CFII, and night-vision goggle certificates.

Randy also provides night-vision goggle instruction to US government agencies, including the State Department, the Justice Department, and the FAA. “I’m one of the few DPEs authorized to issue endorsements for night-vision goggle instructors,” he says. Helicopter Institute also offers a management boot camp for aspiring Part 135 operators.

Randy is quite proud of his latest client, Embry-Riddle Aeronautical University. Helicopter Institute has been selected as the university’s primary helicopter trainer, beginning with the fall 2022 semester. “It’s a huge feather in our cap,” he says. “We competed against many other companies.” The contract is special to Randy for another reason: “I’d always dreamed of going to Embry-Riddle.”

One way the Helicopter Institute strives to stay on the cutting edge of the industry is by participating at HAI HELI-EXPO®. Randy first exhibited in 1993 with a Sikorsky S-55 turbine and has been there every year since. “HAI HELI-EXPO provides a single venue where I can engage clients both domestic and international,” he says. “The

educational courses and working groups also provide tremendous opportunities to expand knowledge, experience, and skills. The show is always worth the trip.”

Priorities for HAI

Randy’s volunteer work with HAI began in 2005 when he led the formation of an HAI committee focused on flight training issues, serving as its chairman for six years. He sees the association as a vital representative for the rotorcraft industry.

“The biggest issue for our US operator members is their ability to navigate FAA requirements and processes,” Randy says. “We need to make sure operators are getting the information they need to succeed.” However, he believes that HAI President and CEO James Viola’s experience as an FAA employee and executive and his keen understanding of both the FAA and the industry have helped HAI to be an effective mediator for the industry and a trusted source of information for the US regulator.

Randy would also like to see HAI expand internationally, pointing out that the problems and challenges of vertical lift are the same everywhere: improving safety, helping operators deal with noise issues, and integrating UAS pilot certification and training. “HAI has some 70 years of experience in embracing new categories of aircraft, and the global vertical lift industry can benefit from that,” he says.

Tackling the pilot and mechanic shortage is another priority for Randy. “We need pilots and mechanics with the experience for more high-end work. Therefore, we need operators willing to mentor and train.” High schools can also be partners in addressing aviation workforce development, he notes. “I’m so supportive of vocational training for high school students. An opportunity to have selected a vocational path related to aviation would have kept me in school.”

Another way to address the pilot shortage is by integrating drones into helicopter operations, Randy says. Using uncrewed aircraft systems (UASs) instead of helicopters for dull and dangerous operations such as pipeline and power-line inspections frees pilots for other tasks. “When the risk is in the yellow and red areas, the job is ideal for UASs.”

Challenges in Training

Reflecting on his 32 years in flight training, Randy says the latest generation of flight students learn differently and focus more on technology. However, upgrading older aircraft from steam gauges to glass can be tough. FAA policies, procedures, and guidance are very strict, and most haven’t changed much since the 1960s and ’70s, he says. “It’s challenging to get the FAA to approve new technologies.”

As an example, Randy says the supplemental type certificate required to install a Garmin G500 electronic flight display

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In the 2013 Salute to Excellence Awards, Randy, shown here with Chris Erickson, then-chairman of HAI, was honored as the W.A. (Dub) Blessing Certified Flight Instructor of the Year.

in an R44 is unnecessarily expensive because the installation is treated as an IFR upgrade, even though the aircraft can only fly VFR. The extra expense of the upgrade, while better preparing pilots for the modern cockpit, then increases the cost of training.

With an ongoing pilot shortage, pushing flight training costs to anywhere from \$85,000 to \$100,000—especially when entry-level pilots may make \$25 an hour until they acquire enough hours to qualify for most commercial jobs—doesn't make sense, Randy explains. Again, this is where HAI and its members can play a role.

"HAI has volunteer groups that work on issues on behalf of the board of directors, allowing HAI staff to propose solutions to the FAA.

"We need to get the cost of helicopter training down, and

it all starts with certification and industry participation," Rowles continues. "The industry needs a commonsense approach to pilot development that considers safety and uses good judgment."

Randy is also exploring ways to ensure there are sufficient DPEs to meet public demand and currently serves on the FAA's Designated Pilot Examiner Reforms Working Group.

An ATP pilot with more than 15,000 flight hours, Randy is also an FAA Gold Seal flight instructor. (For some tips from Randy on two maneuvers every rotorcraft pilot must master, check out "Randy Rowles on Autorotations and Hovering" on p. 28.) He's traveled the world, from the North Slope of Alaska to South America, Austria, and China, to train pilots.

But he met one of his favorite students back in Florida, not far from where he grew up.

Some years ago, Randy recalls, he was in the lobby of the Fort Lauderdale-Hollywood International Airport (KFLA), waiting for a checkride applicant. "Someone said hello, and I turned around and there was Harrison Ford!"

"I'm Harrison Ford," the man said.

"I know who you are. What are you doing here?" said Randy.

"I'm your applicant today," Ford replied.

Randy remembers that he had to collect himself for a moment. Ford, the star of *Star Wars* and *Indiana Jones*, was one of his childhood heroes—and now Randy would be *his* examiner.

As Randy tells it, Ford next said, "I've got kids older than you."

The memory still makes Randy laugh. While he's come a long way from the front seat of that Delta fuel truck, the spark that drove him then still drives him forward. 🌀

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The Return of Schweizer

By Jen Boyer

New manufacturer offers iconic aircraft and commitment to customer service.

JULY 2021 WAS A MONTH OF SIGNIFICANT, hard-earned milestones for Schweizer RSG. On Jul. 19, the FAA issued a certificate of airworthiness to the company for the first Schweizer S300C helicopter off its production line. Three days later, Schweizer RSG delivered the helicopter—the first new aircraft to bear the Schweizer name since 2016—to Foreign Asset Trade Co. for use by the Senegalese Air Force.

The road to this day was long and littered with obstacles that would have made more than a few seasoned aerospace veterans reconsider their life choices. Yet, Schweizer RSG President David Horton pressed on with enthusiasm and dedication to an aircraft he refused to let die on his watch.

Originally certificated by the FAA in 1959 as the Hughes

269, this iconic piston aircraft was popular in the civil market and, as the TH-55A Osage, was for decades the US Army's primary helicopter trainer. The helicopter also underwent a number of design and ownership changes over the years (see sidebar on p. 37). Schweizer RSG, a US-owned company based in Fort Worth, Texas, purchased the Schweizer 269/300 and 333 lines from Sikorsky in 2018.

Labor of Love

A veteran of the helicopter industry, Horton knows a thing or two about helicopter manufacturing, maintenance, supply chains, customer service, and sales. He's served as a director at Bell, a vice president at Safran Helicopter Engines, and as president of three aviation companies, Heli-Dyne Systems,

Uniflight, and Composite Technology. He was also president and general manager of Schweizer Aircraft Corp., under Sikorsky ownership, from 2008 to 2010.

While there, he developed a deep passion for the aircraft and its customers. Besides being the helicopter that thousands of pilots first trained in, the lightweight Schweizer was designed as a cost-effective platform for many other missions, including law enforcement, photography, and agriculture. When Sikorsky announced plans to sell the Schweizer lines, Horton dug deep into his contacts to pull together a company, a team, and the financing to bring the aircraft under his watchful eye once again.

Announced in January 2018, the sale of the Schweizer lines to Schweizer RSG came at a time of unprecedented low confidence in the aircraft. It had been years since a new aircraft had rolled off the line, and spare parts were hard to come by.

“Basically, Schweizer operators were cannibalizing aircraft to stay in the air,” Horton says. “The supply chain was a mess. We were under the impression when we purchased the type certificates that a world-class supply chain was in place. It wasn’t. There were parts that hadn’t been available for years. For example, there were customers who put down deposits for driveshafts who’d been waiting five years. We inherited a lot of work.”

Horton and his team determined their first and best action was to rebuild the supply chain to a level that would support the estimated 2,900 Schweizer S300 series helicopters flying around the world. He brought in experts in drivetrains and those highly experienced in building intricate parts from original engineering drawings or even reverse engineering them from actual parts.

Yet, each step seemed to bring a new obstacle. Some questions arose about the original engineering drawings, bringing things to a halt until those questions were resolved. It was sometimes hard to find a vendor willing to work with a new company when significant orders were coming in from their other customers. For instance, Schweizer RSG lined up a supplier to manufacture main rotor driveshafts. Six months into waiting on those parts, that company dropped the contract to focus on larger orders, leaving Horton and his team scrambling for a new supplier.

In another instance, the single and only Sikorsky contractor for performing overhauls of the S300 main rotor transmissions went out of business. Schweizer RSG had to find a new vendor in short order and then help them apply for and receive FAA approvals to perform the work.

“It has sure been an adventure,” Horton laughs, with a hint of Southern diplomacy. “We chose to stick with it, though, and persisted. And we focused on changing things from the way they were done before. There isn’t just one company

that can do important things like overhaul transmissions now. We have three on three continents.

“In time, we won the hearts of those vendors who weren’t sure about taking a chance on a new company,” he says. “Today, we have some great vendors who’ve really supported this product with us and believe in it as much as we do.”

Building a Supply Chain

By mid-2020, Schweizer RSG had brought its supply chain back, with a host of regularly requested parts—including main rotor driveshafts, blades, mast assemblies, and bearings—fully stocked at the factory and at service centers around the world for immediate shipment upon customer request. However, like many manufacturers, it has since experienced delays in deliveries from suppliers as a result of the staffing shortages, material shortfalls, and production delays caused by the COVID-19 pandemic. Horton hopes to see those pandemic-related delays reduced in the coming months.

In his role as president of Schweizer RSG, Dave Horton brings decades of aviation manufacturing experience—including a previous stint as Schweizer president—as well as an appreciation for the iconic aircraft.



Konrad Filo prepares a spare-parts order for shipment. Establishing a robust supply of spares for Schweizer customers around the world was a top priority.



Schweizer RSG will maintain its spare-parts inventory and grow it to match increased production of aircraft, Horton says. What's more, while the spares inventory mainly supports the C and D models of the aircraft, the company wants to continue supporting A and B models.

"When demand for support for A and B is at a meaningful level, we're certainly going to support them," says Horton. "For instance, there are specific main rotor thrust bearings for As and Bs. We've asked our service centers to determine if there is real demand for them. If so, we will certainly make the financial commitment to have them made and supported.

"We're being financially responsible, putting our resources where our customers need them most," he continues. "We want our focus to be on strengthening the latest models, but we will work with customers of our older models to support them, too."

Schweizer RSG has also improved the availability of spares for its turbine-powered Schweizer 333. With the majority of this aircraft's customers being military, however, Horton says it's been harder to anticipate their needs to ensure the right parts are available when requested.

"They're close to the chest with their future maintenance requirements, but when we go out for visits, we can have a look and ask around," he says. "We were able to anticipate some rather long-lead time, expensive needs that way. We made the investment, and sure enough, about the time the

parts were ready, the customer needed them."

While the supply line took shape, Horton and his team worked to build their own system of Schweizer-authorized service centers around the globe to support customers. Today, there are 14 service centers, strategically placed to serve customers in every region. In addition to these facilities, Schweizer has appointed representatives to handle sales and spare-part support in specific countries.

"It's important to have support in the same time zone, monetary system, and language as our customers wherever possible," Horton explains. "When we took over the company, we hand-selected those centers. Some were from when I was president of Schweizer in Elmira [New York]. Others reached out to us. We took the time to review each carefully to ensure they would be the best fit for the level of service it was imperative we provide moving forward."

Return to Production

As some on the Schweizer team worked to rebuild a global supply chain, others were addressing aircraft production. Working closely with the FAA's Fort Worth Manufacturing Inspection District Office (MIDO), Schweizer RSG set up a manufacturing line and built its first aircraft, with the FAA validating that each process will produce aircraft that meets the requirements of the type certificate.

Because Schweizer already possessed a production certificate for parts and AS9100 certification, the process of

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Andrew Granado oversees the precision placement of a cabin on a fuselage. Schweizer worked closely with the FAA to set up and certify the plant's manufacturing line.

working with the FAA to open the production line for new helicopters moved efficiently. Horton also credits the “tremendous” support received from the MIDO inspectors for helping the company meet the requirements for the certificate of airworthiness for the first S300 produced as well as for its production certificate.

Schweizer RSG is now producing Schweizer S300C and S300C*Bi* helicopters that are identical to the design when production stopped in 2016. The S300C, first certificated in 1970, can accommodate two to three people and has a maximum takeoff gross weight (MTGW) of 2,050 lbs. The right-hand-drive-only S300C*Bi*, with seating for two, has a MTGW of 1,750 lbs. and is designed for the training market.

Schweizer RSG plans to produce eight aircraft in 2021, with the first several undergoing step-by-step validation by the MIDO, as is standard practice, before it receives an unrestricted production certificate. Once the company can produce aircraft unrestricted, Horton foresees the ability to produce 50 to 60 aircraft a year, with each aircraft taking 60 to 90 days to manufacture.

At the same time, the company is in the process of establishing its own FAA Part 145 repair station, with the hope of having approval by the end of 2021. This will further increase

Schweizer RSG's offerings, allowing it to offer full refurbishments of aircraft as well as providing main- and tail-rotor gearbox overhauls and other repairs in-house.

“We want to give our customers as many options as possible, including the option of working directly with the factory on overhauls and repairs,” Horton says. “Many customers

want to work directly with the OEM, and some, such as governments and military, require that equipment be overhauled and tested on the OEM's test bed before being put on their aircraft.”

A Part 145 certificate will also give Schweizer RSG another edge. “Due to the cannibalization of aircraft before we purchased the certificates, we've been able to acquire a certain number of incomplete airframes to provide factory refurbishments,” says Horton. “Along those lines, if a customer wanted to bring us an aircraft for refurbishment, we'll be able to do that, too.

“The original 269 was designed where if all you had was the data plate, you could rebuild the aircraft,” he says. “Due to the lack of parts, insurance companies were totaling aircraft that could have been saved. We will soon be able to provide a service to rebuild those aircraft for customers.”

So far, interest is strong. In 2019, the International Defense & Aerospace Group (IDAG) ordered 25 S300C*Bis*. Foreign Asset Trade Co., the purchaser of the first new-production S300C, has expressed interest in increasing its order to six aircraft, while Helifly in Australia purchased an S300C*Bi*. There is also strong interest from several US and South



Angie Thornton performs the final visual surface inspection of a painted cabin, ensuring it meets required standards.



The iconic Hughes Helicopters "jaws" logo.

American customers as well as non-US armed forces.

While overall demand has been increasing, it's not to the level Horton expected just yet, he says. "I think people are being cautious, waiting to see if we'll be here to support their aircraft. I believe as we build more helicopters and begin selling refurbished aircraft, confidence will build that Schweizer is here to stay, and people will commit."

Some former customers, like the University of North Dakota, were forced to consider other options due to their aging fleet's cost of operation and downtime caused by parts shortages. Alternatively, some customers have remained with the S300, and that has helped Schweizer RSG move forward.

"I think the Schweizer is the best training helicopter in the world, full stop," says Bob Caldwell, CEO and co-founder of IDAG. "I've known Dave Horton for 30 years, and I've full faith and confidence in him, the product, and the company. We were having issues with parts, but Dave was honest and up front. He told us that was his priority, and he certainly made good on that promise. There were bumps along the way, and he was always forthright about them. It might not have been what I wanted to hear, but I deeply respect that he was always open. In the end, we have our parts and can keep our fleet flying now. We're looking forward to working with him and the company to begin taking delivery of our order."

Next Steps

With the Schweizer production line now up and running, the next step in the process is modernization.

"Our goal is to make airframe modifications to move away from analog instrumentation and into digital," Horton says. "Digital systems are lighter, more reliable, less expensive to manufacture, easier to consolidate between aircraft, and less time- and cost-intensive to maintain. Our goal is that helicopters delivered in 2022 and 2023 will be digital."

Updates will include a new flat-panel display with digital instruments that provide information on aircraft and engine performance. Schweizer RSG will also identify and certify digital options for communications and

What a Long, Strange Trip It's Been

The string of helicopter designs now owned by a company in Texas, a company run by longtime helicopter folks, began its journey 65 years ago at a company in California headed by Howard Hughes, a man who knew quite a bit about airplanes but almost nothing about helicopters.

Here are some other factoids about a family of rugged helicopters that has seen many changes in ownership while remaining true to its heritage.

In October 1956, the Model 269—the piston-engine helicopter that started it all—made its first flight. It would become the first production Hughes helicopter.

...

Over the next several decades, Hughes marketed and supported variations of the Model 269A and Model 269B before adopting the Model 300 designation for its commercial line.

...

In 1963, the FAA certificated the Model 300. Shortly thereafter, in 1964, that aircraft, designated the TH-55A Osage, was selected as the US Army's primary rotorcraft trainer, a position it held until the late 1980s.

...

The Osage logged more than 3.5 million flight hours while training more than 60,000 US Army pilots.

...

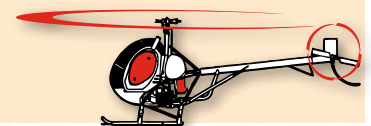
The Model 300C, certificated in May 1970, and its newer variants remain among the world's most popular small utility helicopters, with many pilots around the world receiving their initial training in them.

...

Those variants eventually included the piston-powered 300C, 300CB, and 300Cbi, and the 330, 333, and 434 turbines.

...

In 2018, after stops at Schweizer Aircraft and Sikorsky, this iconic product line found a new, dedicated home.



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navigation, leaving the final decision on their installation in individual aircraft up to the customer.

Schweizer RSG is also tackling another customer concern: maintenance and operating costs. The maintenance schedule for Schweizer aircraft was designed in the 1950s. Other than subsequent airworthiness directives (ADs), it has changed very little. Horton hopes to help change that for the better.

“We’re looking at revising the maintenance schedule to bring it in line with modern aircraft and modern procedures,” Horton says. “For example, there’s a very short time between inspections on the lower coupling driveshaft—150 hours—and we’re asking the FAA to look at an AD to allow an increase in hours before inspection. They’ve made no commitments to do this, but we’re collecting and providing very positive information that supports increasing that inspection interval. Whenever we can increase those inspection times, we can help reduce overall operating costs.”

Another area Horton’s team is exploring is lubrication intervals and lubrication greases. “A lot of greases and lubricants have been vastly improved over the years,” he

explains. “At some point, we plan to review the potential of changing grease and lubrication products that will allow for longer periods of time before servicing. These things take a bit of time to get through the approval process.”

The return to production of the Schweizer S333 is another story. While there have been some customer inquiries, Horton admits there would need to be considerable interest with multiple orders to support the investment required to start production of this aircraft designed for military training and law enforcement. The company would also need to secure a partner to help finance the line.

One opportunity for the S333 lies in the unmanned aircraft system (UAS) market. Northrop Grumman’s autonomous MQ-8B Fire Scout UAS was developed from the S333 platform. Horton believes there are opportunities to expand on the aircraft and technology as the civilian UAS market grows. Another possibility, he says, is converting the S300C to a turbine-powered aircraft for UAS use.

“We’ve already started down the UAS path, but we’re looking into securing a good partner to develop it further,” Horton says. “We’re definitely going to be a player in the UAS business.”

Behind every aircraft built is a team of professionals passionate about quality. Dave Horton’s team at Schweizer RSG, shown here, is committed to supporting the Schweizer legacy.



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Adding UAS to Your Helicopter Operation

For the right mission, drones are a low-cost, safe, effective choice.

By David Hughes

THE FAA RECEIVED ITS FIRST APPLICATION for a commercial unmanned aircraft system (UAS, or drone) in 2006. Fifteen years later, there are nearly 350,000 commercial drones registered with the agency.

Even as the still-developing UAS industry deals with regulatory challenges and battery-imposed limits on payload and flight time, drones are flying many missions formerly handled by helicopters. To compete, helicopter operators must decide whether to add drones to their operations.

Earlier this year, HAI held a webinar, “[Why You Might \(Should\) Have Drones in Your Future](#),” featuring a half dozen helicopter operators and drone specialists reflecting on their lessons learned when adding UAS to their helicopter operations.

James Viola, president and CEO of HAI, kicked off the program, saying, “It makes sense for helicopter operators to integrate unmanned aircraft systems into their businesses. It is going to make those businesses even more versatile and can even save them and their customers money.”

The Tipping Point

“The decision to integrate UASs—not replace helicopters completely but integrate them into operations—that decision is here today,” said Scott Burgess during the webinar. Burgess is an associate professor at Embry-Riddle Aeronautical University (ERAU) and chief of operations in the Department of Flight at ERAU’s Worldwide Campus.

“The proliferation of drones into the aviation industry has really been on the uptake in the last few years,” Burgess said. “It’s amazing to see the number of commercial operations where drones are utilized. Drones or remotely piloted aircraft will continue to creep into traditional helicopter mission sets.”

While battery capacity limits payloads and flight times, many missions that focus on acquiring data, such as photography, surveillance, inspection, and mapping, are seeing an increasing use of drones.

However, HAI is concerned that helicopter operators aren’t showing much enthusiasm for drones. More than 60% of respondents to a recent survey of helicopter operators



said they don't anticipate incorporating any UAS missions into their operations or services in the next year.

Turning away from drones "may not be the best decision to make unless you just want to give up that mission set in your organization," Burgess said. He went on to stress that the UAS industry is just getting started. The FAA rule permitting operations over people and at night without special waivers took effect in April 2021, and Burgess expects beyond visual line of sight (BVLOS), large cargo-carrying, and passenger transport operations by remotely piloted vehicles to one day be routine.

Finding Efficiencies

When Mark Gibson, president of Timberland Helicopters in Ashland, Oregon, saw that UAS operators were beginning to compete with his company for jobs, he decided he had no choice

but to get involved in UAS operations. Gibson has been in the helicopter business for 35 years, and his company, like many operators, provides a wide range of services—from tours and charters to firefighting and logging. He found that drones could capably handle the power-line, pipeline, and other utility patrol services that he provides with helicopters.

The first mission his company took on with drones was finding part numbers on suspect hardware on towers. "Land and facility surveys are probably more efficient with UASs [than with helicopters]," he told webinar attendees. His drones have also carried external loads and pulled a utility line over a short section of river.

Early on, Timberland didn't have a focus for its UAS operations but instead was testing what it could accomplish in the UAS arena. "So we ended up with a whole building full of

UAS products that, frankly, we probably didn't really need," Gibson said. He added that it was easy, however, to justify the expense of this experiment because UAS equipment costs so much less than certificated aircraft and related components.

Another lesson learned from Timberland's experience is that UAS operations should be conducted with the same rigor as those using helicopters. After the company had crashed a UAS, resulting in the destruction of the aircraft but no injuries, "we stepped back and said, 'We really need to look at this as just another segment of our manned aviation program,'" Gibson said.

The company response to the crash was to implement better pilot training, perform pre-flight risk assessments and post-flight debriefs, and increase the maintenance regimen for its UASs. Timberland made flight safety and quality



Engineers use a DJI Mavic Pro drone to inspect solar panels near Pilsen, Czech Republic.

control paramount in its UAS operations, just as it does for traditional aviation.

Timberland also teaches other drone operators how to comply with 14 CFR Part 107, the FAA's rules for small UAS operations. With their background in helicopter operations, the company's licensed pilots and instructors are able to provide new entrants to the field with a thorough understanding of aviation standards and best practices.

Improving Safety

Like any other organization investigating drone use, police departments must determine whether a UAS is the right tool for the job. They also have to navigate challenges such as public acceptance and bureaucratic obstacles.

Mark Colborn, a longtime law enforcement helicopter pilot who recently retired from full-time duty with the Dallas (Texas) Police Department (DPD) and who also serves on the FAA's Drone Advisory Committee, says the department first considered bringing a UAS into its aviation operations in 2015. But, Colborn told the HAI webinar participants, "in government, nothing ever happens fast."

The DPD, however, has since renamed its Helicopter Unit the Air Support Unit and divided the unit into two squads, the Helicopter Squad and the UAS Squad. The DPD recruited four police officers from other units in the department to staff the UAS Squad full time. All four officers have remote pilot certificates and, along with a sergeant assigned to the

unit, expect to begin operating the DPD's 16 drones in October after receiving final approval from the city council.

One planned use for the UASs will be to monitor protests. Colborn sees drones as a safe and efficient platform that can help de-escalate a situation and increase officer safety. The FAA has granted a certificate of authorization to allow the unit's drones to fly in the Dallas city airspace. In addition to monitoring public gatherings, the UASs will perform missions for the DPD's SWAT unit as well as other city departments. However, Colborn points out that DPD policy forbids using the aircraft for surveillance purposes and says the department is working to gain public acceptance of the drones.

Proven Utility

A public energy utility that operates in 16 states, Dominion Energy began using UASs in 2015 to inspect transmission infrastructure in Virginia. Nate Robie, Dominion's manager of unmanned systems, says the utility is now using drones in all operational segments, including nuclear, hydroelectric, and solar power generation, and in electric and natural gas distribution. Dominion has in-house drone capability, and it employs external vendors as well.

Once they had access to them, Dominion field technicians found multiple ways to use drones, and the company is looking forward to BVLOS operations when permitted. "That's when you'll see the most efficient use of UAS," Robie said during the webinar.

The list of how Dominion uses drones is long and growing. Drones monitor the health of Dominion solar panels and the condition of its wind turbine blades. Some drones conduct indoor inspections while others perform external inspections, surveying, and mapping. Along electric transmission lines, drones are used to monitor the status of everything from the vegetation along the right-of-way and structures to the health of components such as insulators. The company is experimenting with sensors that can detect methane, which can indicate a natural gas leak.

Because the technology is so new, Robie says, one of the challenges is “proving the technology to ensure it’s finding exactly what we want during all of the various inspections.” Dominion personnel are being careful not to oversell drones but instead to continually ask, “Is a drone the right technology for the job?”

Drones have already proven their effectiveness for Dominion. Robie cites increased operational safety, efficiency, and lower inspection costs as the major benefits of drone integration. He compares the time required to erect scaffolding or deploy a bucket truck with the ease of launching a drone. “Sometimes it could take multiple days before we were able to get up and see those areas we’re looking to inspect. Now, we can get up there in a fairly short amount of time.”

BVLOS: The Game Changer

Dominion has been working with Virginia Tech’s Mid-Atlantic Aviation Partnership (MAAP) to test the use of drones in inspecting power lines. A designated FAA UAS test site since 2013, MAAP conducts research to support the safe integration of drones into the US National Airspace System. It’s often said drones will follow a crawl-walk-run development time line, and according to MAAP’s new director, Tombo Jones, they are now in the crawl stage.

MAAP is also working with Wing, an Alphabet company and FAA-approved Part 135 operator for small-package delivery. Customers in Christiansburg, Virginia, can order coffee, meals, Girl Scout cookies, pharmacy products, and library books for delivery by Wing drones. These BVLOS deliveries are free, part of the [FAA Beyond Program](#), which



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Dec. 3, 2021



WATCH
Timberland
Use Drones to
Inspect Power
Lines

may someday lead to drones delivering parts to offshore oil rigs and transporting human organs for transplant surgery.

Of course, challenges remain for BVLOS drone operations. UASs operating beyond the visual range of their remote pilots must be able to detect and avoid other drones and aircraft, requiring licensed radio frequency spectrum, Jones says. But BVLOS operations will be a game changer.

“The drone operations we’re seeing today just barely scratch the surface of being able to conduct efficient operations, because they’re almost all line-of-sight operations,” Jones told the webinar audience, adding that achieving BVLOS capability will advance the drone industry’s reach. “That’s where things are going to open up and we’re going to see a much greater gain in efficiency with drone operations.”

A Shared Culture

Some of the strengths that helicopter operators bring to drone operations include their expertise in low-altitude aviation, maintenance, operational control, and handling external loads, says Jonathan Daniels, CEO of Praxis Aerospace Concepts International. Praxis is involved in drone development and testing, and Daniels has two decades of UAS experience in the US Department of Defense. He was named UAS special advisor to HAI’s Board of Directors in July 2021.

Helicopter operators also know how to do flight following and oversight, adds Daniels. “We’re used to operating our


own centers and facilities, and that’s very useful for UAS work,” he said at the webinar, noting that only eight of more than 5,000 heliports are public-use facilities.

“As a former helicopter pilot myself, we’re used to being the unloved red-headed stepchildren and having to figure out our own ways to make things work,” he added. “That’s a great mentality and culture for us to move into UAS operations.”

Burgess says advancements in UAS technology will lead to autonomous air taxis in urban areas and delivery of larger-scale packages.

“If you pay attention to this industry, you can see how fast things are moving. The biggest thing that will hold us back is going to be the regulatory aspects,” he told event attendees. “I think the research and development will facilitate us being able to get there fast.”

Gibson said Timberland doesn’t want to lose business or dilute its crewed helicopter operations. But he knows that when a utility company looks to gather data from the air, it’s going to look for more efficient and less expensive options.

“No matter how you cut it, if a drone can do the job, it’s going to be a little bit more cost effective,” he said. As a matter of survival, a helicopter operator should look into drones. “If the company doesn’t have anyone in their organization who knows about UAS, that’s a perfect opportunity to partner with someone who does.” 



WATCH
Drone
Research at
Virginia Tech

Virginia Tech MAAP engineer Jeremy Spink (left) and undergrad intern Matthew Foran deliver a radar-equipped drone to its launch site during NASA tests of a system designed to enable a drone to autonomously detect and avoid other aircraft, a necessity for BVLOS operations.



AMY ROBERTSON FOR VIRGINIA TECH; REPRINTED WITH PERMISSION

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MANAWATU MOS





S. QUITO

Another case of helicopters saving lives
(in this case, human, canine, and equine ones).

A PHOTO ESSAY BY MARK BENNETT



They'll be in the air by 0630, chasing a pair of helicopters into the rising sun, each loaded with larvicide, each intent on keeping this patch of Florida welcoming to humans by keeping it free of mosquitoes.

The scene plays out regularly across the state throughout most of the year. Helicopter crews might start before the sun, as we did this day, or they might launch at dusk and fly past midnight. They'll go up against the pests as much as needed, when needed, their routes precisely planned and flown, in a never-ending battle of good versus bug.



The Challengers

More than 80 species of mosquitoes inhabit the Sunshine State. Many are merely unwelcome annoyances, leaving us with no greater injury than an itchy welt. Some feed only on nonhuman animals, and a few feed only on plants.

However, some species that feed on humans are potential vectors for diseases such as yellow fever, dengue, or the Zika or West Nile viruses. Some mosquitoes that feed on dogs or horses can spread heartworms or encephalitis, respectively.

Florida's warm, wet environment has hosted mosquitoes for centuries, but serious measures to control them weren't undertaken until their role in spreading disease was understood. Thus it was in 1925, for both public comfort and health, that the first of what are now 58 governmental mosquito-control organizations was formed in the state. In the 1960s, helicopters joined the fight.

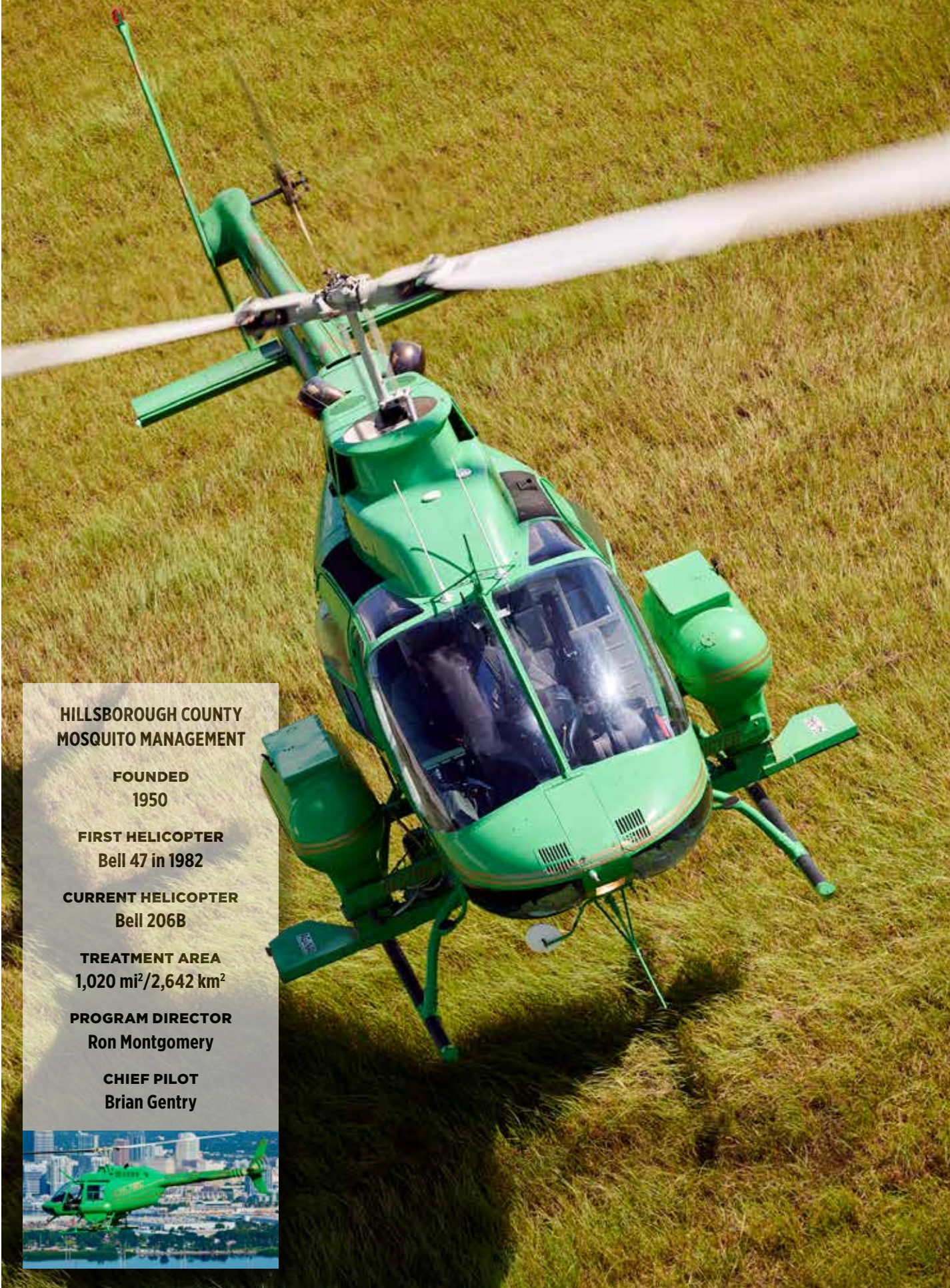
In preparing this essay, I visited eight of those organizations that fight a common enemy across more than 5,000 square miles of forests, salt marshes, ponds, farms, golf courses, and neighborhoods. Why helicopters? Because their capabilities—mobility, agility, precision—essentially mirror those of their prey.

Not every mosquito-control program flies helicopters, and even for those that do, the aircraft are just one tool among many. But when a single aircraft can accomplish in 40 minutes what might take 10 trucks and crews four days, the value of rotary-winged assets is compelling.

Above: Collier County's Bell 407 prepares to launch a dawn assault on mosquito larvae near Naples, Florida, home to some 80 championship golf courses.

Right: Mosquitoes can be more than disagreeable visitors to an exposed patch of skin—they are potential vectors for a range of debilitating, and potentially lethal, diseases in humans, dogs, and horses. (Paul Landau photo)





**HILLSBOROUGH COUNTY
MOSQUITO MANAGEMENT**

**FOUNDED
1950**

**FIRST HELICOPTER
Bell 47 in 1982**

**CURRENT HELICOPTER
Bell 206B**

**TREATMENT AREA
1,020 mi²/2,642 km²**

**PROGRAM DIRECTOR
Ron Montgomery**

**CHIEF PILOT
Brian Gentry**





WATCH

the Lee County Team Fight Mosquitoes in the H125

Left: Hillsborough County encompasses over 1,000 square miles of terrain and water, including the city of Tampa, that is patrolled and treated using a single Bell 206B.

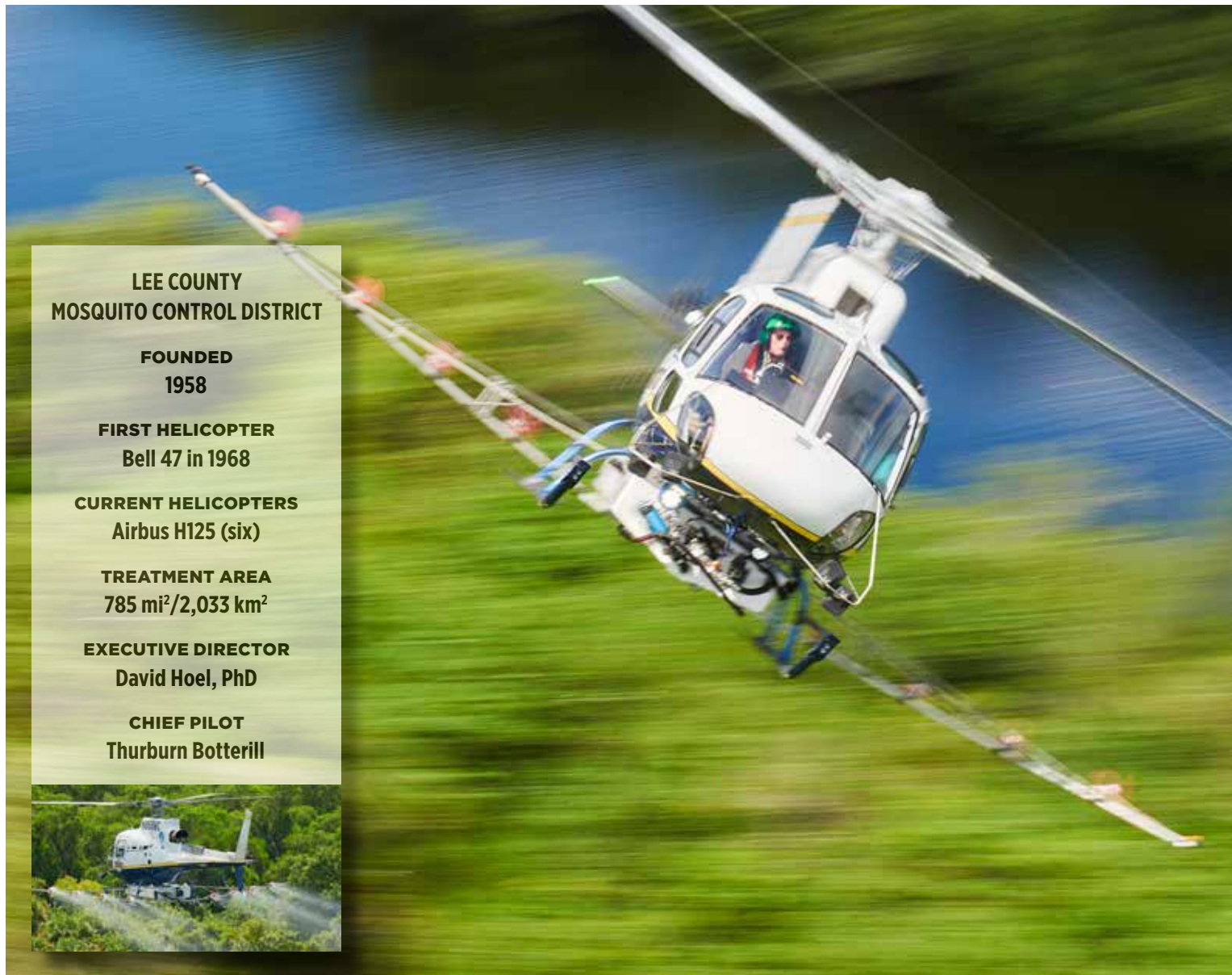
Below: Lee County has the largest fleet of aircraft in the state, with both King Air and DC-3 fixed-wing assets in addition to its six Airbus H125 helicopters.

The Best Offense ...

The first step in controlling mosquitoes is reducing their opportunities to multiply.

That includes commonsense efforts to keep objects like unused buckets, discarded tires, or even bird feeders from providing mosquitoes a place to lay their eggs. But even if every human-created reservoir were emptied, Florida—frequently rained on, rimmed by salt marshes, and run through with springs and slow-moving rivers (hello, Everglades!)—has countless natural habitats in which mosquitoes can always breed.

Mosquitoes, however, are not always in need of control. It is important to determine which species are present and in what numbers. Remember, not all species feed on humans (or dogs and horses). There’s no need to eradicate nonpest mosquitoes, as these insects are part of the food chain for fish, birds, amphibians, and other insects. They are also pollinators.



**LEE COUNTY
MOSQUITO CONTROL DISTRICT**

**FOUNDED
1958**

**FIRST HELICOPTER
Bell 47 in 1968**

**CURRENT HELICOPTERS
Airbus H125 (six)**

**TREATMENT AREA
785 mi²/2,033 km²**

**EXECUTIVE DIRECTOR
David Hoel, PhD**

**CHIEF PILOT
Thurburn Botterill**



The types and populations of mosquitoes are affected by temperature, humidity, rainfall, and tides, so inspections are carried out daily, by sampling water for larvae, checking for adults in traps, or by simply leaving an arm exposed while standing outside. Helicopters play a role by quickly transporting inspectors to distant traps or known environments, or to locations that might be near but otherwise difficult to access.

Another factor that figures into management plans is disease. Only certain species carry certain diseases, but the mere presence of those species does not, by itself, mean that disease is present. Thus, reports from hospitals, tests of trapped mosquitoes, and, for at least one mosquito-control organization, tests of the blood of chickens purposefully housed where they are exposed to mosquitoes are constantly monitored.

Right: This Charlotte County UH-1H is owned by the mosquito-control organization but piloted by a deputy from the sheriff's office, which owns and operates another Huey and an AStar, both of which can also be used in mosquito-control efforts.

Below: East Flagler has a single Bell 206B-3, which it uses for the three main roles of helicopters in mosquito control: inspection, larviciding, and adulticiding.



**EAST FLAGLER
MOSQUITO CONTROL DISTRICT**

**FOUNDED
1952**

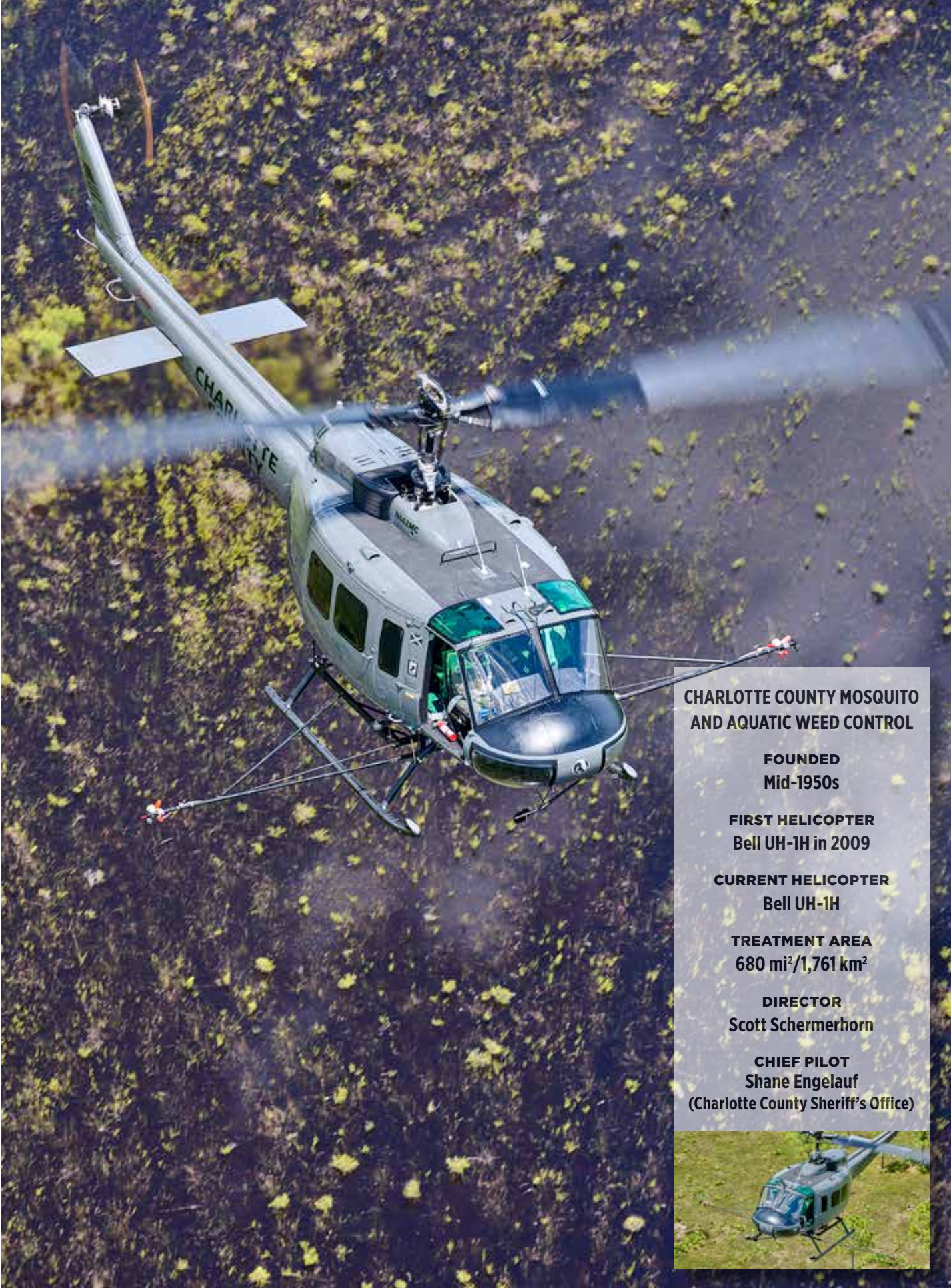
**FIRST HELICOPTER
Bell 47 in 1990**

**CURRENT HELICOPTER
Bell 206B-3**

**TREATMENT AREA
117 mi²/303 km²**

**DIRECTOR
Mark Positano**

**CHIEF PILOT
Kevin Card**



**CHARLOTTE COUNTY MOSQUITO
AND AQUATIC WEED CONTROL**

**FOUNDED
Mid-1950s**

**FIRST HELICOPTER
Bell UH-1H in 2009**

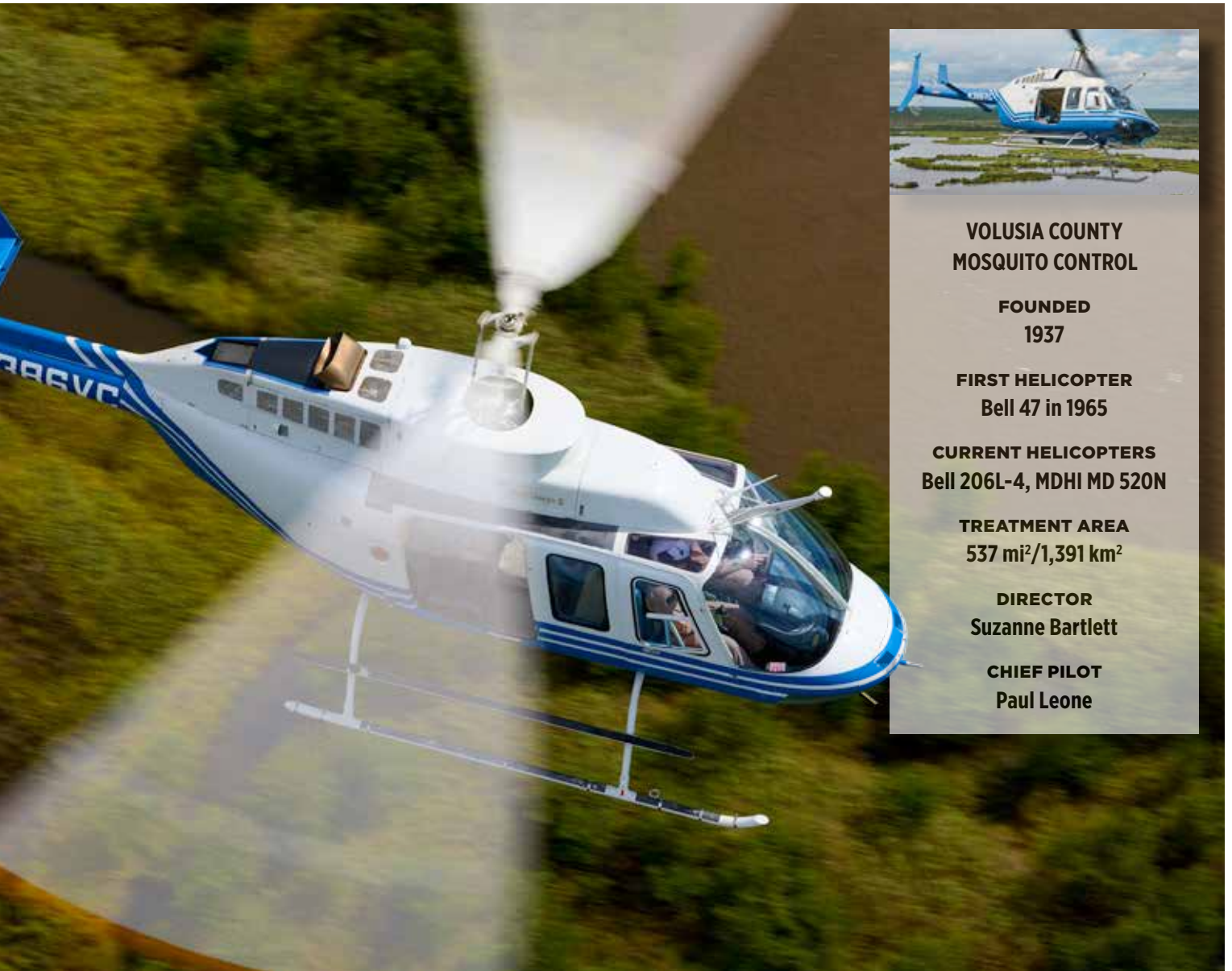
**CURRENT HELICOPTER
Bell UH-1H**

**TREATMENT AREA
680 mi²/1,761 km²**

**DIRECTOR
Scott Schermerhorn**

**CHIEF PILOT
Shane Engelauf
(Charlotte County Sheriff's Office)**





**VOLUSIA COUNTY
MOSQUITO CONTROL**

**FOUNDED
1937**

**FIRST HELICOPTER
Bell 47 in 1965**

**CURRENT HELICOPTERS
Bell 206L-4, MDHI MD 520N**

**TREATMENT AREA
537 mi²/1,391 km²**

**DIRECTOR
Suzanne Bartlett**

**CHIEF PILOT
Paul Leone**

The (Partial) Solution

When intervention is required, people and equipment can be mobilized for attack on foot, by truck, or by air. If helicopters are part of the plan, a lot of planning goes into those operations.

Sophisticated computer programs are used to plot the areas needing treatment, and then exact flight paths are calculated to deliver the proper dose of materials, whether dry or liquid, depending on altitude, humidity, and prevailing winds. Those flight paths are loaded into dedicated avionics systems that control and track the flow of materials, overlaying that data with the track of the aircraft.

Mosquito larvae need water to grow and develop into adulthood, which means they are easier to target than adult, flying mosquitoes. The favored weapon is a bacterium, *Bacillus thuringiensis israelensis* (Bti), that, when ingested by the larvae, leads to a rupturing of their digestive tracts, killing them. Besides mosquitoes, Bti is injurious to only a couple other species of insects that, coincidentally, also spread

Above: Volusia County began using helicopters for mosquito control 56 years ago, earlier than the others included in this essay, and currently flies both an MD 520N and, shown here, a Bell 206L-4 LongRanger.

Right: In contrast to Volusia, Anastasia Mosquito Control is the newest helicopter-operating program in the state, fielding its first of, now, three Bell 206B-3 aircraft just three years ago. Here, the crew calibrates their spray system, using mineral oil as a substitute for actual adulticide.



**ANASTASIA MOSQUITO CONTROL
DISTRICT OF ST. JOHNS COUNTY**

**FOUNDED
1949**

**FIRST HELICOPTER
Bell 206B-3 in 2018**

**CURRENT HELICOPTERS
Bell 206B-3 (three)**

**TREATMENT AREA
822 mi²/2,129 km²**

**EXECUTIVE DIRECTOR
Rui-De Xue, PhD**

**CHIEF PILOT
Dana Smith**





**PASCO COUNTY
MOSQUITO CONTROL DISTRICT**

**FOUNDED
1951**

**FIRST HELICOPTER
Hughes TH-55 in 1989**

**CURRENT HELICOPTERS
Airbus H125 (two)**

**TREATMENT AREA
868 mi²/2,248 km²**

**EXECUTIVE DIRECTOR
Adriane Rogers**

**CHIEF PILOT
Wayne Daniels**

disease. The bacterial agent is typically delivered in pellet form, flung outboard from hoppers on either side of the aircraft.

If the mosquitoes are not defeated as larvae, helicopters can apply plant-based poisons or synthetic versions of them. Booms jut out from the fuselage to deliver liquid to nozzles and fans that atomize it and spread the resultant mist.

Because the poisons are also harmful to bees and butterflies, very low volumes of these solutions are applied, and such missions are flown after most of those desirable insects are already bedded down for the night or not yet up in the morning. Fortunately for the mosquito hunters, evening and dawn are when mosquitoes are most active anyway.

Glamorous? No. Important? Absolutely.

Some sectors in our industry have more cachet than others. Dwayne Johnson probably isn't going to play a mosquito-control helicopter pilot any time soon. But in Florida, I came away with considerable respect for the care and precision with which these flight and ground crews conduct their lifesaving missions. 🇺🇸

Above: Pasco County flies two new H125 helicopters. They are used for surveillance of otherwise hard-to-reach areas and for treating large expanses of forest, swamp, standing water, and open fields.

Right: Collier Mosquito Control District flies a pair of MDHI MD 500D helicopters—this one is dispensing larvicidal pellets onto swampland—as well as a Bell 407 (inset).



**COLLIER MOSQUITO
CONTROL DISTRICT**

**FOUNDED
1950**

**FIRST HELICOPTER
Hughes TH-55 in 1979**

**CURRENT HELICOPTERS
Bell 407, MDHI MD 500D (two)**

**TREATMENT AREA
401 mi²/1,039 km²**

**EXECUTIVE DIRECTOR
Patrick Linn**

**CHIEF PILOT
Chris Laidlaw-Bell**



QUICK FACTS

Faith Lorenz

Helicopters Inc.
St. Louis, Missouri

CURRENT JOB

As a helicopter mechanic, my responsibilities range greatly due to the complete refurb and thorough inspections of our helicopters. Our fleet is scattered across the United States and consists mainly of Bell JetRangers, LongRangers, and 407s.

FIRST AVIATION JOB

My first job in aviation was working as a mechanic apprentice for a local helicopter flight school while I was attending A&P school. I was able to help with minor inspections and familiarize myself with a variety of helicopters, including a Bell 47!

FAVORITE HELICOPTER

My favorite helicopter is the Bell 407. It's proven to be a powerhouse in the sky, and it offers a challenge for me on the maintenance side. One of the more challenging tasks is tracking and balancing its four-bladed main rotor system. It feels like an amazing accomplishment when the helicopter is completely finished and the ride is smooth.



WATCH

Faith and Team Swap
Bell 407 Skid Gear



How did you decide helicopter aviation was the career for you?

I always knew I wanted a career in aviation, but I wasn't sure which direction to go in. I was introduced to the world of helicopters my senior year at Southern Illinois University. I toured the helicopter program they offered, and I really fell in love the minute I set foot in that hangar. Helicopters are truly a vital niche in aviation, and I wanted to be a part of it.

How did you get to your present position?

I landed my current position as a helicopter mechanic by networking at HAI HELI-EXPO 2019. I attended the show while still in A&P school and was looking for a great company to begin my career with. This led to a few referrals to my employer, Helicopters Inc. They received my resume and gave me my first employment opportunity as an A&P mechanic.

What are your career goals?

My current goal is to obtain my private helicopter pilot certificate and to add further ratings as I grow. I'd love to use these certifications as

well as my A&P throughout my career. My main career goal is to be a well-rounded mechanic and pilot, as well as to possibly teach others someday.

What advice would you give someone pursuing your path?

Try something new. If an aviation career truly interests you, I implore you to take a shot at it. As someone who had no friends or family with an aviation background, I'm more than happy with my career path choice. You don't need any prior training to begin. Just be eager and willing to learn! There are so many opportunities in aviation; you just have to find which path works for you.

Who inspires or has inspired you?

My inspiration comes from many important people in my life. My father, who started my interest in maintenance by teaching me how to wrench. My mother, who taught me to be independent and always work your hardest. And of course, my helicopter instructor, Karen Johnson, for her knowledge and example as a woman in this industry.

What do you think is the biggest threat to the helicopter industry?

The lack of exposure. Those in aviation are aware of the large amount of vacancies in the workplace. Many young people are unaware of the career paths available to them, and this must change! That's why I've created my social media blog "How To Helicopter" (@howtohelicopter on TikTok and Instagram) in hopes it can spark interest in those exploring different professions.



Tell us about your most memorable helicopter ride.

My most memorable helicopter ride was actually quite recent! I was in New York working on a few of our helicopters when I had the opportunity to go on a flight over New York City. I was able to see amazing

views over the East and Hudson Rivers as well as fly by the Statue of Liberty and the Empire State Building. It was by far my favorite experience yet in a helicopter!

What still excites you about helicopter aviation?

The endless amount of opportunities available. In just the few short years I've been involved in the helicopter industry, I've gotten to meet so many amazing people, travel to new places, and see some of the most extraordinary views!

What challenges you about helicopter aviation?


I think the biggest challenge for me is to always be better. The helicopter industry is busy and ever-changing, and with it so am I. I want to progress in my career, always striving to complete a new goal. Currently, as an A&P mechanic, my next challenge is my IA [inspection authorization] certificate

as well as my private helicopter pilot certificate. Having these challenges keeps me motivated and always moving forward.

Complete this sentence: I know I picked the right career when ...

... I went for my first flight at Helicopters Inc. around downtown Chicago! At the time, I'd only been at my job for a few months. We'd just completed a large maintenance inspection on our helicopter in Chicago when I was asked to go up for an operational test flight. The pilot was kind enough to take me over the city near the end of our flight, and I was astonished by the scenery. I just kept thinking to myself, "This is what it's all about."

Complete this sentence: I love my job, but I'd rather work for a paper company in Scranton when ...

... a fuel cell inspection is due on a hot day or when it's time to repack some floats! 

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RECENT ACCIDENTS & INCIDENTS

THE ROTORCRAFT ACCIDENTS AND INCIDENTS LISTED BELOW OCCURRED FROM APR. 1, 2021, TO JUN. 30, 2021. The accident details shown are preliminary information, subject to change, and may contain errors. All information was obtained through the official websites included below, where you can learn more details about each event.

Australia—Australian Transport Safety Bureau (ATSB): bit.ly/2P3ZF1S

Canada—Transportation Safety Board of Canada (TSBC): bit.ly/3c6evf2

United States—National Transportation Safety Board (NTSB): bit.ly/2lueqZa

April 2021

Robinson R66

Palmyra, PA, USA
Apr. 3, 2021 | [NTSB N577DD](#)
1 injury, 0 fatalities | Personal flight

Helicopter substantially damaged after loss of control during attempted landing.

Robinson R44

Johnson, KS, USA
Apr. 5, 2021 | [NTSB N8348X](#)
0 injuries, 0 fatalities | Personal flight

Helicopter substantially damaged after loss of control during transition to a hover at low altitude while inspecting a wheat field.

Eurocopter EC120

LeRoy, KS, USA
Apr. 9, 2021 | [NTSB N421PB](#)
0 injuries, 0 fatalities | Personal flight

Helicopter substantially damaged during attempted autorotation to an open field after pilot-reported low rotor rpm.

Robinson R44

Forkston, PA, USA
Apr. 22, 2021 | [NTSB N4055N](#)
0 injuries, 1 fatality | Personal flight

Helicopter crashed in a remote location; radar data revealed snow showers in vicinity.

Agusta A119

Nuevo Laredo, Mexico
Apr. 23, 2021 | [NTSB N119AA](#)
0 injuries, 1 fatality | Flight type unknown
No description available.

Airbus AS350 B2

Griffith Island, Nunavut, Canada
Apr. 25, 2021 | [TSB A21C0038](#)
0 injuries, 3 fatalities | Flight type unknown
Helicopter impacted snow-covered terrain and was destroyed during post-crash fire.

Bell 429

Eden, NC, USA
Apr. 28, 2021 | [NTSB N53DE](#)
2 injuries, 1 fatality | Aerial observation flight
During a low-altitude power-line patrol, helicopter descended into trees and crashed due to unknown reasons.

May 2021

Precision Helicopters UH-1H

Rayón, Mexico
May 2, 2021 | [NTSB N1206G](#)
0 injuries, 0 fatalities | Flight type unknown
No description available.

Robinson R44

Wingate, NC, USA
May 2, 2021 | [NTSB N4528T](#)
0 injuries, 1 fatality | Agricultural flight
Helicopter crashed during aerial application flight with preliminary evidence of a wire strike.

Robinson R22

Durban, South Africa
May 3, 2021 | [NTSB ZS-HBR](#)
0 injuries, 1 fatality | Flight type unknown
No description available.

MD Helicopters 369FF

Mesa, AZ, USA
May 5, 2021 | [NTSB N6068S](#)
0 injuries, 0 fatalities | Instructional flight
No description available.

McDonnell Douglas 369FF

Palm Gardens, NV, USA
May 6, 2021 | [NTSB N972BW](#)
0 injuries, 0 fatalities | External-load flight
No description available.

Robinson R44

Estepona, Spain
May 7, 2021 | UNK
0 injuries, 1 fatality | Flight type unknown
No description available.

Robinson R44

Belo Horizonte, Brazil
May 8, 2021 | PR-RDR
0 injuries, 0 fatalities | Flight type unknown
No description available.

Enstrom F-28F

Palmer, AK, USA
May 9, 2021 | [NTSB N8627J](#)
0 injuries, 0 fatalities | Air tour flight
Helicopter substantially damaged during autorotative landing.

Richards Heavylift Helo UH-1H

Norris City, IL, USA
May 10, 2021 | [NTSB N567VF](#)
0 injuries, 0 fatalities | Agricultural flight
No description available.

Airbus AS350 B2

Les Escoumins, Quebec, Canada
May 11, 2021 | [TSB A21Q0024](#)
1 injury, 0 fatalities | External-load flight
Helicopter experienced hard landing after tail-rotor gearbox and tail rotor separated from helicopter during power-line operations.

Aérospatiale AS350 B2 Écureuil

Yukon, OK, USA
May 12, 2021 | [NTSB N841BP](#)
2 injuries, 0 fatalities | Instructional flight
During low-altitude training, helicopter experienced loss of control, impacted terrain, and was destroyed during post-crash fire.

Robinson R22

New South Wales, Australia
May 26, 2021 | [ATSB AO-2021-020](#)
0 injuries, 1 fatality | Aerial mustering flight
Helicopter sustained significant damage following collision with terrain during aerial mustering flight.

Leonardo AW139

New South Wales, Australia
May 30, 2021 | [ATSB AO-2021-022](#)
0 injuries, 0 fatalities | Air medical flight
Helicopter experienced tail-rotor strike during night-vision goggles-aided, confined-area landing to an unimproved area.

June 2021

Schweizer (Hughes) TH-55A/269A

Monroe, LA, USA
Jun. 3, 2021 | [NTSB CEN21LA253](#)
0 injuries, 0 fatalities | Instructional flight
No description available.

AgustaWestland AW139

Mangalore Airport, Victoria, Australia
Jun. 6, 2021 | [ATSB AO-2021-023](#)
0 injuries, 0 fatalities | Air medical flight
Helicopter pilot responded to a TCAS (traffic collision avoidance system) alert and successfully maneuvered to avoid a fixed-wing aircraft performing a missed-approach procedure.

Bell 214ST

Nipigon, Ontario, Canada
Jun. 8, 2021 | [NTSB GAA21WA138](#)
0 injuries, 0 fatalities | Firefighting flight
No description available.

Robinson R44 II

Reserve, LA, USA
Jun. 10, 2021 | [NTSB CEN21LA284](#)
0 injuries, 0 fatalities | Personal flight
Helicopter sustained substantial damage following a loss of power during takeoff.

Robinson R44

Auckland, New Zealand
Jun. 12, 2021 | [NTSB GAA21WA143](#)
Injuries unknown, fatalities unknown | Personal flight
No description available.

Robinson R44 II

Sylva, NC, USA
Jun. 14, 2021 | [NTSB ERA21LA252](#)
0 injuries, 0 fatalities | Instructional flight
No description available.

Bell UH-1H

Townsend, MT, USA
Jun. 15, 2021 | [NTSB WPR21LA236](#)
0 injuries, 0 fatalities | Public aircraft
No description available.

Robinson R44

Eidanger, Norway
Jun. 17, 2021 | [NTSB GAA21WA145](#)
Injuries unknown, fatalities unknown | Flight type unknown
No description available.

McDonnell Douglas 369E

Swan Lake, NY, USA
Jun. 18, 2021 | [NTSB ERA21LA262](#)
2 injuries, 0 fatalities | External-load flight
During external-load operations and electrical tower repair, pilot and lineman reported loud bangs before helicopter descended and impacted terrain.

Bell 407

Tampa, FL, USA
Jun. 21, 2021 | [NTSB ERA21LA264](#)
0 injuries, 0 fatalities | Instructional flight
No description available.

Garlick OH-58A+

Alpine, AL, USA
Jun. 25, 2021 | [NTSB ERA21LA269](#)
0 injuries, 1 fatality | Agricultural flight
Helicopter crashed with preliminary evidence of a wire strike during aerial application.

Cabri G2

Lostallo, Switzerland
Jun. 26, 2021 | [NTSB GAA21WA190](#)
0 injuries, 0 fatalities | Flight type unknown
No description available.



Robinson R44

Yalta, Ukraine
Jun. 27, 2021 | [NTSB GAA21WA157](#)
0 injuries, 0 fatalities | Flight type unknown
No description available.

Robinson R66

Waxhaw, NC, USA
Jun. 27, 2021 | [NTSB ERA21LA270](#)
0 injuries, 0 fatalities | Agricultural flight
No description available.

Bell 47G-2A-1

Brasstown, NC, USA
Jun. 28, 2021 | [NTSB ERA21LA272](#)
1 injury, 0 fatalities | Personal flight
No description available.

Bell 212

Evansburg, Alberta, Canada
Jun. 28, 2021 | [TSB A21W0045](#)
0 injuries, 1 fatality | Firefighting flight
Helicopter experienced in-flight main rotor separation during firefighting operations and crashed.

Bell 206

Rome, NY, USA
Jun. 29, 2021 | [NTSB ERA21LA275](#)
3 injuries, 0 fatalities | Instructional flight
Helicopter substantially damaged after hard landing and rollover during autorotation training and attempted power recovery.



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Out of Character

Instructor's in-flight behavior belies his professional reputation.



THE SATISFACTION OF HAVING MASTERED something exceptionally difficult rarely compares to the pleasure of putting that mastery to work. Like surgeons or Broadway stars, top-notch pilots—who can be seen as both professionals and performing artists—sometimes enjoy the thrill of perfect execution, every detail clicking exactly as intended. But that euphoria is best tempered with appropriate caution. Getting swept up in the moment can lead to a very unpleasant surprise.

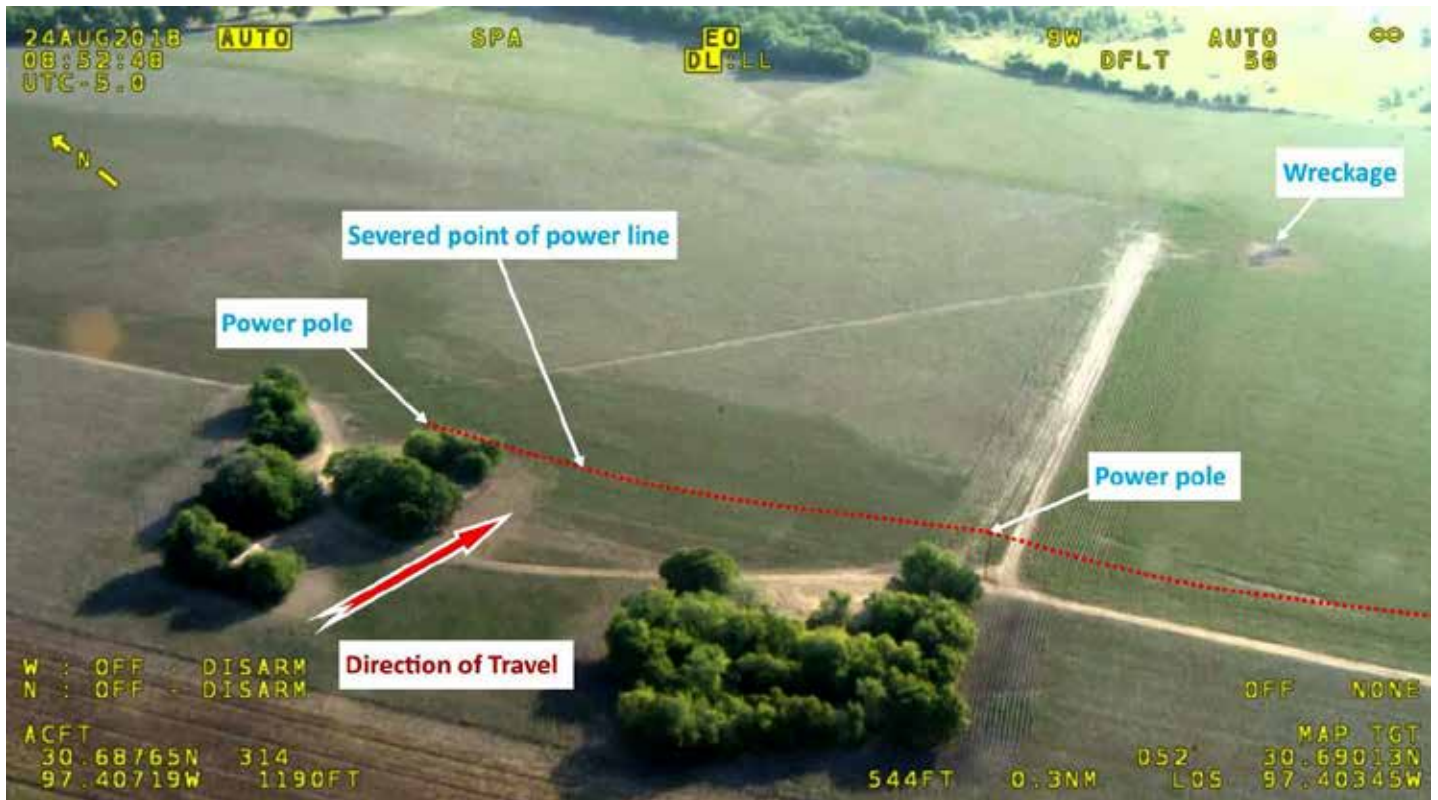
The Mission

At 12:08 pm local time on Aug. 21, 2018, a Hughes 369FF took off from the Georgetown (Texas) Municipal Airport (KGTU) for Draughon-Miller Central Texas Regional Airport (KTPL) in Temple, Texas. The Part 91 instructional flight was one of a regular series operated under contract with the US Army Security Assistance

Training Management Organization (SATMO) to provide recurrent training in emergency procedures to pilots of the Special Operations Command of the Royal Jordanian Air Force.

Classes of five pilots each rotated through a two-week program whose nine hours of flight time included orientation to the local training area; simulated engine, hydraulic, and anti-torque failures; and a live-fire marksmanship exercise over a designated firing range. Comparable training isn't available in Jordan.

The Hughes 369FF was a close replica of the MD 530F model flown by the Jordanians in the field. It was configured to place the trainee in the right seat, the one occupied by the command pilot in Jordan. The trainees were described as “very well accomplished,” already qualified as either pilot-in-command or second-in-command. Except for the orientation and live-fire flights, all training was conducted in the environment of the



The investigation determined that the power-line poles, which would have signaled to the pilots the presence of wires, were obscured from view by trees.

Georgetown, Temple, or Taylor airports, with the transitions between them flown 200 ft. to 300 ft. above ground level (agl).

The Operator

At the time of the accident, the contractor had one part-time and seven full-time employees and operated three helicopters, one owned and two leased. In 2015, it acquired Part 133, 135, and 137 operating certificates by purchasing the prior certificate holder. An estimated 80% of its business was done with the US Department of Defense, for which it provided "niche training for ... allied foreign nation partners." It also conducted low-altitude operations such as feral hog eradication for local clients.

The Pilots

The 58-year-old instructor entered US Army helicopter school in 1989 and served as a pilot and instructor until retiring in 2003–04. His assignments had included "long-range navigation and precision aerial gunnery" as an attack helicopter pilot for the 160th Special Operations Aviation Regiment. After leaving the army, he continued flying for private operators in Iraq and Afghanistan. In 2017, he was recruited by the contractor's chief operating officer (COO), with whom he'd served in the 2nd Ranger Battalion in 1981.

The COO described the instructor as "a perfectionist ... who always flew 'by the book.'" Trainees commended his "strictness and discipline" to the point of reprimanding a pilot who descended from 600 ft. to 580 ft. without permission. The National Transportation Safety Board (NTSB) estimated that he had about 7,000 hours of career flight experience, 700 of them in the Hughes 369. He was assistant program manager for the Jordanian contract.

The trainee pilot was a 27-year-old first lieutenant, rated as second-in-command, who'd completed the same course the year before. The NTSB reported that about 1,000 of his estimated 2,000 hours of total flight time were in the same or comparable models.

The Flight

The instructor requested VFR departure to the northeast at 12:07 pm and was cleared for takeoff. About one minute after departure, he requested a frequency change. There were no further communications from the aircraft.

A resident at his home about 2 miles southwest of the town of Granger heard an approaching helicopter. Rotorcraft traffic in the vicinity was not unusual, but this one was "unusually loud." He turned to see a black helicopter approaching quickly from the northwest, flying 30 ft. to 40 ft. above a field in a nose-low attitude.

The resident became concerned the aircraft might hit

his house, and he estimated it came within 200 ft. before quickly climbing up and over the power lines bordering his street. By the time he turned to track the helicopter's progress, it had disappeared behind a stand of trees. The time, he said, was somewhere between 12:00 and 1:00 pm.

Between 12:15 and 12:20, a fixed-wing student pilot and instructor returning to KGTU heard a "desperate" string of profanity transmitted over the KGTU tower frequency. The instructor guessed it lasted about 2 seconds. No such transmission was captured on the tower's audio recordings.

At 12:25, the operator was notified that the helicopter's emergency locator transmitter (ELT) signal had been detected emanating from a location east of Georgetown. Temple Fire & Rescue and the Georgetown tower were unable to reach the aircraft, so the COO flew the company's AS350 FX to the reported ELT coordinates. He found the wreckage in a cotton field about 4 miles east of the witness's house. State troopers were already on the scene.

The Investigation

Data from an FAA air route surveillance radar installation 30 miles northeast of Georgetown detected a target departing the vicinity of KGTU eastbound at 12:09 climbing to about 500 ft. agl. Four minutes later, 9 miles east of the airport, it descended to 50 ft. and continued eastbound over unpopulated areas at about 90 kt. ground speed and altitudes of between 0 and 120 ft.

At 12:15:26, the aircraft approached the witness's house at 25 ft. agl, coming within 700 ft., then climbed to 125 ft. as it passed. The last radar contact came at 12:17:14 about 1 mile west of the accident site at an altitude of 58 ft.

The main wreckage was found at the end of a 100-ft. debris field (see image, opposite) that began with "five matching 2-ft.-long excavations that were equally spaced throughout a length of about 40 ft." Fragments of yellow paint in the ground matched that on the tips of the five main rotor blades. Skid fragments, pieces of wind-screen, parts of a main rotor blade, and items from inside the cabin led eastward to the fuselage, which was largely consumed by fire. The tail cone and tail rotor were 20 ft. farther east.

The west side of the field was bordered by a two-wire power line running north-south between 36-ft.-high poles. Both wires were severed at a point between two stands of trees about 950 ft. west of the main wreckage. Fragments of the aircraft's red belly strobe were found 100 ft. east of the break.

The southern end of the stranded steel overhead line had been pulled loose from the next three poles, all of which were bent toward the crash site. Some 1,300 ft. of unbroken cable ran from the wreckage to the fourth pole to the south.

Investigators determined that the helicopter passed between two clumps of trees that obscured the power poles from the pilots' view. The distance from the point of impact to the helicopter's final resting place indicated it was flying at high speed.

The probable cause of the accident was "the failure of both pilots to see and avoid a power line while maneuvering at low altitude. Contributing to the accident was the flight instructor's decision to not follow the training syllabus and allow the low-level, high-speed flight."

The Takeaway


It seems nearly impossible to reconcile the circumstances of the accident with the instructor's reputation for professionalism and discipline. At the same time, the combined radar, witness, and physical evidence are indisputable.

The COO, who also was an instructor in the Jordanian training program, told investigators that "flying low-level, nap-of-the-earth, gun runs or similar during training are considered serious transgressions."

He wasn't aware of the accident instructor ever having conducted such runs, adding that because he flew exclusively for the training program, he was unfamiliar with the low-level hazards in the area. He also noted that the younger, second-lieutenant trainees often wanted to fly low, while the first lieutenants "are a little more responsible."

The accident flight was nominally a SATMO local orientation flight. Since the trainee had completed the same course a year earlier, he may have retained some familiarity with the area.

In its probable-cause report, the NTSB speculated that the instructor's decision to "perform, or allow the pilot under instruction to perform," the low-level, high-speed flight might have been attributable to a desire "to simulate their working environment, make the flight more interesting or engaging, push limits, or impress each other."

This assessment, too, seems hard to accept, given that the two men weren't thought to have been close friends or known to have socialized with each other. But *something* led them to fly at least one unauthorized low-altitude maneuver ... and while they might have intended that maneuver to be brief, its end was all too final. 

Seeing Clearly

Don't take your vision for granted. There's no more valuable asset to an aviation professional.



WHAT IS VFR? THAT SHOULD BE a rhetorical question for most people reading this column.

VFR, of course, stands for visual flight rules. Visual flight rules are the cornerstone of aviation, dating back to 1903 and Kitty Hawk, North Carolina, when the Wright

brothers launched the first powered flights.

But is it possible we take VFR—and vision in general—for granted? It's the ole' fallback for everyone flying.

There are barnstorming aviators flying NORDDO (no radio) not speaking to or hearing anyone. They enjoy the freedom of flight and trust their knowledge and skill to fly without outside assistance from air traffic control or even listening to other aircraft for situational awareness.

We have thousands of VFR aircraft flying every day

with some level of advisory services, and there are thousands of pilots doing instrument approaches who'll announce to their copilot, "I have the runway in sight." Some of those instrument approaches require a "proceed visually" or "proceed VFR" final approach segment.

Putting the "Visual" in VFR

Let's spend a few moments talking about the "visual" part of the flight rules. VFR requires a pilot to be able to see outside the cockpit, control the aircraft's attitude, navigate, and avoid obstacles and other aircraft.

The FAA gives us rules and tools to use to ensure we set the conditions for being able to see and avoid obstacles and other aircraft. These come in the form of 14 CFR 91.155 outlining basic weather minimums. These rules tell VFR pilots to, for example, refrain from flying into clouds and remain far enough from clouds so that we can see and be seen by other aviators.

The FAA has also given guidance to medical examiners to set the minimum standards pilots must meet to

I love to fly. So you can imagine how distressing it was when, over the past year or two, I noticed I had difficulty seeing aircraft my ADS-B had no trouble seeing.

pass a flight medical examination in order to fly an aircraft. I bet few pilots know what those minimum standards are. (They're outlined in CFR Part 67.)

Depending on your medical classification level, you could have different minimum visual standards from other pilots. Class 1 and 2 candidates will need 20/20 visual acuity and 20/40 near vision, whereas Class 3 candidates will need only 20/40 visual acuity and 20/40 near vision. You may use corrective lenses to meet these standards, and if you do, you'll likely be required to have those lenses available or wear them when exercising the privileges of your airman certificate.

The standards change just a bit if you're an airman and use the basic medical that's authorized by the FAA within US borders. Those visual acuity minimums are similar to what's required to pass a basic driver's license exam. Because state vision standards can vary, I won't try to outline them

here, but keep in mind that those standards won't be as strict as a pilot medical Class 1, 2, or 3 standard.

Wake-Up Call

I fly a lot. Some people around my local airport might say I really fly a lot. I love to fly. I especially enjoy the sound of a big-bore Continental engine and the smell of avgas! So you can imagine how distressing it was when, over the past year or two, I noticed I had difficulty seeing aircraft my ADS-B had no trouble seeing.

When I went for my annual Class 2 flight physical, my aviation medical examiner (AME) confirmed what I already knew but didn't want to admit: it was time for a vision correction.

I had the procedure done recently to correct my vision, and the difference is unbelievable. Colors are more vibrant, and objects are clearer by many measures. Our vision changes so gradually sometimes

that we don't notice the difference and forget what we could see before.


It's Up to You

There are three parts to the VFR equation. The government sets the standard on flight rules. AMEs make sure you meet the minimum physical standards for a pilot. And the third part? That's up to you. Do all you can to safeguard your vision.

Wear sunglasses when necessary. Put on eye gear when working in the hangar or workshop, or when you're on the flight line. Protect your eyes from chemicals.

For a pilot or mechanic, nothing is more important physically than your ability to see. To do the things we love to do—like go fast and look down on all things mortal—we have to be able to see, and see well.

The next time you go flying or prepare an aircraft for flight, remember the "V" in VFR. You can't do it if you can't see it.

Fugere tutum! 

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How Do You Keep Your Training in Check?

Following the checklist regularly ensures you'll know the steps to follow when you need them most.



WHEN I WAS A YOUNG AVIATOR IN THE US Army 21 years ago, I picked up some bad habits on deployment. I had become complacent about referring to the aircraft checklist for each flight and, instead, memorized a lot of it. I thought this meant my knowledge of my aircraft was thorough and that recalling checklist items from memory confirmed how much I knew.

When I started flight training, my bad habits showed like a red warning light on the instrument panel. I vividly remember being on downwind to land after a day of training, and my instructor made the callout for me to perform a before-landing check. I immediately responded verbally with the action steps and a “check complete,” all while my checklist remained closed at my side.

My instructor paused, gave me a steely side-eye glance, and asked if I was going to use the checklist for

my before-landing check. He reminded me that using a checklist is a sign of professionalism, not an indicator of weakness or lack of knowledge.

I came away from that humbling experience with a greater understanding of the importance of following procedures consistently, every time. As a result, I’ve now developed some *good* habits—habits I encourage my students and other pilots to practice.

Rely on Memory for Emergency Procedures Only

More than half (52%) of all errors that happen during flight are procedural, according to The University of Texas at Austin Human Factors Research Project, the most common occurring when the pilot attempts to recite the checklist from memory. Many accident investigations list as causal factors the crews not using checklists and

instead taking inappropriate actions that prevented or reduced the likelihood of landing safely.

Certain checklist items, of course, should be memorized so that the pilot can respond immediately during an in-flight

My instructor reminded me that using a checklist is a sign of professionalism, not an indicator of weakness or lack of knowledge.

emergency and aviate, navigate, and communicate appropriately. Once those emergency steps have been taken, however, the checklist should be consulted for guidance on subsequent steps.

Slow Down

An overly confident pilot who relies on memory can overlook key steps in the checklist, causing mistakes. Taking time and slowing down to confirm the steps in our checklists makes us methodical, keeps us familiar with the list, and prevents us from making rushed and potentially dangerous decisions.

To get yourself “into the checklist,” combine your discussions and training about checklists and procedures with your simulator training. That way, you can reinforce your checklist skills before you ever take flight. If you can’t train in a simulator, use cockpit drills to review and practice the checklist procedures in your own aircraft.

Employ a Multiple-Crew Cross-Check

In multicrew operations, cross-checking checklist steps with fellow flight crew members helps monitor and confirm the necessary steps and settings. Having a flight crew member read out the checklist steps and procedures using the call-and-response method for each individual step fosters assimilation of the checklist, establishes a rhythm, reduces errors, and increases communication between crew members.

Use the Checklist during Single-Pilot Operations Especially

The checklist becomes even more important without the assistance of another crew member to cross-check and verify our actions. When you’re operating single-pilot,

take extra care to confirm the steps and double-check your settings. If you find yourself mentally skipping ahead, stop. Go back and check the

steps you took against the checklist to ensure you didn’t miss anything important.


Minimize Distractions

Ideally while flying, we’d minimize all distractions to focus on one task at a time. Sadly, this isn’t always possible, but remember: if you become distracted while going through the checklist, go back two,

or even three, steps before the point at which you were interrupted to confirm you completed the previous items and are continuing to follow the checklist in the correct sequence.

Practice Your Checklist Skills Regularly

Take time to regularly practice your checklist skills and procedures to prepare for your next flight. From preflight to post-flight, using the checklist helps us maintain familiarity with the steps in our operational procedures so that in times of high stress, we know where we are in the process and exactly where to go to find the next step.

Ever since that first lesson in using my checklist for a before-landing check, I regularly review and practice the checklist items, whether in the simulator or in flight, before I need to perform them in the air. This keeps me in the checklist and familiar with its steps when I need them most. 



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Shawn Coyle

Canadian veteran was renowned test pilot, instructor, author.

SHAWN COYLE, A LONGTIME TEST PILOT, FLIGHT TEST ENGINEER, FLIGHT EDUCATOR, and author, died Jun. 19, 2021, after a long illness. He was 71.

Coyle, a member of the Royal Canadian Air Force's 427 Squadron and a graduate of the Royal Military College of Canada and the Empire Test Pilots' School in the United Kingdom, had more than 40 years of experience in aviation. He was consulted by numerous organizations as a lecturer and subject-matter expert in helicopter aerodynamics, flight training, simulator training, and helicopter safety.

In 1997, Coyle cofounded Aeroserve Technologies, manufacturer of the Airtab vortex generator, which was designed to reduce aerodynamic drag on vehicles, thereby saving fuel. During his career, he also worked for Bell Helicopter on the Model 400; was an instructor at the US Naval Test Pilot School, the National Test Pilot School in California, and the International Test Pilots School; and served at Transport Canada as a certification test pilot on the Bell 407, 430, and 427. He also taught a popular course at HAI HELI-EXPO®, "Helicopter Aerodynamics without Equations," where he demystified the difficult aerodynamic concepts of rotary-wing flight.

"Shawn could explain things in such a way that an engineer would find the explanation accurate while the pilot would find it crystal clear," says Greg Brown, HAI director of education and training services.

Coyle was awarded HAI's Excellence in Communications Award in 2013 for his columns in industry publications as well as his books *Cyclic & Collective*, *The Art and Science of Flying Helicopters*, and *The Little Book of Autorotations*.

Survivors include his wife, three children, and four grandchildren. [!\[\]\(f95dab70c751fda7d824b8b03650f7aa_img.jpg\)](#)



Bob Whitson

Former HAI Excellence in Helicopter Maintenance Award recipient dies at 74.

BOB WHITSON, ONE OF THE ORIGINAL LEADERS OF EDWARDS AND ASSOCIATES (which was acquired by Bell Textron in 1999), died Aug. 7, 2021. He was 74.

After Whitson joined Bristol, Tennessee-based Edwards and Associates in 1979, he served as the head of the company's maintenance department and, eventually, as VP of operations. Whitson, an FAA designated manufacturing inspection representative and a designated airworthiness representative, traveled to more than 35 countries during his career and worked on several supplemental type certificates.

Whitson was awarded HAI's Excellence in Helicopter Maintenance Award in 1989.

Survivors include his wife, three children, five grandchildren, and one great-grandchild. [!\[\]\(4146d17f71dced09c6ad789cacceaa6d_img.jpg\)](#)

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In this photo, a Hummingbird is parked outside the company's hangar at Orlando Sanford International Airport (KSFB) in Sanford, Florida; an original S-52 (signed by Sergei Sikorsky) sits behind it.





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