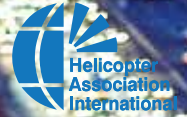


ROTOR

2020 QUARTER 2 THE MAGAZINE OF HELICOPTER ASSOCIATION INTERNATIONAL



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Above and Beyond

Helinet Flies Ahead

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ON THE COVER: Photographer Mark Bennett captured this S-76 C++ flying over the traffic on LA's Interstate 405. The helicopter, piloted by Steve Gould (left) and copiloted by Adam Ferris, is part of Helinet's aircraft management program, which currently oversees four aircraft.

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Mark Bennett worked for McDonnell Douglas Helicopter/Boeing for a decade, then in 1999

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Chris DeJoy joined HAI as its editor this past October. Previously, she worked more than

35 years as a staff managing editor and freelance editor for various trade magazines and websites as well as government contractors. In her free time, Chris enjoys—what else—reading.



David Jack Kenny

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 Safety Institute, where he authored eight editions of its *Joseph T. Nall Report* and nearly 500 articles. He'd rather be flying.



Dan Reed

Dan Reed is an award-winning journalist and author who has covered aircraft

manufacturing, aviation, and airlines for more than 30 years. Currently, he's a freelancer for *Forbes* and other publications, writes books, and operates his own communications consulting firm. Dan is based in Fort Worth, Texas.



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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.



Jaasmin Foote

Jaasmin Foote joined HAI as the association's social media manager in March, 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!



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.



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.



Cade Clark

HAI's VP of government affairs, Cade Clark has directed association advocacy programs

for nearly 20 years. Growing up, he worked at an FBO where Cade 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.



Chris Hill

After an aviation career in the US Army and Coast Guard, Chris Hill oversaw aviation safety

management systems throughout the USCG as aviation safety manager. He holds an ATP rating and has logged more than 5,000 flight hours, primarily in military and commercial helicopters. Chris joined HAI in 2018 as director of safety.



Zac Noble

Zac Noble joined HAI as its deputy director of flight operations and technical services after 11 years of flying

in the air medical sector. A US Army veteran, Zac's aviation career spans more than 35 years. He is a dual-rated ATP, a dual-rated CFII, and an A&P with IA privileges.



Dan Sweet

Dan Sweet joined HAI as director of communications and public relations in 2017. He previously

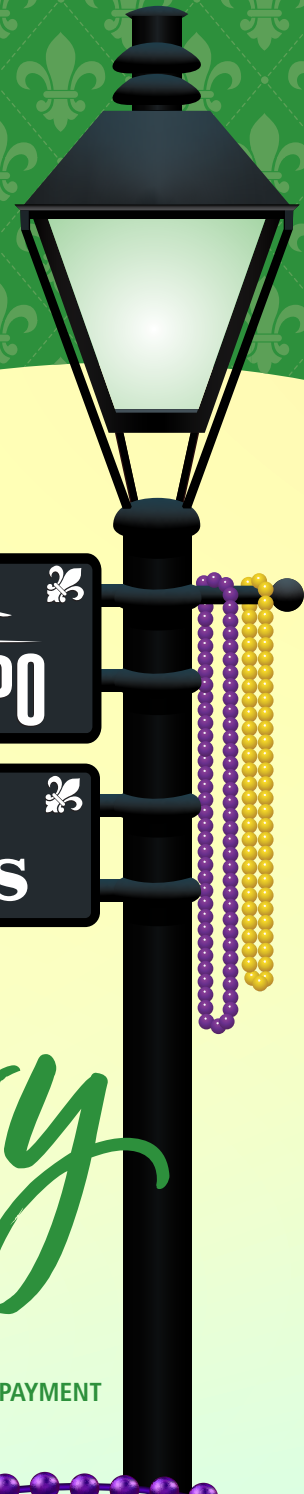
served in the US Navy as a photojournalist. After leaving the Navy, he worked for Oregon-based Columbia Helicopters, performing public relations, communications, and trade show management work for more than 22 years.

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By Jan Becker

HAI Keeps Moving

No pandemic paralysis here.



The current chair of HAI, Jan Becker is a commercial helicopter pilot and CEO of Becker Helicopter Services. A registered nurse and midwife, she does regular fieldwork in Tanzania for Midwife Vision, a charity she cofounded to support maternal and baby health in developing countries. Jan and her husband, Mike, live in Queensland, Australia, and have two daughters.

THE COVID-19 PANDEMIC HAS BROUGHT MANY DAILY ACTIVITIES TO A HALT while simultaneously forcing us to isolate and grounding our economies. There are many parts of the helicopter and UAS industry that are powering on regardless. Although the tourism and charter sectors are seeing big changes, helicopter air ambulance and utility operators are still carrying out their essential missions. It's at times like these that we realize how much helicopters do for society.

There've been some significant changes in the HAI world since Jim Viola took the helm as your president and CEO on Jan. 16. What a first 90 days he's had! Six months ago, could we have predicted the world we now live in, the way in which everything has shifted so quickly?

And there's more change to come. Together, the HAI Board of Directors is focusing on new ways to support you, the HAI member. Although for some change is difficult, it's also inevitable and so should be embraced.


The HAI Board of Directors has added another layer of oversight to the association's financial strategy by forming the Finance and Risk Committee. This new committee will assist the board in making sound financial decisions and creating focused budgets. The Finance and Risk Committee will appoint an independent financial consultant to work with the HAI CFO to demystify financial statements. The goal is to ensure good governance and the application of internal controls, policies, and procedures that highlight, identify, and manage all of HAI's financial risks, safeguarding the sustainability of your association.

We've also made some changes to the HAI working groups. They're now charged with some key performance indicators and time-specific action items that will benefit the HAI membership as well as the industry in general. For example, the Training Working Group is working to lower the number of accidents stemming from inadvertent entry into instrument meteorological conditions (IIMC) by developing industry best practices for keeping pilots in visual meteorological conditions and, when that isn't possible, for developing IFR transition plans as part of the preflight process.

The Training Working Group is also producing four free courses about IIMC prevention and recovery that members can use in their everyday operations. I can't wait to see what comes out of their efforts. Other HAI working groups are adjusting their focus to pursue similar projects.

The process for voting in HAI elections is also on our agenda. It's about time we use technology in our elections and cast votes electronically—no need to hold up your little paddle. (We were going to have members vote by drone but thought that might be a little too soon!)

April saw the HAI Board of Directors meet via Zoom.com, where we all dialed in to meet "face-to-face" and carry out your association's business. It's a new way of doing business, and I have to say I won't miss the jet lag. Sometimes change *is* good.

Be safe out there, both in the air and on the ground. 

By James A. Viola



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.

Reaching Our Potential

Preparing for a sustainable future.

WE'RE NEARLY HALFWAY THROUGH THE YEAR, and frankly, 2020 has been a bumpy ride. COVID-19 changed nearly every routine we had, both at work and at home. Businesses around the world went dark, and millions signed up for unemployment.

Some sectors of our industry, such as aerial tours and flight training, have been hard-hit by the recession the pandemic has caused. Others, such as oil and gas production, have seen business activity reduced by completely unrelated events. Our industry and our people, however, are resilient. The pandemic continues, but we're building a new normal for ourselves.

Like you, HAI is making use of this time to take a look internally and ensure we're prepared for the future. For one, [we're reorganizing](#) so that we have clear lines of responsibility throughout the association. There have also been some leadership changes in some other organizations with which you should be familiar: the [International Helicopter Safety Foundation](#) and the [US Helicopter Safety Team](#).


HAI's No. 1 priority has been to find ways to help our members during this crisis, and the HAI staff have been advocating for economic and regulatory relief for you at every opportunity, including securing more than \$27 million in payroll support for US air tour operators. I thank many of you who've provided feedback on issues to both our Government Affairs and Operations Departments. Your reports of conditions in the field have been invaluable in guiding our work with lawmakers and civil aviation authorities.

To improve our ability to provide you with up-to-the-minute information, we've launched HAI@Work, a weekly webinar series featuring HAI staff and guest speakers from the international vertical flight industry. Finding a job, getting insurance, navigating government bureaucracies—each week, we focus on a different topic. Where could some expert advice help you? Email your suggestions to president@rotor.org. And visit rotor.org/webinar to register for upcoming webinars or view our archive for ones you might have missed.

HAI is also launching a program that supports our members' efforts to keep their aircraft clean and sanitized and their customers safe. The HAI COVID Clean Program reassures tour, charter, and corporate clients that their operators follow industry best practices to prevent coronavirus transmission. HAI members can find related resources at rotor.org/covid, and more are planned.

As I write this, it's not just COVID-19 but the Black Lives Matter movement that's changing how we live—as it should. As a workplace, as an association, and as an industry, we must take a moment to listen and reflect on the stories being told by people of color.

In my experience growing and leading teams, diversity makes us stronger, more capable, and more adaptable. But goodwill alone isn't enough. To prepare our industry for a future of sustainable growth, we need to seek out human potential wherever it's found and remove artificial limits on it.

At HAI, we're working on doing just that, both as a workplace and as your association. As an industry, we're experiencing challenging times. But we can't look backward. Instead, let's focus on uncovering the potential within ourselves and those around us. Meanwhile, stay in touch with HAI, and [tell us how we can help you keep your rotors turning](#). 

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

By Stan Rose

License to Learn

Where will pilots get the education they need to fly safely?

AS AN 18-YEAR-OLD PLANNING FOR MY FUTURE IN 1968, I was asked, “When you go to Vietnam, do you want to walk to the war or do you want to fly there?” I chose the latter, and in that moment my life changed. After I learned to march in basic training, I joined my class in flight school.

The first month of flight school was called preflight. As the name implies, we spent the entire time in the classroom learning the fundamentals of aerodynamics, helicopters, airspace, maneuvers, emergency procedures, and safety. Eight hours a day, five days a week for a month adds up to 160 hours of classroom training before we made it to our first day on the flight line.

For the next eight months, we spent half of each working day on the flight line and the other half in the classroom. The flight line was the fun part, but the classroom education continued to round out our knowledge of flight procedures and decision-making skills (as well as combat maneuvers). Four hours a day, five days a week for eight months adds up to around 640 hours of additional education before we were called pilots.

To be fair, I’ll deduct the 320 hours I estimate were dedicated to tactics and say that my army flight training required me to take 320 hours of follow-on classroom instruction, in addition to my 160 hours of ground school. Now, let’s compare my 480 hours of pilot education with the typical classroom education of a commercial pilot today: 150 hours of ground school.

And yet we wonder, why are we crashing helicopters?


Look, I’m not saying that everything was great back then. The aircraft were less capable and engine failures more common. Our industry lacked a strong safety culture, and we had the accident rate to prove it. While my flight school buddies and I did study hard, we were motivated by more than the usual competition among pilots: the next stop for washouts was the infantry.

But there’s no getting around the data. In a recent list of causal factors for helicopter accidents prepared by the US Helicopter Safety Team, 41% of fatal accidents happened because the pilot lost control of the aircraft. The causal factors identified include bad performance management, exceeding the operating limits of the aircraft, improperly responding to an onboard emergency, and improperly performing ground duties such as performance calculations, fuel calculations, flight risk assessment tools, and preflighting of the aircraft.

Aviation is a demanding profession. As pilot in command, you have to be able to assess dynamic situations, remember your aerodynamic theory, apply aeronautical decision-making, translate it into actionable inputs, and employ your senses and motor skills to “listen” to what your aircraft is telling you. And when you get it wrong, one mistake can effectively cancel out thousands of hours of accident- and incident-free flight.

A pilot’s only protection is to treat every day, every flight, as another chance to improve. The opportunities to do just that by pursuing continuing education are endless, many of them free or low cost. And we know it works: pilots who consistently seek out continuing education have safety records that are better by a factor of 10 than pilots who don’t.

The FAA already mandates 40 hours of continuing education annually for Part 135 pilots; Part 91 pilots need to pass the oral portion of their biennial flight review. Professional pilots see these requirements for what they are—the minimum amount of continuing education—and seek instead to become lifelong learners. Professional pilots actively seek to sharpen their skills and master their craft so they can stay out of the accident database.

So what kind of pilot are you? 



Stan Rose is the CEO of Helicopter Safety Alliance, which provides safety education to pilots, maintenance technicians, and managers of small helicopter operations. Stan’s career as a pilot, program director, and executive in the helicopter industry spans 50 years and several continents.

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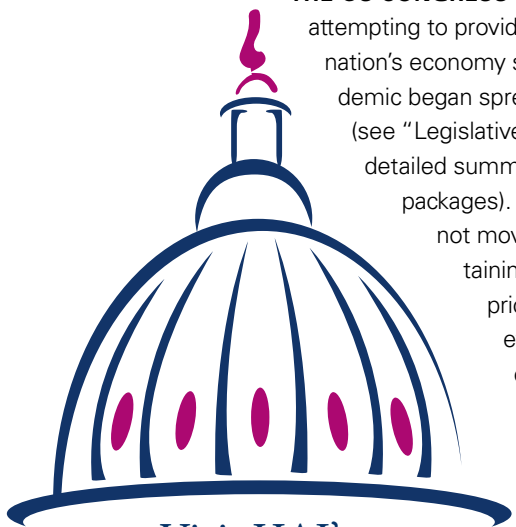


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LEGISLATIVE UPDATE



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THE US CONGRESS HAS BEEN BUSY this year attempting to provide a financial lifeline to the nation's economy since the COVID-19 pandemic began spreading across the country (see "Legislative Spotlight," p. 12, for a detailed summary of the COVID-19 relief packages). Congress typically does not move that quickly on bills containing such large programs and price tags. The nation, however, is obviously facing a crisis during which the playbook is being written on the fly, and the Senate and House are doing their best to provide solutions.

Since passage of H.R. 266, the Paycheck Protection Program and Health Care

Enhancement Act, the Senate has remained in session to work on previously scheduled, non-COVID-related legislation. While the House decreased its days in session following passage of H.R. 266, on May 15, the

chamber passed the Health and Economic Recovery Omnibus Emergency Solutions, or HEROES, Act, a new \$3 trillion relief package. The roughly 1,800-page bill includes \$875 billion for state and local governments, \$75 billion for mortgage relief, \$100 billion in assistance for renters, \$25 billion for the US Postal Service, \$3.6 billion to shore up elections, and \$10 billion for small businesses.

Congress is now debating policy priorities for a CARES Act 2.0, a COVID-19 relief package that many assume to be Congress's last attempt at financial assistance for the pandemic. While the HEROES Act was the House's opening bid for what the CARES Act 2.0 package could look like, Senate Republicans have largely dismissed the legislation.

Senate leaders are moving cautiously on CARES Act 2.0, stating their desire to see if the relief packages previously passed by Congress are working as intended. On Jun. 5, the US Bureau of Labor Statistics reported that the economy added 2.5 million jobs in May. Republicans are pointing to these job numbers in a renewed push for a slimmed-down approach to CARES Act 2.0.

Minimalist approach or not, Republican leaders have noted the importance of CARES Act 2.0. Senate Leader Mitch McConnell (R-Ky.) recently indicated that Congress will likely need to pass another round of COVID-19 relief legislation, and President Donald Trump has also expressed support.

Republicans are discussing different policy priorities to include in the CARES Act 2.0 that would address liability protections for employers who reopen their businesses and tax incentives to encourage businesses and events to resume. The next COVID relief bill to be signed into law will



HAI Members

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likely include and exclude provisions from both bills.

The two chambers will have a heavy workload to process in a severely compressed congressional time frame, as the coronavirus has disrupted the schedule in an already-packed year. Historically, during election years, Congress extends the August recess and considerably decreases

Funding for transportation and HUD in fiscal year 2021 will vary based on whether infrastructure and housing aid are addressed in future emergency coronavirus-response appropriations.

the number of days it will be in session for the remainder of the calendar year, especially in presidential cycles such as this one. This allows lawmakers facing re-election the time to campaign in their respective districts and states. However, the COVID pandemic has the potential to change this norm and add days if not weeks to the legislative calendar.

Also on the Congressional Agenda

In addition to providing pandemic relief, Congress faces an abbreviated time line to pass all 12 appropriations bills before the Sep. 30 deadline in order to fund the government and avoid another shutdown.

Other major issues Congress plans to address in this session include:

- Defense authorization
- Surface transportation reauthorization
- The Foreign Intelligence Surveillance Act reauthorization
- Federal health-care programs, now set to expire Nov. 30
- Pandemic-response programs, many of which expire at the end of 2020
- Tax extenders, which expire Dec. 31.

Fiscal Year 2021 Appropriations

Congress is also working on the fiscal year 2021 appropriations numbers. The current plan is for House appropriators to hold subcommittee and full committee markups on funding bills during the first two weeks of July, with floor consideration likely occurring the last two weeks of July. The Senate Appropriations Committee is tentatively planning to begin marking up spending bills the third week of June.

Funding for transportation, housing, and urban development will vary based on whether infrastructure and housing aid

are addressed in a CARES Act 2.0 COVID relief package. For context, President Trump has called on Congress to invest \$2 trillion in infrastructure, while Democrats have proposed a \$760 billion, five-year package that includes surface transportation, airports, water, broadband, ports, and more.

On top of this unprecedented round of activity, of course, 2020 is a national election year. Posturing and campaigning—all while figuring out how to do so amid a pandemic—are sure to bring new dynamics to the work of Congress. Although it's unclear what August campaigning will look like, we highly encourage you to reach out and engage your elected officials during this campaign season.

As Congress debates a CARES Act 2.0 and addresses other pressing legislative deadlines, HAI will focus on ensuring that the vertical flight industry's priorities are included in a potential relief package as well as the appropriations process. Stay up-to-date on congressional action and access the latest government resources at HAI's members-only [Legislative Action Center](#). ▶



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LEGISLATIVE SPOTLIGHT

COVID-19 Relief Packages

OVER THE PAST FEW MONTHS, we've all witnessed the impact the novel coronavirus outbreak has had on nearly every aspect of life. The imposition of stay-at-home orders in a majority of US states has had devastating effects on most sectors of the economy, including many segments of the vertical flight industry. Even as states begin implementing phased reopening plans, the economic disruption caused by the pandemic may have lasting effects for business. These unprecedented times have prompted unprecedented measures in Washington, DC. Specifically, five COVID-19 relief packages have been enacted since the virus reached US soil.

Phase 1: H.R. 6074, the Coronavirus Preparedness and Response Supplemental Appropriations Act, passed with near-unanimous support in both the House and Senate and was signed into law by President Donald Trump on Mar. 6. The bill provided \$8.3 billion in emergency funding for a number of purposes, including vaccine development and medical treatment, grants for state and local governments, loans for small businesses, and preparedness activities at US government facilities.

Phase 2: H.R. 6201, the Families First Coronavirus

Response Act, passed in both chambers shortly after the White House declared COVID-19 a national emergency and was signed into law by the president on Mar. 18. The bill authorized \$192 billion worth of aid and provided paid leave, tax credits, expanded unemployment and nutrition assistance, and free COVID-19 testing.

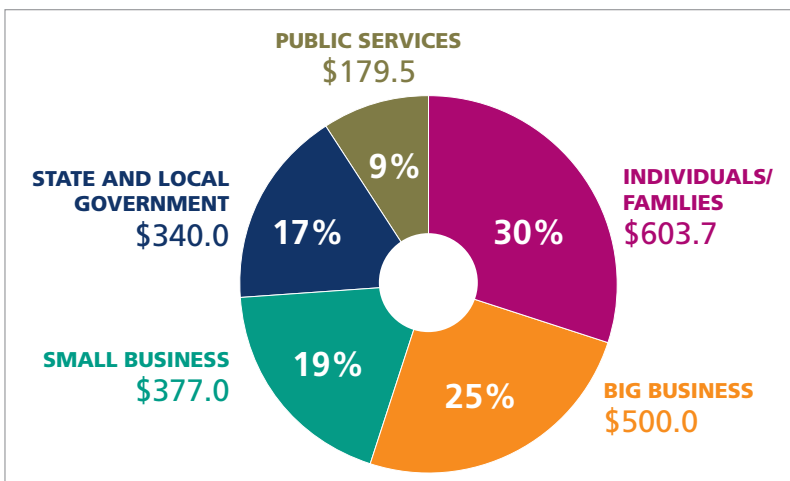
Phase 3: H.R. 748, the [Coronavirus Aid, Relief, and Economic Security \(CARES\) Act](#), passed in both chambers without a single dissenting vote and was signed into law by the president on Mar. 27. The legislation provides more than \$2 trillion in funding for individuals, small businesses, large corporations, state and local governments, and public services.

H.R. 266, the Paycheck Protection Program (PPP) and Health Care Enhancement Act, passed in both chambers shortly after the PPP funding provided in the CARES Act had been depleted and was signed into law by the president on Apr. 24. The legislation provided an additional \$310 billion in lending authority for the PPP, \$60 billion for Economic Injury Disaster Loans (EIDL) and grants, \$75 billion for hospitals, and \$25 billion for COVID-19 testing.

H.R. 7010, the Paycheck Protection Program Flexibility Act (PPPPFA), passed in both chambers one month after additional PPP funding was provided in H.R. 266 and was signed into law by the president on Jun. 5. The legislation gives borrowers more freedom in how and when loan funds are spent while retaining the possibility of full forgiveness.

Figure 1. CARES Act Funding

The more than \$2 trillion in CARES Act funding went to five primary categories of recipients (share amounts listed in billions of dollars).



The CARES Act

The CARES Act became the largest economic stimulus bill in modern US history, amounting to 10% of the total US gross domestic product and more than doubling the funds stipulated in the 2009 Recovery Act, a stimulus package enacted in response to the Great Recession.

When the CARES Act was originally introduced, the proposal included \$500 billion in direct payments to Americans, \$208 billion in loans to major industries, and \$300 billion in Small Business Administration (SBA) loans. As a result of bipartisan negotiations, the bill grew to more than \$2 trillion in the version signed into law (see Figure 1).

The CARES Act included several provisions

specifically for the aviation industry, including direct grants, loans, loan guarantees, and tax relief. The legislation also provided relief for small businesses by creating new programs such as the PPP and by expanding existing programs such as EIDL.

Targeted Relief to Passenger and Cargo Air Carriers (Air Carrier and Critical Businesses Relief)

One of the key provisions of Title IV of the CARES Act provides \$500 billion to support “eligible businesses.” The legislation defines eligible businesses as both passenger and cargo air carriers and businesses that have not otherwise received adequate economic relief in the form of loans or loan guarantees under the act.

The \$500 billion is allocated in the following manner:

- \$25 billion in loans and loan guarantees

- for passenger air carriers, including general aviation operators that conduct flights under Part 135 and eligible businesses that are certified under Part 145 to perform inspection, repair, replacement, or overhaul services
- \$4 billion in loans and loan guarantees for cargo air carriers
- \$17 billion in loans and loan guarantees for businesses critical to maintaining national security
- \$454 billion for loans, loan guarantees, and investments in support of facilities established by the Federal Reserve to support lending to eligible businesses, states, and municipalities.

Targeted Relief to Aviation Employees (Air Carrier Payroll Support Program)

In addition to relief for air carriers, the

CARES Act also provides financial assistance targeted to air carrier and aviation industry workers. More specifically, the act allocates funds to air carriers and certain contractors on the condition that the money be used to continue wages, salaries, and benefits for air carrier and aviation industry employees (excluding corporate officers). The funds are allocated in the following amounts:

- \$25 billion for passenger air carriers
- \$4 billion for cargo air carriers
- \$3 billion for certain contractors and subcontractors.

HAI strongly advocated for general aviation air carriers as the Treasury Department implemented the payroll support program. On Apr. 20, Treasury made the first payroll support program payments to approved applicants, among them many Part 135 charter operators.

Air Transportation Tax Relief

The act suspends all federal air transportation excise taxes that apply to commercial operations (Part 135 flights) effective Mar. 27, 2020, through Jan. 1, 2021. The suspension includes all taxes that a commercial operator normally pays, including the 7.5% tax on amounts paid, applicable domestic and international segment fees, and the 4.3-cents-per-gallon portion of the fuel tax.

Airport Grants

The CARES Act includes \$10 billion in funds to be awarded as economic relief to eligible US airports affected by the prevention of, preparation for, and response to the COVID-19 pandemic. The law provides funds to increase the federal share to 100% for the Airport Improvement Program and supplemental discretionary grants already planned for fiscal year 2020. Of the \$10 billion in grants, \$100 million is designated for general aviation airports. ►

Figure 2. PPP Changes from the CARES Act to the Flexibility Act

	CARES Act (enacted Mar. 27, 2020)	PPP Flexibility Act (enacted Jun. 5, 2020)
Term	2 years	5 years
Loan, Covered Period	Feb. 15, 2020 – Jun. 30, 2020	Feb. 15, 2020 – Dec. 31, 2020
Loan Forgiveness, Covered Period	8 weeks from origination	24 weeks from origination or Dec. 31, 2020
Payment Deferral	6 months from end of covered period	Must submit loan forgiveness application within 10 months after last day of covered period
Rehire Deadline	Jun. 30, 2020	Dec. 31, 2020
Payroll Requirements	Minimum 75% on payroll costs	Minimum 60% on payroll costs
Deferment of Payroll Tax Payment	Not entitled to deferment	Borrowers are eligible to defer payment of payroll taxes (6.2% employer portion of Social Security payroll taxes)
Deadline to Apply for PPP Loan	Jun. 30, 2020	Jun. 30, 2020
Deadline for Use of PPP Funds	Jun. 30, 2020	Dec. 31, 2020

Financial Assistance to Small Businesses

The PPP and EIDL programs, both administered by the SBA, are the two main options small businesses and nonprofits have to obtain financial support during the coronavirus outbreak. Organizations can receive loans from both programs, and an EIDL loan can be refinanced into a PPP loan. Visit sba.gov to learn about other programs funded in the CARES Act that are available to small businesses.

Paycheck Protection Program (PPP)

The main driver of small-business stimulus in the CARES Act is contained in the PPP. The \$349 billion provided under the SBA Business Loans Program Account will fund loans of up to \$10 million that qualifying businesses can spend to cover payroll, mortgage interest, rent, and utilities.

As noted earlier, Congress provided an additional \$310 billion for the program in H.R. 266, the PPP and Health Care Enhancement Act, after the initial funding was exhausted in less than two weeks. The SBA temporarily stopped accepting new applications from participating lenders on Apr. 16 but resumed on Apr. 27.

As of Jun. 6, the SBA reported the following statistics on PPP:

- 4,531,883 million loans approved, totaling roughly \$511.3 billion
- \$113,000 is the average loan size
- 64.9% of loans were approved at \$50,000 and under
- \$130.6 billion in funding remains.

No additional PPP funds have been appropriated by Congress since H.R. 266 was signed into law on Apr. 24, but several

Figure 3. EIDL Program Terms

	EIDL
Eligibility	Small businesses, co-ops, and ESOPs with up to 500 employees; self-employed individuals; private nonprofits
Uses	Fixed debts, payroll and related benefits, accounts payable, and other expenses that cannot be paid because of the disaster's impact
Loan Administrator	SBA
Max Amount	Up to \$2 million, based on actual economic injury determined by SBA
Term	Up to 30 years
Collateral	Yes, for loans greater than \$25,000
Personal Guarantee	Required for loans more than \$200,000, by owners of greater than 20%
Credit Check	Yes
Forgiveness	No, but eligible applicants may receive a cash advance up to \$10,000 that doesn't need to be repaid
Interest Rate	3.75%, or 2.75% for nonprofits
Deferral	1 year (interest accrues)

significant changes were made to the program in H.R. 7010, the PPPFA, that would make it easier for current PPP borrowers to use the loans and receive forgiveness (see Figure 2).

Most notably, the PPPFA includes the following PPP changes:

- Extends the expense forgiveness period
- Reduces the 75% payroll ratio requirement
- Extends the loan repayment requirement for future borrowers
- Allows payroll tax deferral for PPP recipients
- Extends the rehiring deadline.

Economic Injury and Disaster Loans (EIDL)


This long-standing SBA loan program provides working-capital loans of up to \$2 million to help small businesses overcome a

temporary loss of revenue (see Figure 3). Part of the EIDL program, created in the CARES Act, is the EIDL Emergency Advance, which provides companies that successfully submit an EIDL application a \$10,000 loan advance that does not need to be repaid. However, recent guidance reduced this program from \$10,000 per company to \$1,000 per employee (up to 10 employees). The SBA's website indicates only that the funds will only be made available "within days following a successful application."

Similar to the temporary freeze in PPP loan approvals, a lapse in appropriations prevented the SBA from processing new EIDL and EIDL Emergency Advance applications from Apr. 16 to Apr. 27.

H.R. 266 increased the EIDL program account by \$50 billion and added another \$10 billion to the EIDL Emergency Advance program, allowing the agency to resume issuing loans under the program. H.R. 266 also modified eligibility for the EIDL program to include "agriculture enterprises." As a result, the SBA has been accepting EIDL and EIDL Emergency Advance applications on a limited basis only to provide relief to US agricultural businesses.

As of Jun. 6, the SBA had approved 1,130,731 loans totaling \$79.98 billion through the EIDL program, and by May 8, the agency had approved 3,009,934 advances totaling \$9.88 billion through the EIDL Emergency Advance program.

Many HAI members may still be eligible under the new and/or temporary requirements and are encouraged to check rotor.org/LAC for details. 

ROTORWASH

INDUSTRY DATA, TOPICS, ADVICE, HAPPENINGS, ISSUES, AND NEWS TO KEEP THE ROTORS TURNING

HAI BRIEFS

HAI Debuts Weekly Webinar Series

HAI IS NOW OFFERING A SERIES of [weekly webinars](#) covering a wide range of topics to meet the rotorcraft community's needs in this rapidly changing era.

The series, HAI@Work, began in April and covers both current and evergreen topics. While the first three webinars focused on subjects related to the COVID-19 pandemic, future sessions will address various matters of interest to industry businesses and individuals.

Each webinar features a panel of subject-matter experts, including HAI staff members and other industry representatives. In the hour-long format, panel members

discuss the week's topic before taking viewers' questions.

HAI launched the initiative to provide members with up-to-the-minute resources

and information during this period of economic and social disruption.

"The worldwide economic slowdown is impacting the rotorcraft community. Flight activity is down, and government agency personnel are working remotely," says HAI president and CEO James A. Viola. "We know our members need current information on the financial resources and regulatory programs available to help individuals and businesses cope. Getting information straight from the experts, and taking questions in real time, is a resource HAI can provide our industry when it needs it most.

"We knew that information

A graphic titled "COVID-19 COMBAT CHECKLIST" featuring a red helicopter and a yellow spray bottle labeled "Clean Air". The checklist includes:

- Sterilize the following items with approved cleaners* between flights:**
- Aircraft components:**
 - Door handles
 - Seat-belt buckles
 - Flight controls (cyclic, collective, throttles, press-to-test switches, touch-screen avionics, knobs, buttons)
 - Fuel caps
 - Absorbent fabrics
- Flight equipment:**
 - Headsets
 - Helmets
 - Mic booms and mic muffs
 - Clothing and footwear that might become contaminated
- Personnel:**
 - Hands
 - Exposed portions of the body

69,921 People Reached		
550 Reactions, comments & shares		
416 Likes	50 On post	366 On shares
17 Love	3 On post	14 On shares
1 Wow	1 On post	0 On shares
1 Sad	0 On post	1 On shares
25 Comments	2 On post	19 On shares
94 Shares	91 On post	3 On shares
1,577 Post Clicks		
786 Photo views	0 Link clicks	791 Other Clicks

An industry that's safe together saves lives together! We shared our COVID-19 checklist on HAI's social media platforms as a supplement to operators' equipment manuals and company policies, and it received 2,127 engagements on Facebook. We're ecstatic that our members and followers are prioritizing safety, whether for themselves, their colleagues, or their passengers during the pandemic. Continue to fly safe!

HAI ON SOCIAL

- /HelicopterAssoc
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ONE QUESTION

MANY ANSWERS

How do you deal with IIMC?

Inadvertent entry into instrument meteorological conditions (IIMC) is one of the top three causes of fatal helicopter accidents. To determine how pilots are preparing themselves to survive—and avoid—IIMC encounters, we surveyed readers anonymously about their practices. ROTOR received nearly 750 responses over a two-week period, reflecting how important this issue is to HAI's members.

Seventy percent of respondents answered yes to the question of whether they're an IFR-rated pilot. Fifty-five percent of those respondents maintain their IFR skills by regularly practicing IIMC recovery using a simulator or other training device, and 52% regularly file and fly IFR.

Respondents who lack a rotorcraft instrument rating cited the fact that their company flies only VFR missions as the main reason they haven't obtained a rating (49%). Only 13.5% said they haven't obtained an instrument rating because they don't anticipate encountering IIMC.

We also asked respondents to provide any additional comments they wished about IFR versus VFR operations. Here are some of their illuminating—and candid—responses.



*We should also be discussing **night operations and their strong similarity to IMC**. I've always treated night flying as IMC. ... Being "surprised" is not acceptable.*

***IIMC deaths will continue** as long as we're allowed to fly clear of clouds at an airspeed that allows you to see and avoid objects while carrying passengers.*

*Technologies like [enhanced flight] vision systems can help, as well as **increased focus on standard operating procedures and risk management** via an effective safety management system and flight data monitoring. [Also] addressing topics like spatial disorientation through better training/technology advancements.*

***Synthetic vision is a game changer** and should be a required basic tool.*

*Don't fool yourself in thinking that having an instrument rating is the answer to handling IIMC. **Being instrument rated and current is NOT the same as being prepared and trained to deal with IIMC**. IIMC is all about surviving the first couple of minutes; your only goal is to not lose control and not hit anything. After those first couple of minutes, your regular instrument skills become relevant again.*

***IIMC may present a greater risk to IFR-rated pilots flying VFR profiles** than VFR-only-rated pilots. Being comfortable in IMC may sway the pilot's judgment and increase their acceptance of deteriorating conditions to a point beyond which they run out of options for a positive outcome.*

*It's disappointing that most Part 135 operators of charter aircraft don't conduct IIMC training or checking during annual checkrides. Not only do **operators fail to prepare pilots for IIMC**, they actively pressure pilots into flying in weather conditions conducive to an IIMC event. ... I call on HAI to prioritize pilots and safety ahead of operators' business needs. Part of this can be achieved by pressuring operators to train and check pilots for IIMC, as well as pressuring the FAA to simplify both the certification of single-engine turbine helicopters for IFR flight and the process of obtaining an IFR Ops Spec.*

► specific to the rotorcraft community was available, but it was spread out,” adds Viola. “Many of our members run small businesses, and some have operations in one country but work globally. Why not bring the information to them so that they don’t have to search for it?”

Webinar topics so far have included the HAI members-only resources available on rotor.org, regulatory issues, government financial assistance programs, and employment. Future webinars will address other industry-relevant topics, and participants are encouraged to submit subjects or questions they’d like HAI to address.

HAI@Work webinars take place at 4 pm EDT (UTC-4) every Thursday, although some rescheduling may become necessary to accommodate the schedules of the speakers. Videos of the webinars are available shortly after broadcast on the [HAI YouTube page](#).

Weekly announcements about upcoming topics, including the web address for that week’s webinar, are available on HAI’s [Facebook](#), [Instagram](#), [LinkedIn](#), and [Twitter](#) social media channels.

HAI BRIEFS

Salute to Excellence Nominations Open Jul. 1, Will Include UAS

HAI’S ANNUAL AWARDS PROGRAM, Salute to Excellence, will begin accepting nominations for 2021 on Jul. 1, 2020, at rotor.org/salute. The program presents a total of nine awards each year, honoring achievements across the breadth of the rotorcraft industry.

New for 2021 is the inclusion in every

category of individuals and operators working with unmanned aircraft systems (UAS), or drones.

“Operators of remotely piloted vertical flight aircraft are doing amazing things,”



says James A. Viola, president and CEO of HAI. “We hear about the new and exciting uses for these rotorcraft every day, and we felt it was time to expand our awards program to recognize these achievements.”

The nine categories open for nominations are:

- Excellence in Communications Award, sponsored by Lightspeed
- Humanitarian Service Award, sponsored by Sikorsky
- W.A. “Dub” Blessing Flight Instructor of the Year Award, sponsored by the H. Ross Perot, Jr., family
- Law Enforcement Award, sponsored by MD Helicopters
- Golden Hour Award honoring air medical transport

- Safety Award, sponsored by BLR Aerospace
- Excellence in Helicopter Maintenance Award, sponsored by Rolls-Royce
- Pilot of the Year Award
- Lifetime Achievement Award, sponsored by Bell.

As in previous years, nominees need not be HAI members, and anyone may submit a nomination. Both individuals and teams, such as flight crews or team members, are eligible to receive an award.

Dan Sweet, coordinator for the Salute to Excellence program and HAI’s director of public relations and communications, has some tips for preparing a winning nomination packet. “Successful nominations typically provide significant information about the nominee’s contributions to the rotorcraft industry,” he says. “It’s not enough to be a ‘great guy to work with.’ We are looking to honor those who have made a difference in rotorcraft aviation.”

Nominations that document the nominee’s achievements are especially effective. “Give us everything you can that supports the nomination,” Sweet says. “In addition to a statement explaining why the nominee is worthy of an award, you can submit letters of support from industry members, copies of other awards, news clippings or links, photographs, and links to videos.

“The more information you provide to our judges, the better they’ll understand the nominee’s impact on our industry.”

The winners will be honored at the annual Salute to Excellence Awards luncheon on Mar. 24 at HAI HELI-EXPO 2021 in New Orleans. Tickets to the event will be available through the show registration process and on-site at the New Orleans Ernest N. Morial Convention Center. ►

HAI BRIEFS

HAI Names Rob Volmer VP of Marketing Communications

ROBERT M. VOLMER HAS JOINED HAI as the vice president of Marketing Communications. In this role, Rob will over-



see branding, messaging, research, technology, and media for the association.

"When I joined HAI, I told the Board of

Directors that I wanted to overcommunicate to our members about what their association was doing to serve them. Hiring Rob was part of that strategy," says James A. Viola, HAI president and CEO. "Rob's experience in communicating to a variety of audiences, including government, business, and the consumer, will help HAI demonstrate the value of our industry to the global community while providing additional member benefits."

Rob comes to HAI with more than 20 years of experience in consumer and business-to-business product and brand marketing, government, public affairs, and corporate public relations. He is a founding partner of Crosby-Volmer International Communications, a firm providing strategic communications services to companies, nonprofits, and associations. His clients there include Fortune 500 companies, foreign governments, and associations. Prior to Crosby-Volmer, Rob was manager of corporate communications at the Air Transport Association.

"Vertical flight aviation

provides unique, essential services to people around the world. I'm excited to join the HAI team and play a part in telling that story," says Rob. "I couldn't resist the combination of innovation and opportunity that vertical flight represents, especially in this moment of seismic change in aviation."

A native of Memphis, Tennessee, Rob is a graduate of the University of Oklahoma (go Sooners!). He lives in Washington, D.C., with his wife, three children, and for some inexplicable reason, a new puppy.

HAI BRIEFS

ROTOR Launches New Digital Format

WITH THIS ISSUE OF ROTOR, WE DEBUT a robust digital platform for the magazine, making it easier for you to take ROTOR with you wherever you go.

Just visit rotor.org/rotormag and click on the link for the latest issue—whether you're on a laptop, tablet, or mobile phone. Our responsive platform will detect your device and resize to fit it.

With the platform's mobile phone view, there's no need to navigate a multicolumn layout on your cell phone: just toggle to the mobile phone view and the content will reflow to fit your screen.

The ROTOR digital platform also enables you to click through to advertisers or to links in articles. And we can now embed video for a richer environment. Simply click on a play button to launch a new window with video content. (There are four videos in this issue: did you find them all?)

The new platform makes moving around the magazine easy. You can navigate through an issue by flipping the "pages" or by clicking on links in the contents page or on thumbnails. There's also a link to a pdf version of the magazine, so you can download the issue to read later or print some pages. You can easily share content, too, via email or social media.

We've upgraded the online tools available to you as well. A sophisticated search feature enables you to search the current issue of the magazine (and, in the future, archived issues) for a word, name, or phrase. Clicking on the search results takes you instantly to the exact location where that item appears.

But wait. "Where's my print edition?" you might be asking. For this issue of ROTOR, the 2020 Quarter 2 edition (formerly called Spring 2020), we decided to forgo the print version because of the COVID-19 pandemic. By not printing this issue, we determined we wouldn't flood

empty offices with paper copies of the magazine while so many of our readers are working from home.

We hope you enjoy ROTOR's new digital format and the added benefits it brings. We'd love to know what you think of the platform and the features you like best (and those you don't care for). Of course, we always want to hear what you do and don't enjoy about ROTOR, from cover to cover. Let us know at letters@rotor.org.



By Chris Hill

Unplanned VFR Flight into IMC

Unplanned VFR flight into IMC continues to be a top cause of fatal helicopter accidents. Remember these tips and reverse this unacceptable trend.



1 DO get trained and stay proficient. Training, certification, and proficiency are the best weapons against inadvertent entry into instrument meteorological conditions (IIMC). Even if you're not instrument rated or have lapsed in currency, you can still improve your recognition of and recovery from unplanned flight into degraded visual environments. You can conduct this training in an aircraft or Level D simulator, but you can also use low-cost aviation training devices or desktop simulation programs to develop and maintain your instrument skills and improve your confidence to deal with unplanned IMC.

2 DON'T even think about attempting VFR flight into deteriorating weather conditions. The FAA offers a subtle warning in its Helicopter Flying Handbook: "If the pilot isn't instrument rated, instrument current, or proficient, or is flying a non-IFR-equipped helicopter, remaining in VMC [visual meteorological conditions] is paramount" (<https://bit.ly/3a3mby6>, pages 11–24 through 11–26).

We prefer to state it more boldly: **In an unplanned VFR flight into IMC, if you're not a highly proficient instrument-rated pilot operating a fully certificated IFR aircraft, your chances of surviving beyond two minutes are nearly ZERO.**

3 DO set, announce, and follow your personal limits. Clearly understand and consistently abide by the limitations of your aircraft, your skills, and regulations—without compromise! Always brief your takeoff minimums and en route decision points before you fly. Doing so manages the expectations of your crew and passengers and ensures that active risk management is integrated into all phases of flight planning and execution.

4 DON'T scud run! IFR does not stand for "I follow roads." Focusing on what's below you is a sure way to collide with what's in front of you (terrain, wires, towers, etc.). Take note if you're getting lower (for example, 500 feet agl) or slower (such as 50 KIAS [knots indicated airspeed]) just to maintain your visual references. You likely have already reached a decision point and need to return home, amend your flight to avoid IMC, or if a safe landing can be made, simply get the helicopter on the ground and Land & LIVE!

5 DO respond immediately and decisively if you enter IMC. Despite warnings to avoid continued VFR flight into bad weather, it still happens. If you have an unexpected entry into IMC, what you do in the next few seconds will determine your fate. First and always, make helicopter control a priority above all other duties or distractions.

Here are the five basic steps all pilots should be trained to execute immediately if they ever encounter IIMC:

1. **Wings:** Level the bank angle using the attitude indicator
2. **Attitude:** Set a climb attitude that achieves a safe climb speed
3. **Airspeed:** Verify that the attitude selected has achieved the desired airspeed
4. **Power:** Adjust to a climb power setting relative to the desired airspeed
5. **Heading and trim:** Pick a heading known to be free of obstacles and maintain it.

Note: The guidance available on IIMC is much too extensive to limit to only five steps. We strongly encourage all pilots to refer to the 2019 release of the FAA's Helicopter Flying Handbook, FAA-H-8083-21B. Pages 11–24 through 11–26 include several updates addressing how best to avoid and respond to VFR flight into IMC.

By Dan Reed

NFL Star Helps Kids Pursue Aviation Careers

Jimmy Graham: Chicago Bears tight end and instrument-rated pilot.

NFL TIGHT END JIMMY Graham—newly signed to a lucrative free-agent contract by the Chicago Bears—didn't get much attention or encouragement at home, growing up in what can best be described as a highly dysfunctional military family. Things got so bad that his mother effectively abandoned him as an 11-year-old when she placed him in a group home in Goldsboro, North Carolina, where the older and bigger boys beat him regularly.

So it makes sense now that, after his improbable rise to stardom and wealth in the NFL, Graham is committed to encouraging youngsters—especially those from similarly tough and impoverished backgrounds—to aim for futures that seemingly are beyond their reach.

What's surprising, though, is that the 6-foot 7-inch, 270-lb All Pro pass-catching machine isn't using his athletic prowess and fame to help kids excel in athletics. Rather, Graham depends on his personal Bell UH-1 Huey helicopter—plus his Extra 330 LX aerobatic plane (it's a really tight fit) and his 1957 de Havilland Canada DHC-2 Beaver seaplane (with retractable skis)—to point kids toward potential careers in aviation.

Though he'd only been a licensed pilot for a little less than eight years at the time, Graham jumped at the chance in 2018 to follow in the footsteps of Gen. Chuck Yeager, Capt. Chesley "Sully" Sullenberger, and actors Harrison Ford and Cliff Robertson as chairman of the Young Eagles. The organization, founded in 1992 by the US Experimental Aircraft Association, gives children ages 8 to 17



opportunities to experience flight in a general aviation aircraft and to learn about aviation.

Because he can take only one kid at a time up with him in his Extra 330, and only two or three in his Beaver, Graham's Young Eagles ride of choice is his Huey. The aircraft, along with his charitable organization, [The Jimmy Graham Foundation](#), is based at Miami Executive Airport (KTMB), outside of Miami, Florida.

The iconic model is fully restored to the way it looked when it flew with the US Army's 170th Assault Helicopter Co. during 21 months from 1968 through 1969. The

helicopter operated in the Vietnamese Central Highlands, ferrying soldiers into and out of battle zones. It also flew into and out of Cambodia and Laos in support of the 5th Special Forces Group. These days, the Huey mostly carries children via the Young Eagles program, along with Vietnam veterans taking brief trips down memory lane.

ROTOR: Given your challenged childhood and the huge amount of time you've committed to becoming a top athlete, how did you get so involved in flying?

Graham: The first movie I remember watching was *Top Gun*. My dream was to be a fighter pilot, but then I grew to a freakish six-seven and there went that dream. We lived around military bases—my original parents were in the military. I randomly loitered around airports, talking a lot about aviation and asking a lot of questions. I met

a guy named John. He said if I ever wanted to go up [in an aircraft], he'd give me a ride. So I flew with him and loved it.

When did you get your pilot's license?

I played basketball at the University of Miami for four years, then played one year of football there before being drafted by the New Orleans Saints. I'd never had the time or money to learn to fly. But after my first NFL season, I had some money and, for the first time, some [spare] time in the off-season, so I started lessons. I took my checkride before the end of that year. Except in years when I had off-season

surgeries, I've learned new ways of flying or gotten new licenses every off-season since.

What licenses do you have?

Beyond my private pilot's license, I've got my airplane single-engine sea and land, airplane multi-engine land, tailwheel, rotorcraft, instrument (airplane and helicopter), and commercial helicopter licenses. I'll probably add my sea and land commercial license, and after I retire from football I want to move into gliders. I've kept this under wraps until now, but I'm also a licensed skydiver.

During the season, I may only have time to fly two or three days. But the rest of the year, I fly on average five days a week. I just love it; I love everything about flying.

Where does that passion and commitment come from?

To be honest, I don't just half-ass anything. Whether it's football, or athletics, or flying, or investing my money, I want to do it to the very best of my ability and keep learning more and more about it. I'm kinda'



weird that way, I guess. But even if I'm doing a charity event, I guarantee you ... it's going to be excellent.

Have your coaches or teams ever raised concerns about your flying?

They don't want to go there with me. One time when I was with the Saints, [Head Coach] Sean Payton and [General Manager] Mickey Loomis, before I signed my big deal, actually mentioned that they didn't want me to be in a private plane if it wasn't a jet with two engines and had a copilot. I told them I wouldn't sign that contract and that there were 31 other teams that would give me the same contract AND let me fly.

No organization has ever mentioned it again.

How did you get involved in the Young Eagles?

A good friend of mine, Sean D. Tucker, flies airshows. He's been doing it about 30 years solo. And this last year, he wanted to go to a two-plane operation. So I got involved with him with my aerobatic plane. He also got me involved with the Young Eagles program, and I quickly saw the benefits of their mission. *[Editor's note: Tucker followed Sullenberger as the Young Eagles' chairman in 2013 and continues to serve as co-chair alongside Graham.]*

You could champion any cause you wanted, or just spend all your time flying. Why get deeply involved in the Young Eagles?

I'm a gutter kid. I came from the gutter. I always tell kids that, as a boy, I had my PhD—poor, hungry, and driven. And that's a gift.

I'm thankful for every hardship I had. It made me grow up fast and [gave me drive]. The Young Eagles program gives me a chance to talk to kids—especially kids from tough backgrounds like mine who probably never dreamed they could do something like this—and get them thinking about aviation as a career. It gives me a chance to motivate them and encourage them not to be held back by whatever negative circumstances they've had to deal with. 📌



HELICOPTEREVENTS

CANCELED

The following events have been canceled for 2020 as a result of the COVID-19 pandemic:

APSCON 2020

Originally scheduled for Jul. 20–25, 2020
Airborne Public Safety Association

EAA AirVenture Oshkosh 2020

Originally scheduled for Jul. 20–26, 2020
Experimental Aircraft Association

2020 White Plains (New York) Regional Forum

Originally scheduled for Jun. 10, 2020
National Business Aviation Association

SCHEDULED

The following events were on schedule as of mid-May:

2020

JUN. 21

Father's Day Fly-In Breakfast

Aircraft Owners and Pilots Association
Geneseo, Illinois, USA
pic.aopa.org/events/item/50/3016

SEP. 5–7

2020 Cleveland National Air Show

Cleveland, Ohio, USA
clevelandairshow.com

SEP. 8–11

46th European Rotorcraft Forum

Moscow, Russia
erf2020.ru

OCT. 5–8

AUVSI Xponential 2020

(postponed from May 4–7)

The Association for Unmanned Vehicle Systems
International

Dallas, Texas, USA (originally scheduled for Boston, Massachusetts, USA)

auvsi.org/events/exponential/auvsi-xponential-2020

Visit HAI at Booth #1601

OCT. 6–8

2020 NBAA Business Aviation Convention & Exhibition

National Business Aviation Association
Orlando, Florida, USA

nbaa.org/events/2020-nbaa-business-aviation-convention-exhibition/

Visit HAI at Booth #4230

OCT. 27–29

2020 Rotorcraft Safety Conference

Federal Aviation Administration
Hurst, Texas, USA

faahelisafety.org

NOV. 2–4

2020 Air Medical Transport Conference

The Association of Air Medical Services
Nashville, Tennessee, USA

aams.org/events/amtc/

2021

MAR. 22–25 / EXHIBITS OPEN MAR. 23–25

HAI HELI-EXPO 2021



Helicopter Association International
New Orleans, Louisiana, USA

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STUDENT PILOT: TAYLOR MCKINSTRY

PHOTO BY MARK BENNETT





Air Ambulances in a COVID-19 World



By Jen Boyer

Air medical operators reset best practices and protective measures in the fight against an insidious pandemic.

IN JUST A SHORT TIME, THE WORLD HAS QUICKLY BECOME FAMILIAR WITH medical teams attired in full PPE (personal protective equipment) fighting to save lives in crowded hospitals. Helicopter air ambulance operators are also responding to the new normal of life during the Coronavirus Disease 2019 (COVID-19) pandemic, as they look to save lives on two fronts: their patients and their personnel.

An Initial Lull

When COVID-19 began to spread across the United States in late January 2020, air ambulance services experienced an initial deep drop in volume.

“One of the first things that happened is everything ground to a halt, which interestingly enough happened after 9/11, too,” says Tom Judge, executive director of LifeFlight of Maine, which operates three bases in the state. “The bottom dropped out for air medical, with a 50%

decrease in volume—for both scene and interfacility transport.”

Jerry Splitt, Geisinger Medical Center’s program director, saw the same thing about his six bases across Pennsylvania. “Our volumes were consistent—and even on the increase. Then, suddenly a decrease. You know, they say the medical industry is recession-proof, but it’s not pandemic-proof. Reduced transports and procedures cut income.”

Although some of the decrease was attributed to the halting of elective procedures, another large contributing factor was stay-at-home orders issued by local governments. Fewer people on the roads and out being active leads to fewer trauma accidents requiring air transport.

Paul Schaaf, pilot for emergency medical services operator STAT MedEvac, experienced a decrease in pediatric transports for the same reasons. STAT MedEvac coordinates the operation of SkyBear, the rapid helicopter transport service of Children’s National Hospital in Washington, D.C.

“I’m attributing [the decrease] to the kids not being in school or preschool catching the flu and other respiratory issues we used to fly them for,” Schaaf says. “They’re also not out in the woods or doing other activities that cause accidents, like snakebites, broken bones, etc. Parents are keeping kids close right now.”

Oddly, a sudden reduction in heart attack and stroke patients occurred at the same time, something that was also experienced after 9/11. These patients picked up again about the time the number of serious COVID-19 patients needing transport began to take off.

“To be perfectly honest, I don’t know what causes this phenomenon,” says Rick Rohrbach, EMS Director at Cooper University Health Care in Camden, New Jersey, about the sudden reduction in stroke and heart attack victims. “Maybe it’s because they were suddenly sitting at home on the couch. But the decrease ... only lasted a few weeks.”

Sure enough, a few weeks into the stay-at-home orders, the scene changed. Typical respiratory-, heart-, and stroke-related transports began to increase right about when COVID-19 patient transports began in earnest.

“We’re back to comparable volumes now, with COVID patients making up the difference from reduced trauma accidents,” says Rohrbach.

Preparing for Battle

Even before stay-at-home orders were put in place, many air ambulance operators began to prepare for the changing environment surrounding COVID-19. The universal first priority was to initiate procedures to protect the health of

To avoid the highly contagious COVID-19 virus, air ambulance flight crews have stepped up their use of PPE.





With fewer people on the road and others avoiding health care facilities, HAA programs such as Cooper University Health Care experienced an initial lull during the pandemic.

crews so they could safely continue to save lives.

“The political narrative in the beginning of this crisis was confusing, with conflicting advice, but we’d been preparing for this since January, regardless,” Splitt says. “In the medical field, you can’t overplan for a pandemic, and we were very fortunate to have some warning and time to prepare.”

Specific policies and procedures instituted to protect crews from COVID-19 vary slightly between operators, based mainly on location, access to PPE, and medical facility direction. The biggest factor driving these differences stems from how each service is organized. In some cases, when an aviation service provides the aircraft, pilot, and mechanic, that service dictates procedures for its employees while the medical facility oversees procedures for the onboard medical staff. In other cases, the medical facility takes the lead in implementing overall health protection procedures.

Several preventive best practices were adopted across the industry almost immediately as a result of considerable collaboration between medical facilities and helicopter operators. The most common is the requirement for PPE for medical crews and pilots. In most cases, the medical crews wear full isolation gowns, N95 masks, face shields, booties, and gloves, while the pilot often wears an N95 mask and, in some cases, gloves.

Some operations require this level of preparedness only for transports involving known or potential COVID patients; others require it for every transport. Again, directives differ based on location, rate of COVID infection in the community,

and PPE supply.

Unfortunately, with a worldwide PPE shortage, some operations are forced to ration their use of PPE based on whether a patient has tested positive for COVID or has the potential to be positive. Some are forced to wear masks for eight hours rather than dispose of them between patients.

N95 masks themselves pose an issue. The US Occupational Safety and Health Administration requires every user to be fitted for the masks and signed off by a medical doctor because the mask can restrict airflow. This requirement led to delays in many aviation service provider pilots receiving N95 masks, as overwhelmed medical staff prioritized their medical crews, according to Kenny Morrow, COO of Metro Aviation in Shreveport, Louisiana.

Other common protective measures that were initiated with COVID-19 include bagging in plastic everything on board the aircraft, which allows for easier cleaning and disinfecting, whether that entails wiping down the plastic or rebagging items. In some cases, air ambulances are identifying nonessential equipment for flights that can remain off the aircraft, thus reducing the volume of equipment potentially exposed and needing disinfecting. For the same reason, some are also taking less gear into the sending facility during an interfacility transfer.

Pilots who often helped the medical crews or accompanied them into medical facilities pre-COVID now remain with the aircraft and stay more than 6 feet from the crew and patient at all times. Additionally, a barrier now frequently

remains between the pilot and crew continually during every flight, most often an NVG (night-vision goggles) curtain. The aircraft is also completely disinfected after each transport before it can return to service, with the medical crew disinfecting the cabin while the pilot disinfects the cockpit.

At bases and hospital ready rooms, pilots and staff are observing social distancing, often staying in their own offices. Some services also require pilots and flight crews to remain masked at all times. Others are initiating similar masking and social separation requirements for their maintenance staff while also limiting the number of mechanics who may work on an aircraft at the same time and prohibiting non-essential people in the hangar.

Service operations themselves are also changing. “Prior to all this, we had strict liftoff times and monitored them closely, treating everything like a scene call,” Rohrbach says. “Now, we’re slowing it down for interfacility transports. We’re treating all flights as if everyone is a COVID patient. A lot goes into preparing the aircraft and crews to ensure we’re all safe. There’s also a longer out-of-service time at the end of flights while we thoroughly disinfect the aircraft.”

The lack of firm medical guidance in the early days of the pandemic created additional difficulties. Geisinger Medical Center owns and operates all of its nine aircraft, employing all staff, from pilots and mechanics to medical teams. When COVID began to reach its service area, the organization immediately banned air transports of known COVID patients.

“Around the beginning of March, when this was just taking off in our area, information about the virus and the recommended policies were changing daily, even hourly,” Splitt says. “We didn’t know a lot about how it was transmitted, and until we did and could safely protect our staff, we had to rely on ground transport.”

Geisinger slowly transitioned positive COVID patients to airlift as more information became available about the virus and how to safely transport those patients.

The Power of Teamwork

Across the board, air medical transport services are working together and with medical facilities to share information and best practices. Many hold daily calls to learn the latest information on the virus and recommendations for safe operations.

Colorado-based Global Medical Response

(GMR) in January of this year officially combined all its air and ground operations, which on the helicopter side include Air Evac Lifeteam, Med-Trans Corp., REACH Air Medical Services, and Guardian Flight. COVID put the newly consolidated company to the test.

“I was really impressed with the level of communication that came from GMR to help all employees understand COVID and that we can safely transport people with this disease,” says GMR VP of Operations Joe Grygiel. Formerly with Air Evac Lifeteam, Grygiel found his new parent company’s coordinated communications effort a literal lifesaver.

“When everyone better understands, it helps ease anxiety and they can do their jobs better. COVID information is changing daily. What was said yesterday will change tomorrow,” says Grygiel. “With calls, a COVID-19 information website for employees, peer support, and even a chaplain line, GMR is making it possible for employees to focus on the job.

“The company was also able to put its weight behind efforts to get personal protective equipment for all of our teams, which is no small [achievement],” Grygiel adds. “They turned over quite a few rocks, but their buying power helped

Geisinger Life Flight Pilot Bruce Linton and Nurses Maura Brunmeier and Chris Woodring prepare for a NICU transport.



ensure our teams were protected.”

Metro Aviation, meanwhile, is focused entirely on aviation, employing 450 pilots and 250 mechanics across the country for medical customers. With no medical personnel on staff, the company has looked to its customers for support.

“We quickly assembled a medical director advisory committee to get feedback and direction on how to best protect our pilots, aircraft, and crew,” say Metro’s Morrow. “They did an excellent job of preparing us. And as things changed and more information became available, they kept us well informed to make decisions that are in the best interest of our people’s health and safety.”

Staffing Outlook

The COVID-19 health crisis has had one unexpected positive effect on the air ambulance industry: its staffing forecast. Helicopter operations in general have been losing pilots and mechanics to airlines over the past several years. The pandemic has hit the airlines hard, with a long, slow recovery anticipated. As commercial airplanes are parked around the world, some furloughed pilots and maintenance technicians are looking to return to the helicopter industry.

“We were losing pilots pretty fast to the airlines, and now those opportunities aren’t there,” says Grygiel. “This is where watching what happens to the commercial airline industry is going to be key to how our supply of qualified pilots and mechanics will be affected.”

As for medical flight crew positions, the shortage continues. Pre-COVID, facilities reported that their open positions attracted fewer applicants than in past years and, in some cases, very few qualified candidates.

“In the past, an open flight nurse or flight paramedic position would attract a long list of applicants,” says Cooper’s Rohrbach. “It’s hard to get a good pool, even before COVID, let alone people who meet the requirements. It’s getting harder and harder over the whole industry.”

“However, there’s a lot of goodwill and sentiment with the public right now for health care,” he says. “I hope that will have a real effect. I hope a year from now, people will remember how valuable and important these professions are and how they put it all on the line for you. I hope more people will want to join these professions.”

Life after COVID

Air medical operators are staying up-to-date on the latest developments in this disease, pivoting as needed to maintain their ability to safely save lives. Longer term, the largest concern is an adequate PPE supply to meet the demand through the entire pandemic. And then there’s what happens after.

“You’ve got to figure all these people who’ve been cooped up and haven’t been able to do things are really going to get out and start [moving] when they can, even people who haven’t been that active in the past,” Morrow says. “I predict we’ll see an increase in heart attacks, strokes, trauma, and accidents as the states open up. We’re advising our people to stay staffed and prepared for that shift as COVID decreases.”

HAI Salutes Our Everyday Heroes!



Nurse Dustin Bailey and Medic Blake Gregg display a can-do attitude on a Global Medical Response flight.



Stephen Leavins, LifeFlight of Maine flight paramedic, and Kirk Donovan, captain, SevenBar Aviation / LifeFlight of Maine.



Geisinger Life Flight Nurses Maura Brunmeier and Chris Woodring transport a COVID-19 patient.



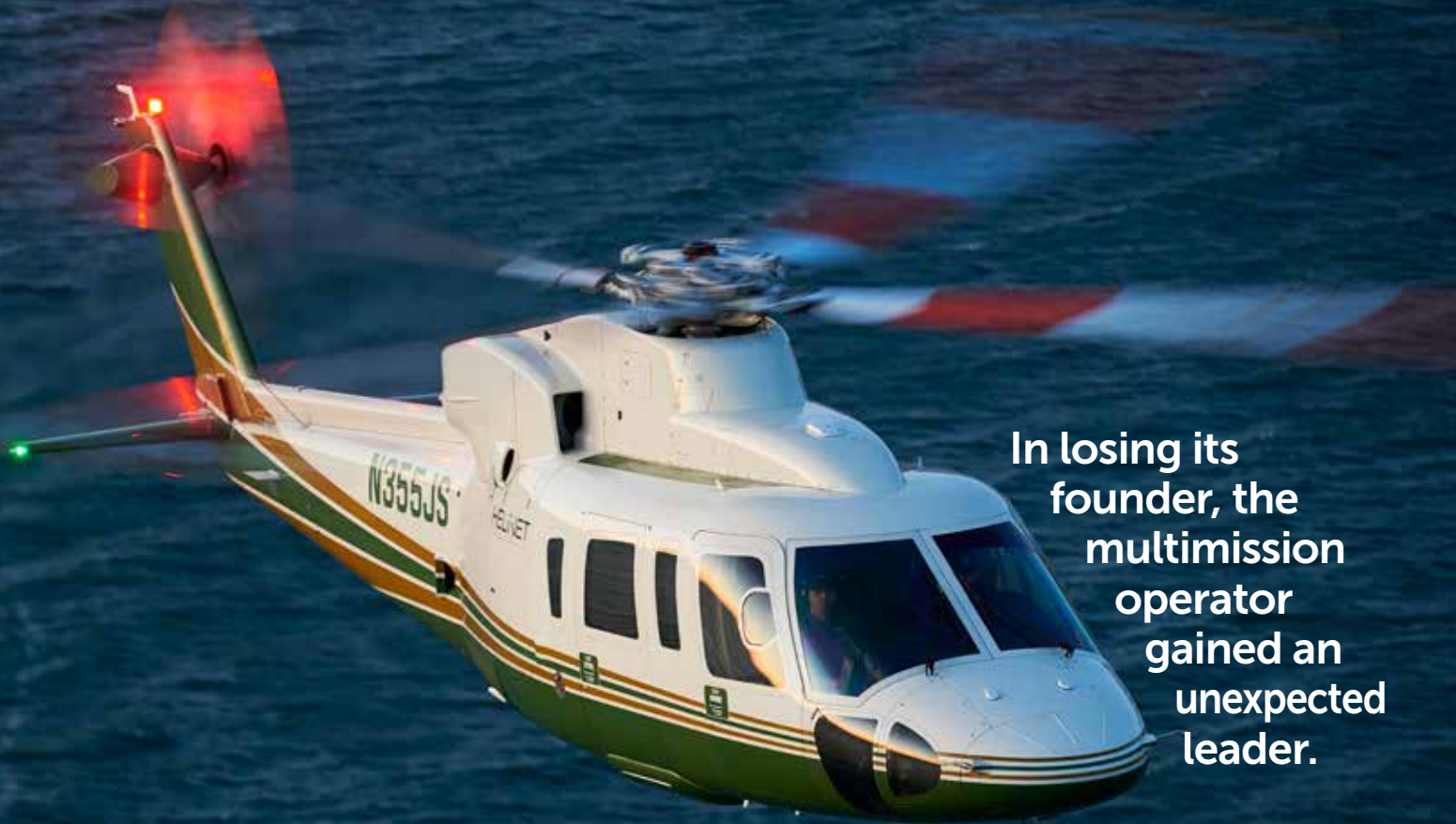
Geisinger Life Flight Pilot Bruce Linton.



Advanced Care Paramedics Anita McElhane (left) and Val Morwood of the Ornge air ambulance team in Ontario, Canada, train for COVID-19 transport service.



The Children's National Hospital SkyBear crew (from left, Flight Nurse Amanda Collier, Flight Paramedic Ed Edge, and Pilot Paul Schaaf) practices social distancing.



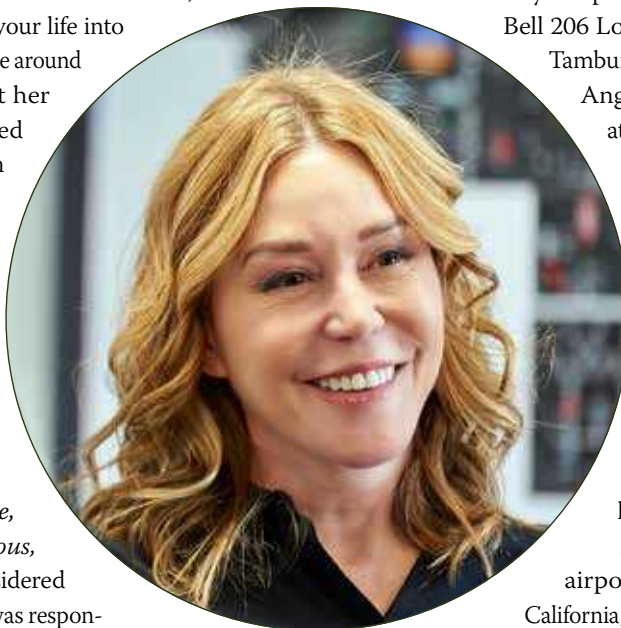
In losing its founder, the multimission operator gained an unexpected leader.

Helinet Flies Ahead

By Gina Kvitkovich

LIKE MANY OF HER COLLEAGUES IN AVIATION, Kathryn Purwin has gotten The Call—the one that delivers dreaded news about a loved one or coworker, the one that transforms your life into Before and After. Some time around Sep. 11, 2015, Kathryn learned that her husband, Alan Purwin, had been killed when the airplane he was on crashed in Colombia.

Best known for his film production work as a helicopter stunt pilot and aerial coordinator, Alan was the chairman of Helinet Aviation Services, a multimission helicopter operator based in Los Angeles. Since 1984, he had flown for nearly 150 movies and television productions, including the box-office blockbusters *Air Force One*, *Armageddon*, *The Fast and the Furious*, *Jurassic Park*, and *Transformers*. Considered an innovative film production pilot, he was responsible for iconic stunts such as the helicopter chase scene in the 2003 movie *The Italian Job*.



Helinet

Alan founded Helinet, originally called West Coast Helicopters, in 1987 at Van Nuys Airport (KVNY) in Los Angeles. Starting with a Bell 206 LongRanger, Alan and a partner, Michael Tamburro, provided flight services for several Los Angeles-based business professionals and athletes. In 1988, West Coast began transporting organs for LA-based transplant centers. Two years later, it secured its first newsgathering contract.

Charter, organ transport, electronic newsgathering—the fledgling helicopter company was acquiring a diverse list of missions. “I’ve watched this company grow from the very beginning,” says Kathryn. “I remember when Alan had one helicopter, one desk, and one phone line.”

Kathryn first met Alan at—where else?—an airport. She had attended the University of California, Los Angeles, with a double major in history and political science, intending to become a lawyer. But that plan was sidetracked when a friend took her flying. She was hooked.

Instead of a lawyer, Kathryn became a commercial pilot, flying business jets (she holds commercial multiengine and instrument fixed-wing ratings and also holds a helicopter license). When Alan started West Coast Helicopters, the two were already friends; they married in 1994.

In 1998, Alan merged West Coast Helicopters with Helinet Aviation Services. His reputation as an aerial coordinator and stunt and production pilot for film and TV productions was growing, and the company was expanding into new missions, including helicopter air ambulance work and aircraft management.

With the birth of their children, Michaela and Kyle, Kathryn became less directly involved in the company. After Alan's death, she didn't initially plan to be an active owner of Helinet. There were all the other details that needed attention, and of course, her children. Besides, Alan had hired a management team three months before the accident.

Kathryn initially left it to that team to run the business. But without Alan to provide continuity, the company he had created was losing focus. He was a visionary, charismatic leader who could run a complex business out of his head. Replacing him as CEO seemed like an impossible task.

"After he was gone, it wasn't my original intent to come in," says Kathryn. "But I saw that I needed to do that for Alan's legacy to continue. He worked so hard for it. It was my commitment to Alan that I was going to keep this place alive. That's why I came in, and that's why I'm still here."

Choosing to Lead

And so in 2016, about six months after Alan died, Kathryn took over as Helinet's CEO.

Stepping in for her husband wasn't easy, she says. "Both my children needed me—it was a difficult time for all of us. But it was good for them to see me come in here to take a stand for their dad."

Keeping up morale was a top priority. "These people had been through a lot. They had lost their leader, and then the wife comes in? They had families, their careers—it was a scary time for them, where there was a lot of instability."

One reassuring strategy Kathryn employed was listening.

"A few months after I came in, morale was still low, especially with the pilots," she says. "So I put a schedule out and said, 'Look, anybody who wants to meet with me, just sign up.' And every single one of them did. Some people took 20 minutes, and some took two hours. It took a month to get through them all, but just listening to what they had to say



went a long way. Now there's a great sense of family in this company, which is something I work very hard to create."

Kathryn understood immediately that Helinet would have to evolve. "People like Alan don't come around very often. He was a brilliant man and an entrepreneur in the truest sense of the word. Coming in, I knew I couldn't fill those shoes," she says. "But I knew I could build a team that could do it."

One of her first moves was to begin to create her team. She recruited trusted business associates to join a board of advisers who would provide strategic direction for growth. Each board member would bring a unique background that provides Helinet with valuable perspective from its service markets.

Current board members include Thomas Norton, a former director of US Customs and Border Protection's National Marine Training Center; Arnold Kleiner, former president and general manager of KABC-TV, who had been an early champion of marrying high-definition cinematography and helicopters; and retired US Coast Guard Vice Adm. William "Dean" Lee.

"I was in the military, and so I've seen a lot of leaders in my life," says Lee. "I admire Kathryn so very much because the easy thing to do when her husband—who had largely been running the company while she raised the family—died would have been to sell out and go. She has more than risen to the occasion, and now she's *running* this company."

Another recent addition to Kathryn's team is Sean Cross, Helinet's president and COO and a retired US Coast Guard

Each month, Helinet raffles off a ride in a helicopter to a staff member. "Some of the people on the office side have never been in a helicopter, yet they work with them every day. Now they can bring in their family and go up on a flight to see what it's like," says Kathryn, shown here speaking with Brittany Brown, flight follower for Helinet.



Helinet's VIP charter customers use Sikorsky S-76, Leonardo AW109, and Eurocopter AS355 twin-engine aircraft to conquer the notorious Los Angeles traffic.

captain and aviator. "A big part of my job is to ensure high standards for professional operation and maintenance of our aircraft, while making sure the individual lines of business are working together and doing what's best for Helinet," says Cross.

One advantage to having a team is hearing different perspectives, says Kathryn. "It's good to see things with a fresh set of eyes. Our CFO, Brad Sather, has a sign in his office that says, 'The 6 Most Expensive Words in the English Language: We Always Did It That Way.' And that's so true. Helinet doesn't look the same now as it did five years ago and five years before that, and it may not look the same in five years."

Aerial Production

Under Alan's leadership, Helinet established a large footprint in providing aerial services for movie, television, and media production. The company has steadily expanded its capabilities in this area, providing film production companies with an array of aerial services, from cast and crew transport to helicopters

and drones outfitted as camera platforms to aircraft that appear on-screen.

Helinet's "picture ships" include a wide variety of aircraft that can be "cast" in various missions, including the 18 aircraft that it owns and the four in its aircraft management program. A standout in Helinet's fleet is its MovieHawk, a Sikorsky UH-60A Black Hawk ESSS model. The unique aircraft can carry actual, if disabled, external weaponry and fuel tanks, as well as a system for fast-rope insertions and extractions. The company also has an Aero L-39 Albatros aircraft, dubbed the CineJet. With a custom Shotover camera mount designed for high-speed aerial cinematography, the CineJet captures images at speeds exceeding 350 knots and during maneuvers approaching 3 Gs.

Helinet's camera ships include six single- and two twin-engine aircraft outfitted with camera mounts that can accommodate a film production company's desired cameras and lenses. The company also uses 14 drones to capture aerial footage.

But it's the Helinet team that makes the magic happen. Aerial coordinators pore over the logistics of every shoot, including locations, aircraft, maintenance, fuel, pilots, crew, safety, and regulatory compliance. A 30-second aerial sequence in a movie can take eight hours of preparation—or more.

Helinet's production pilots work closely with the film production team to choreograph aircraft movement, a task that's even more difficult when you're dodging the imagined movements of a 30-foot Transformer that doesn't actually exist.

"It's both a physical and mental exercise when you're out in the helicopter making these shots," says Kevin LaRosa II, the ATP-rated pilot who heads Helinet's production team. "You're not only flying an aircraft, you're directing another helicopter or multiple helicopters on how they should be flying, and you're watching the image to make sure you're putting yourself in the right place."

"I hired Kevin to fill the gap in our production department left by Alan's death," says Kathryn.

“He’s done a great job of preserving Helinet’s reputation in the film production community, which is very small and competitive,” says Kathryn. “Word gets around quickly, and the way you get asked back is by being well-organized, perfectly prepared, and able to improvise safely and efficiently—because on-site conditions and creative requirements are constantly evolving.”

Helinet is also a major player in the LA electronic news-gathering (ENG) market, providing a range of services to several TV stations in the area, including KABC, KCBS, and KTTV (Fox).

“We provide all the aircraft and pilots,” says Cross. “The companies actually invest in the equipment on board the aircraft because that’s a competitive advantage. All clients provide their own on-air reporter, but some bring their own camera operators and for others, we provide them.”

While current battery limits and regulatory permits limit the use of drones in ENG work, Kathryn foresees their eventual use by that sector. Meanwhile, a Helinet ENG aircraft recently had a too-close encounter with an sUAS.

“Our helicopter flying ENG for KABC-TV, Air7HD, was hit by a drone on Dec. 4. Our pilot thought it was a bird strike and put it down, but there [were] no feathers or other evidence,” says Kathryn. “[The NTSB can’t be sure, but they found metal fragments lodged in the aircraft](#). If that drone had hit a bit farther back, it could have been fatal.”

“That helicopter was flying at 1,100 feet agl, where no drone should be flying legally,” adds Cross. “There’s a lot of unprofessional people out there flying drones. The aviation industry needs more than luck to prevent a tragedy from happening.”

Medical Transport

Transport for LA-area hospitals’ organ donor programs was one of the first contracts Alan won, and it’s a service Helinet still provides today. “I’m extremely proud that over the last year, we’ve transported 20% of the organs transplanted in California,” says Cross. “Through this mission, Helinet has impacted the lives of over 1,300 people.”

The service requires complex planning and precise timing. “We’re not just going from hospital pad to hospital pad in Southern California,” Cross says. “We’re going to get organs that are being harvested as far away as Seattle, St. Louis, or Salt Lake City.”

“Our organ transport pilots demonstrate a culture of conservative decision-making, and that’s penetrated to other business lines at Helinet,” Cross adds. “Our pilots have to think really hard about decision-making because of the viability of that organ. ‘If there’s going to be a delay, is it better to use land transport? Because if I make a bad decision, someone who needs this organ might have to go without.’”

Of all of Helinet’s missions, Kathryn is most proud of one the company has been carrying out since 1999: providing Children’s Hospital Los Angeles (CHLA) with free round-the-clock helicopter air ambulance service.

“Helinet provides everything—the helicopters, the insurance, the maintenance, the pilots. Children’s doesn’t pay for anything, and neither do the patients or their families. We transport about 450 kids a year,” says Kathryn.

In 2015, CHLA renamed the program the Alan Purwin Emergency Transport Program. “It’s something that means a lot to the entire company. It certainly means a lot to me,” says Kathryn, who also sits on the Children’s Hospital Foundation Board of Trustees. “This was an important mission for Alan, and under another owner, this would have been one of the first missions to go.”

Helicopters as Tools

For all that made Alan a pilot’s pilot—someone who loved the detailed planning that goes into, for example, safely flying through a tunnel for a movie scene—he was also a technologist. As a stunt pilot, he had a deep understanding of what a helicopter could do. As an entrepreneur and a businessman, he knew the many ways in which helicopters could be used, so Helinet has a long history of branching into complementary lines of business.

“Helinet is through the stabilization phase,” says Kathryn. “Now we’re moving forward to ask what the future of Helinet looks like.”



As a sought-after film production pilot, Alan grasped the technical challenges of aerial photography. In 2004, Helinet bought Cineflex, a high-definition aerial camera system developed by John Coyle, and then sold it in 2007 to a company that's now part of General Dynamics.

Coyle's next brainchild, Shotover Camera Systems, was purchased by Helinet in 2012. Used by broadcast, news, utility, and film production organizations around the world, the Shotover line of gyro-stabilized camera systems provides an open-architecture, highly stable platform for cameras.

It's not just what the Shotover platform can do; its success also lies in what it doesn't do. The device's carbon-fiber body doesn't weigh a lot, making the unit easy to transport. Its open architecture means clients aren't restricted in their choice of cameras and lenses. Its gimbal relies on commercially developed software, meaning there are no export or trade restrictions on its use.

Helinet's technical expertise provides yet another line of business: Helinet Technologies, which offers acquisition, installation, and support services for aerial surveillance systems for law enforcement, public safety, and government agencies. "Every solution is different," Kathryn says, "and we're vendor-agnostic, so we design a system that's right for their requirements."

Helinet's post-installation service and support are critical. "Without a company like Helinet involved, when these agencies encounter technical difficulties, it can be hard to identify the problem within these complex installations. With Helinet Technologies, the customer experiences less frustration and more system uptime," says Allison Rakun, senior VP of marketing and business development.

"Our clients just don't have the time to deal with technical troubleshooting," says Kathryn. "They just want to go out and catch bad guys, so our experts give them turnkey service to support that."

Future Focused

With Cross on board, Kathryn's job continues to evolve. "While Sean oversees day-to-day operations, I'm increasingly going to focus on strategy and vision: what the future of Helinet looks like," she says. "We just started a Part 133 operation, so we're expanding into the firefighting sector. One of our Hawks is being converted. We just won our first call-when-needed contract with the US Forest Service, so that's a big thing for us."

Kathryn is also looking at the future of airborne transportation. "We teamed with Sikorsky for an event called CoMotion LA, which was all about the future of urban air mobility." She acknowledges the tremendous volatility in that sector but says the future is coming fast—after all, you can already book a Helinet charter through an app on your phone. However, she thinks it's likely drones will make an impact in sectors such as organ transplant and law enforcement before anyone climbs into an Uber Elevate.

"Airborne transportation is evolving before our eyes, and we want to be a part of that," Kathryn says. "We're continuing to do what Alan always did—exploring opportunities, growing where there's room to grow, and reevaluating the industry all the time."

"I want to honor Alan's legacy, which is everything he created, but also evolve into the future. And the future never looks like the past, ever." 

Kathryn, shown here with Helinet president and COO Sean Cross, has continued her company's 21-year commitment to providing comprehensive HAA services at no charge to Children's Hospital Los Angeles.



Congratulations to the 2020 HAI Scholarship Winners

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Evan Falk, Kamin Kim, Adam Lupercio,
Kenneth McFarland, Ethan Miller,
August Russ, David Sanches

Commercial Helicopter Pilot Rating Scholarship

Sarah Blanton, Ivana Doverspike,
Jordan Nieters, Nicolas Tillim

Maintenance Technician Certificate Scholarship

Thaddeus Baughman, Alex Brabon,
Luis Dandrade, Alec Dockery,
Nicolas Katerberg, August Russ

Michelle North Scholarship for Safety

Brent Keller

Southern Utah University (SUU) Rotor Aviation Scholarship

George Perry

Women in Aviation International (WAI) Maintenance Technician Certificate Scholarship

Diana Stearns

HAI offers up to 22 scholarships to support future helicopter pilots, maintenance technicians, and safety professionals:

- **Bill Sanderson Aviation Maintenance Technician (AMT) Scholarships** are awarded to up to eight AMT students, each of whom will attend a training course offered by select helicopter and engine manufacturers.
- **Commercial Helicopter Pilot Rating Scholarships** are awarded to up to four pilots who have their private licenses and are in the process of attaining their commercial rating.
- **Maintenance Technician Certificate Scholarships** are awarded to up to six students studying to become AMTs.
- **The Michelle North Scholarship for Safety** is awarded to a pilot who has already attained his or her commercial rating and who demonstrates an outstanding aptitude for safe flying and aviation best practices.
- **Southern Utah University (SUU) Rotor Aviation Scholarships** provide \$20,000 toward the SUU Aviation commercial/instrument flight lab for up to three pilots who intend to complete their ratings up to CFI and to enroll in an SUU degree program.
- **The Women in Aviation International (WAI) Maintenance Technician Certificate Scholarship** is awarded to a student in training to be an AMT.



2021 Applications Accepted Sep. 1 – Nov. 1 at
rotor.org/scholarships



Cautious Optimism Marks HAI HELI-EXPO 2020

By Jen Boyer

Safety and steady growth take the main stage at this year's show.

HAI HELI-EXPO 2020 kicked off in Anaheim, California, in a somber yet determined mood. On Jan. 26, the day before the show opened, Los Angeles Lakers basketball legend Kobe Bryant and eight others perished in a helicopter accident in Calabasas, just 55 miles north of Anaheim. The accident and loss of life hit the tight-knit helicopter community hard while also leading to increased public scrutiny of the industry and its safety record.

Safety, First and Foremost

With the Calabasas accident fresh on everyone's mind, safety continued to be a main theme at HAI HELI-EXPO®. More than 3,180 attendees participated in 30 professional education courses and 60 free Rotor Safety Challenge sessions, most of which were devoted to improving safety in some aspect of the vertical lift industry.

New HAI President and CEO James A. Viola drew on his

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personal passion and professional background in safety when addressing the media and the association's membership. The former director of general aviation safety assurance for the FAA, US Army helicopter pilot, and the organizer of the US Helicopter Safety Team, Viola emphasized the importance of keeping safety as an essential activity for the industry.

"High-profile accidents and incidents bring more visibility, and not in a positive way for the industry," Viola said at his introductory press conference on Jan. 27. "If there's any connection to what we're doing this week, it's that this industry really goes out of its way to try to make sure we provide the safest environment possible. Zero accidents—that's the vision, the goal, because no loss of life is acceptable."

In addition to multiple safety courses, HAI for the first time created a safety kiosk near the show floor main entrance. Safety-focused affiliate organizations that typically have booths on the show floor were co-located in the kiosk, offering a front-and-center safety access point for all attendees. Participants included NASA's Aviation Safety Reporting System, the International Helicopter Safety Foundation, the Tour Operators Program of Safety, the FAA Safety Team, and the Unmanned Aircraft Safety Team.

At the HAI Annual Membership Meeting on Jan. 28, FAA Administrator Stephen M. Dickson spoke about the industry's safety challenges and how the agency is working to solve them. (To read ROTOR's exclusive interview with Dickson during Expo, see p. 46.) With unmanned aircraft systems and electric vertical takeoff and landing (eVTOL) aircraft quickly moving from prototype to testing, Dickson emphasized that those passengers will demand the very high level of safety achieved by airlines—a benchmark the helicopter industry has yet to meet.

Dickson also questioned the current climate in the helicopter industry in which, more often than not, accidents could have been avoided. If the industry can't change that climate, it will be forced to, he said. "There's a lot of energy in Congress as it relates to safety and noise concerns. If we can't take meaningful action on both of these fronts very soon, I suspect that path forward might be dictated to us," Dickson said.

The New Normal

Beyond safety, the industry's key manufacturers have focused on expanding their businesses. All told, the collective industry story is one of slow, steady growth with clear geopolitical challenges.

For years, aircraft and engine manufacturers have watched for signs of a rebound to the level of sales the industry enjoyed before the Great Recession of 2008. Each year, OEMs have reported some growth, but short of large one-off sales, there hasn't been a significant boom on the horizon.

"Maybe next year" has become the new mantra. Agile companies began to diversify their product portfolios early on, reaching into new or emerging markets and developing new programs. Cost-saving engine-monitoring systems and component life-extending processes became life preservers.

2020 is no different, and the industry is beginning to adjust its expectations. The recovery it's been looking for could very well not exist, especially given the oil price war between Saudi Arabia and Russia and the global economic disruption

Opposite: Kopter hopes to achieve full certification of its light single-engine SH09 by the end of this year. Below: HAI President and CEO James A. Viola lands in Anaheim to kick off this year's fly-in.





Airbus's exhibit attracts steady visitors on the show floor in Anaheim. Despite celebrating record sales in 2019, the French manufacturer was one of many OEMs that experienced slow growth in the mature US market last year.

stemming from the COVID-19 pandemic.

"I'm hesitant to even talk about a recovery anymore," says Romain Trapp, Airbus president and head of the firm's North America region. "I believe where we are today is the new norm. The market of 10 years ago is gone. We must reset our expectations and aim for growth of a few percent a year versus dozens of percent."

Product Innovation, Geopolitics at Work

Airbus

While Airbus celebrated record worldwide sales in 2019, the manufacturer was one of many OEMs experiencing slow growth in the mature US market, particularly the helicopter air ambulance sector. Trapp believes this was due in part to legislation introduced in the US Senate in June 2019, S. 1895, the Lower Health Care Costs Act, which would affect emergency medical care in many states. (Note: as of publication, the bill had not been voted on by the Senate.) Some operators are buying aircraft to replace or expand their fleets, but most remain cautious, Trapp says.

Similar ripples run through the industry about China. Many manufacturers have seen sales in that country drop

significantly because of tariffs and the increasing realization that the Chinese market will be constrained by that country's tight control of its airspace, as well as its own maturing aircraft manufacturing industry.

Leonardo and Kopter

Leonardo arguably had the biggest news at Expo, putting its diversity strategy to work by announcing the acquisition of Swiss OEM Kopter. The move adds an additional light single-engine workhorse, the Kopter SH09, to Leonardo's offerings.

"We wanted to complete our product portfolio the right way," says Gian Piero Cutillo, managing director of Leonardo's Helicopter Division. "We believe this is the right product, adding strength to our single-engine segment and complementing the AW119."

Kopter announced it had frozen its design for the SH09 and was in the final stages of certification. To reduce the time between approvals from the FAA and EASA, Kopter is working with both agencies to achieve full certification by the end of 2020. Once certificated, the multimission helicopter wouldn't be far from single-engine IFR supplemental type certification (STC). Modifications to receive the STC include

adding a third attitude indicator and a four-axis autopilot.

Leonardo and Kopter confirmed that Kopter's name, Switzerland location, and brand will remain, though the latter may undergo some alterations to better align with Leonardo's branding. Plans for US production in Lafayette, Louisiana, are unchanged.

"The idea isn't to interfere but to help as needed, as they're so close to certification," says Leonardo's Roberto Garavaglia, senior VP of competitive analysis and strategy. "For instance, we may have a facility they can use, saving them from having to build one."

Leonardo's Kopter news came on the heels of the Italian manufacturer having won the US Navy single-engine IFR training helicopter contract with the AW119, on top of a steady year of sales. When not counting a large Qatar order in 2018, Leonardo sales in 2019 were up slightly from those of the previous year.

"The civil market remains interesting," Garavaglia says, echoing the sentiment of many other manufacturers. "Many areas remain weak, though they're coming back some. This is geopolitics at work, and we're trying to learn how to play that. We find ways to continue business without making predictions. There is life in the industry. It simply requires an exercise in creativity."

Kaman

At Kaman, innovation remains strong. Since restarting production of the K-Max helicopter in 2017, Kaman has delivered 13 of the aircraft. In 2019, the company delivered four helicopters and plans to maintain an output of four to five a year, not including military orders.

The recent surge in wildland fires and the US Forest Service's new "call when needed" firefighting contracts have led to increased interest in the K-Max, says Roger Wassmuth, Kaman's senior director of business development. A high-altitude workhorse, the aircraft is becoming a favorite for government contracting.

"The Forest Service began putting telemetry equipment on its contract aircraft to see if operators were actually doing the work within the scope of the contract—weight, altitude, etc.," Wassmuth says. "That's one thing K-Max operators never have to worry about."

The unmanned version of the K-Max underwent critical design review in late 2019 and was on track to have completed that process for its software in early 2020. That aircraft is expected to take its first flight later this year. It's designed to be completely autonomous and features a fully redesigned system from the one used by the US Marines between 2011 and 2014.

Among the biggest news announcements at HAI HELI-EXPO 2020 was Leonardo's acquisition of Swiss OEM Kopter.



Schweizer

At Schweizer RSG, it's steady as she goes, and staying the course is paying off. When company president David Horton acquired the rights to Schweizer helicopters in 2018 from Sikorsky, the aircraft was out of production and there was a large backlog of spare-parts orders. For two years, Horton has focused company efforts on three things: rebuilding supply chains, producing aircraft and parts, and providing world-class customer support.

The Fort Worth, Texas-based manufacturer has received the green light from the FAA to begin making parts, and full certification to manufacture aircraft is expected by the end of 2020. With 27 orders already on the books, Horton is excited to deliver. The company has also purchased cannibalized aircraft and is refurbishing them for sale with parts that Schweizer RSG manufactures in-house, Horton says.

"We've made a lot of progress," says Horton. "It's not as much as I'd hoped by this time, but that's a result of our focus on not doing anything unless it's perfect and we're doing it right. We take being stewards of this product with a rich history very seriously."

Enstrom

Celebrating 60 years of manufacturing at HAI HELI-EXPO 2020, Enstrom Helicopter Corp. reported an up-and-down 2019. Despite Enstrom's ownership by Chongqing Helicopter

Investment Corp. in China, sales were down in that country.

"The US-China relationship has really affected our business," says Enstrom President Matt Francour. "We have fewer sales on their end, but customers feel it will shift back eventually."

With a large percentage of sales in the foreign military sector, Enstrom sees continued slow growth. "When one contract drags, it hits us more than the larger OEMs," says Francour. "Business isn't going away. We remain very established around the world. It's a wait-and-see game."

MD Helicopters

Deliveries remained flat at MD Helicopters, too, with 2020 looking to be just ahead of 2019. The Mesa, Arizona-based company announced plans to invest \$100 million in 2020 supporting the 902, 969, and 530G aircraft and certifying new digital avionics for its single-engine helicopters.

MD Helicopters also announced a move from Genesys Aerosystems back to Universal Avionics's InSight flight deck, originally chosen for the MD 900/902 program. Then-CEO Lynn Tilton credited the change to Universal's new ownership under Elbit and hoped this would lead to speedier certification and delivery. Tilton, who resigned as MD Helicopters CEO on Mar. 23, said the company planned to have the aircraft with Universal's cockpit for sale by the end of 2021.

Enstrom's exhibit highlighted the manufacturer's 60th anniversary.





Robinson

Robinson Helicopter Co., often the manufacturer with the largest number of deliveries annually, had a much softer year in 2019, selling 196 aircraft compared with 2018's 300. With 70% of sales coming from outside the United States, company President and Chairman Kurt Robinson attributed the soft year to the high dollar overseas and tariffs. Looking forward, Robinson has already sold out the first six months of 2020 production of the R44 and R66.

Ever the innovator, at the show Robinson highlighted a number of features for its aircraft, including a slimmer aux tank to free up R66 baggage space, a new cabin video and voice recorder, overspeed protection for R22 and R44 start-up, a tach and engine electronic monitoring unit, and a high-impact-resistant windscreen.

Sikorsky

Sikorsky maintained a low profile at Expo in response to the Kobe Bryant accident, which involved an S-76B. Like many other events at the show, the company's annual press conference began with a moment of silence for those affected by the crash.

Sikorsky leaders shared that the first CH-53K King Stallion was in final assembly and the SB-1 Defiant was continuing test flights. The company's show floor display highlighted its Firehawk and recent deliveries to combat increased forest

fires in California and elsewhere around the globe.

After last year's announcement that the company would offer upgrades for the S-92 with the latest technology, Sikorsky VP of Commercial Systems and Services Audrey Brady announced that two options are now available for position agreements: the S-92A+, which includes the Phase IV gearbox and increases maximum gross weight to 27,700 lbs, and the S-92B, which includes all the S-92+ features plus several additional items, including a global real-time health and usage monitoring system (HUMS). General Electric's CT7-8A6 engine is an available option for both, producing more power for higher, hotter operations.

Bell

For Bell, 2019 saw steady sales increases over 2018. A flurry of announced orders at Expo highlighted the company's predictions for an even better year in 2020. Bell announced its selections of Astronautics's integrated flight display systems for the Bell 412EPX and 429 and a HUMS in the new Bell 407GX, signaling its interest in outfitting new aircraft with the latest technology.

Bell, too, noted geopolitical issues and tariffs as obstacles. However, with 505 sales steady, the 525 Relentless in the final stages of flight testing, and strong interest in the new single-engine IFR 407GX, hopes are high for additional growth this year.

Robinson Helicopter experienced softer than usual sales in 2019, but by late January of this year it had already sold out the first six months of 2020 production for two of its most popular models.



Above: Bell announced several orders at Expo, reflecting an upward sales trend since 2018 for the manufacturer. The company also expressed interest in equipping its aircraft with the latest technology, including Astronautics's integrated flight displays.

Below: French helicopter engine-maker Safran enjoyed smooth sales in 2019 and saw four of its products certificated.

Rolls-Royce

With sales in line with those of their associated aircraft manufacturers, engine OEMs at the show focused their news on positioning and strengthening customer service.

Rolls-Royce sales in 2019 were slightly more than in 2018, says James Payton, the company's VP of sales, civil helicopters. "We saw things soften with tariffs and the geopolitical atmosphere, but we're starting to see a significant uptick in 2020 and 2021."

Undeterred by current issues in China, Rolls-Royce remains focused on increasing sales there and is expanding support for aerospace overhaul in the Asia-Pacific market.

Rolls-Royce is also positioning itself to be a leader in the eVTOL space, having acquired Siemens's electric and hybrid-electric engine

division last fall. The company is also working with a consortium of industry partners to design what it hopes will be the fastest all-electric airplane.



“Our strategy is to be a leader in the electrification business,” Payton says.

Safran

Safran felt 2019 was a strong year, with the certification of four of its engines and steady sales. The French company also announced its plans to expand its health monitoring services to include daily health indicators and an online interface.

On to New Orleans

HAI HELI-EXPO 2020 was a robust show, with 657 exhibitors, 62 helicopters, and several mock-ups, eVTOL concepts, and remotely piloted vehicles filling more than 313,000 square feet of exhibition space.

Next year, the vertical lift industry will meet in New Orleans. “Work is well under way for HAI HELI-EXPO 2021 in New Orleans,” says HAI’s Viola. “I’m optimistic this will be a great show and our attendees will have an extraordinary time.”

HAI HELI-EXPO 2021 will take place Mar. 22–25 at the New Orleans Ernest N. Morial Convention Center, with the exhibit floor open Mar. 23–25. [🌐](#)



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Steve Dickson's 30,000-Foot VIEW



The FAA administrator talks about agency priorities, UAS integration, and managing a complex airspace.

By Gina Kvitkovich

“It’s a passion—it’s not like work to me. And aviation is something where you’re always learning and discovering new or better ways to do things.”

FAA ADMINISTRATOR STEPHEN M. DICKSON attended 12 different schools as his family moved to posts across the United States and around the world for his father’s career as a US Air Force pilot. After graduating from the US Air Force Academy, Dickson, too, flew for the Air Force. He moved to Delta Air Lines in 1991 to work as a line pilot and also earned a law degree along the way. After various stints in Delta management, including as chief pilot and senior VP of flight operations, Dickson retired ... for a brief minute before being asked by US Transportation Secretary Elaine Chao to head the FAA. He was sworn in as the top US aviation official on Aug. 12, 2019.

ROTOR Editor Gina Kvitkovich sat down with Dickson in late January during his visit to HAI HELI-EXPO 2020 in Anaheim, California. This interview has been edited and condensed for publication.

ROTOR: What drew you to aviation and what made you stay?

Steve Dickson: It’s just a passion—it’s not like work to me. And aviation is something where you’re always learning and discovering new or better ways to do things.

Once I graduated from the academy, I wanted to fly and serve my country. That was another thing that was attractive about joining the FAA—it was a chance for things to come full circle and give something back to my country. I’ve been fortunate to have a lot of success in my business career;

servicing as FAA administrator was a chance for me to bring some of that perspective and be part of a team.

Do you still fly?
Not currently. I’ve



got some other things I'm focused on right now, but I do plan to get qualified on the FAA's aircraft. It's always been important to me to lead by example.

One way the FAA is different from some other transportation authorities is that it has an operational mission. I think it's important for the people at the FAA to see that their leader is out there with them and seeing the operation from the same perspective that they are.

I'm looking forward to rounding out my experience with GA [general aviation]. It actually has some similarities to military flying, where you're kind of dispatching yourself, doing your own flight planning, and checking your own weather. With the pace of operations in a commercial airline environment, that's all being done by the ops center.

What are your priorities as FAA administrator?

I came into the agency with a 90-day plan that I laid out on the first day for Secretary Chao, which of course falls closely in line with her overall transportation strategy. The agency is in the process of developing our five-year strategic plan, and I've got five strategy pillars.

The first and most important one, not surprisingly, is safety. And that's safety as both a regulator and an operator of the airspace. We have to be able to do both.

The second pillar is global leadership. The United States has a responsibility to lead in safety and operations and in all aspects of commercial aviation around the world. In my observation, even before I arrived at the agency, when the FAA shows up somewhere, stakeholders really listen to what the FAA has to say. That's not always true with other regu-

latory authorities, even fairly mature ones.

Over the years, the FAA has done more than any other regulatory authority to promote aviation safety around the world. But we do it through openness. With the United States being an open society and an open people in general, we're very inclusive and collaborative by nature. Developing authorities around the world have really benefited from the mentoring and support the FAA has provided over the years, sometimes through ICAO [the International Civil Aviation Organization], other times through bilateral relationships, and other times through regional relationships. There's an important mentoring role we can play.

The third pillar is operational excellence. This is really about operationalizing NextGen. We must make sure that we continue to invest in our infrastructure and do the needed physical modifications and modernization of the system—but we also need to make sure we're getting operational benefits out of these investments.

The fourth pillar is innovation. This is where our approach to airspace integration is so important. Look at the commercial space sector. I had no idea, when I came into the agency, how involved the FAA is in licensing commercial space operations. We have 11 space ports around the country. A decade ago, we would have three or four commercial launches a year. This year, we're close to 50 launches.

The FAA can't continue to block off large swaths of airspace for these launches as we've done historically, so we're developing technology to manage airspace more surgically, more dynamically. We're developing systems so we can actually ingest the trajectory data and the predictive data off of the

FAA Administrator Steve Dickson (third from right) helps James Viola and the rest of the HAI Board of Directors open the HAI HELI-EXPO 2020 exhibit floor.



HAI/ROBE COHEN PHOTOGRAPHY



During his tour of the HAI HELI-EXPO show floor, Dickson had a chance to discuss issues with industry figures such as Chris Jaran, COO of MD Helicopters.

planned launches and reentries. Eventually, they'll be displayed on the controller's scopes so that we can manage operations much more dynamically.

This is really the most exciting period in aviation history, probably back to, I would say, the advent of the jet engine or maybe even the DC-3. That's because of the innovation we see on the HAI HELI-EXPO show floor. You're talking about fly-by-wire helicopters, developments with synthetic vision, and the rule-making we're having to do around UAS [unmanned aircraft systems] and commercial space to enable all of these different capabilities to operate in the same airspace. It's extremely exciting.

The final strategy pillar is about people. When it comes to recruiting and training, there's an internal aspect to it in terms of staffing the FAA, but there's an industry side to it as well. We need to mentor young people to understand the opportunities that exist in our industry, not only within the agency but also in the private sector.

Actually, I just reviewed the candidates who had applied to be on the Women in Aviation advisory board that was mandated in the 2018 FAA reauthorization bill. We had about 200 submittals for 20 slots. There are many accomplished people and stakeholders who have applied, but we need to get some diversification in terms of age and experience, because there may be some knowledge about the best

way to reach young people that somebody my age might not pick up on.

The FAA will also convene different stakeholder groups and see where the opportunities are to promote aviation. There are a lot of good things happening around the industry, but they're kind of piecemeal and fragmented. I think there's a way we can coordinate our efforts effectively.

There are so many different ways into aviation now that didn't exist years ago. A lot of what we need to do is get the message out about these opportunities to groups who may not be familiar with aviation. For many people, if they've never had a connection to aviation or no one in their family has been in aviation, they just aren't aware of it.

As far as my strategy for the FAA workforce goes, the agency has to work to more systematically allow our people to have satisfying careers and ensure they have a broad perspective of the entire agency. My experience in large technical organizations like an airline or the military is that people who have subject-matter expertise in a particular technical discipline tend to want to matriculate and be promoted within that discipline. But if they haven't had any exposure to the rest of the business or the rest of the enterprise, it can be challenging to find your best leaders.

The best engineer or the best mechanic or the best pilot may not actually be the best leader for the organization.

We've got to systematically give folks the support and programs to be able to broaden as they're promoted throughout their careers. We're going to be doing some things internally, as well, to make our employee development more robust, so that we're not just looking within our own technical disciplines for leaders.

Where are the opportunities to improve GA safety?

That's something I'm looking forward to working on with Jim [Viola, HAI president and CEO,] because I know he's got a lot of experience in that area. [Viola was head of GA safety assurance for the FAA before he moved to HAI.]

I think the opportunity with GA safety is to continue to drill down on data. How do we develop a system that's going to allow us to make the same kind of significant improvements we've seen in commercial airline travel?

It will require using the General Aviation Joint Steering Committee and the US Helicopter Safety Team and putting the same types of

resources, focus, and attention on GA safety. Our vision is that no accident is acceptable. We don't want anybody to ever get hurt or killed on an aircraft.

There's always going to be operational pressure, because aviators tend to be very mission-oriented and -driven. Pilots are driven by a checklist, mechanics are driven by work cards—they want to get the task done. Well, sometimes you have to sit back and say, "OK; let's set the parking brake," or, "Let's land and live."

Let's do whatever we need to do to say, "This is probably not a good idea. Let's stop the operation, let's let the weather pass, let's talk about our game plan," and then move forward from there.

We've got to be able to bring people together to have those kinds of conversations, but those conversations have to be rooted in data. We just need to figure out how to adapt the information we have to the GA environment so we can understand each other's perspectives.

So the FAA will continue to focus on data as a key method of improving safety?

Another element of my innovation strategy is the digital transformation of the FAA so that we're able to ingest and utilize data more effectively. We have a lot of data, but it's compartmentalized and not easily combined and reshaped for different purposes.

Let's look at the historical continuum of how the aviation industry has dealt with safety issues. The following example is focused on commercial airline operations, but I think it's instructive.

When you think about commercial aviation safety up until probably the 1970s or 1980s, it was really the blame game. It was always pilot error or the engine caught fire or the weather was bad. You didn't have the data to go in and look at root causes.

Then we moved toward more disciplined, post-accident investigations, where it was more of a forensic approach. It's the way we investigate



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UPS delivery of prescription medicines from a Florida pharmacy to a nearby large retirement community via drone is scheduled to begin in May. The flights will cover less than 0.5 miles, and final delivery will be by ground vehicle.

accidents now, where you go in and you really look at all aspects—the human factors, the machine, the operating environment, the training records, and whatever else. So we moved from the blame game to forensics.

Then we moved from forensics to a proactive approach, and that's where we are now. We have voluntary safety reporting programs, and we have data from flight-data monitoring and flight operational quality assurance that's streaming off of engines and airplanes. We have other types of employee reporting and agency audits.

Then you have a team sift and filter that data to figure out what's important, what the threats are, and what changes need to be made. This approach does allow you to be more proactive, but it's an analog process.

We're moving to a world where the data sources talk to each other. Maybe you're online looking at a new TV, and then later these pop-up ads for TVs show up. These commercial companies know a lot about you by analyzing the data they've collected about you.

But we don't have the same kind of visibility into a pilot. For example, when you look at a pilot who's being put into the operation that day, what is their readiness level for that day? We need to look at their schedule, their qualification, their checkrides. That's the people data. Then there's the data on the machine. Then what about the operating environment? What's the mission, what's the tempo, what's the weather?

This information comes from very different data sources. But imagine if we could bring that in and combine it with some machine learning or artificial intelligence. So the question isn't just, "Do I want that pilot?" It's, "Do I want to

pair a captain with less than 100 hours with a new-hire first officer flying their first ride into Midway, a place with high-tempo operations where the shorter runway can be challenging?"

That's where you start to get into predictive analysis, where you look at the data to make a better-informed decision rather than reacting after the fact. You might say, "This mission meets the rules, but is that really a risk that we want to take on?" So you change the experience levels of the crew pairing, or you substitute a different equipment type, or you wait for the weather to clear, or you do whatever you can to reduce the risk. That's what I'm pushing forward to.

Right now, there are a lot of data-driven processes within the FAA, but I want to bring all of that together into a common data lake. We can then use and manipulate that data for different purposes. For example, an aviation safety inspector's personnel information is segregated from their training qualifications, even though it's the same person. I want to bring all that together, because I may want to query it for different purposes. And that's just one example.

You have to be able to translate the data into some kind of actionable information. And that's the challenge.

What progress is being made on integrating UAS, or drones, into the National Airspace System?

The FAA has an excellent leader in Jay Merkle, who came from our Air Traffic Organization and is now overseeing our UAS integration team. He's doing a good job of engaging stakeholders and bringing together the different lines of business within the FAA.

It's a tall order to actually integrate UAS operations into the airspace system, but I think it's the right strategy. Some stakeholders would rather see us establish certain routes or restrictions on UAS, but I think that would severely hamper the development of a technology that will be very beneficial to society.

But we've got to manage the integration through a logical process. So we've tried to use our existing regulatory structure to do that. The challenge has been to create a pilot program in which we can test certain business opportunities in certain applications so that when we actually do write the rules, we write them in the most beneficial way to be able to continue that development.

Right now, it's hard to say what things are going to look like five years from now. Every time you think you've got a good idea of what the trajectory is going to be, there are new innovations out there and new opportunities. We want to be supportive, and we don't want to cut off any of that innovation. At the same time, we have to get some things out there first, like remote ID, so we can have a broader scale beyond visual-line-of-sight operations and operations over people.

Not everyone agrees on how we're approaching UAS integration. We've got to make sure we understand their perspectives, but they've got to understand that the FAA oversees a *system*. We can't favor one part of the country or one constituency over another. There will have to be some compromises and some trade-offs.

There are entities, such as cities, communities, and our security or law enforcement partners, that have certain interests that we have to account for when we write rules. And we have certain societal considerations, like noise, privacy, and data, that we've got to consider when we make rules, even as the safety regulator.

Our tremendously diverse and dynamic NAS makes it more challenging to do that. In some places, there isn't as much GA activity. But in the United States, we have a diverse, robust GA sector with lots of different types of operations and a large helicopter sector. These opportunities create a lot of complexity that has to be managed.

But that's something to be cherished. It makes the US aviation system much more diverse and complicated than anywhere else in the world. That's one reason I think the FAA is still, by a large margin, the leading aviation authority in the world, because it has to bring together all these disparate elements, and that's exciting.

Getting back to the subject of UAS integration, it goes back to fundamental questions, such as who's responsible

for the US airspace. Well, the answer depends on what you're talking about. If you're talking about civil airspace, it's the FAA. If you're talking about defense, it's NORAD [the North American Aerospace Defense Command, a joint US–Canadian organization that conducts aerospace warning, aerospace control, and maritime warning in the defense of North America] and USNORTHCOM [the US Northern Command, the US Department of Defense command dedicated to homeland defense].

The Department of Defense is an airspace user as well. The ADS-B mandate was a good example of that. We had to create some opportunities for the military to be able to operate in a way that civil aircraft wouldn't be able to within the system—a

military aircraft doesn't always want to broadcast its location. We certainly have to take DOD's needs into consideration when we write rules.

“It's a tall order to actually integrate UAS operations into the airspace system, but I think it's the right strategy.”

From the FAA's perspective, how did the ADS-B Out equipage mandate go?

Thanks to a lot of work and a lot of preparation on the part of all segments of the industry, I think it's been going well. The compliance has been probably as we expected. There have been a few little surprises here and there with some operators, mostly foreign operators, that we're dealing with.

As you get into any situation where you've got different aircraft avionics configurations, there have been some difficulties because there's not just the ADS-B transponder, there are also multimode receivers and other things that are part of the architecture.

There were difficulties with some manufacturers that showed up within the past year that are going to have to be remediated. But it's a relatively small number of operators who were dealing with that.

Any surprises about the job of being FAA administrator?

Nothing happens as fast as you want it to happen. That's certainly one observation.

I've been very impressed with the quality of the people whom I have the privilege of working with in the agency, and that's something that I appreciate every day. I love being part of a team that's trying every day to make a difference and improve a system that already operates at an extremely high level.

Finally, I get to learn more about different segments of the industry, some of which I was more familiar with than others. It's been a great experience so far. 🌀



UAS Market Ready for a **BREAKOUT**

Less expensive to operate. Lower risk to humans. What's not to like?

By Dan Reed

THE MARKET FOR UNMANNED AIRCRAFT SYSTEMS (UAS, or drones) grows bigger every year, as more companies, industries, and governments find ways to use these aircraft. Because drones can easily carry lightweight cameras and other sensing equipment, they're already utilized for inspection, surveillance, or data-gathering missions. But plans are under way to carry cargo and people, too.

"It depends on what study you read, but the commercial drone industry and light military [drone] market in 2018—in the US alone—was \$2.6 billion. And by 2025 it will grow to \$16.2 billion," says Cameron Chell, co-founder and CEO of Canadian firm Dragonfly, the world's first commercial drone manufacturer.

Some studies suggest a much higher number. But whatever the real figure, there's no denying the UAS industry's current growth and prospects for more of it, regardless of where the hype surrounding

the technology stands.

"I wouldn't say all the hype is gone, but it is much reduced," says Kay Wackwitz, a consulting aeronautical engineer and CEO of research and consulting firm Drone Industry Insights, based in Hamburg, Germany.

Most of the excitement generated in recent years has been aimed at attracting investment dollars to the small army of drone start-ups—and to the big ride-sharing companies like Uber that are itching to begin operating "flying taxis."

But a number of start-ups have scaled back their dreams, and some have even shut down after having learned how hard the technical challenges are, how long the road is to full certification, and how much of an investment would be required to produce a certificated and affordable finished product.

That shrinkage and recalibration within the industry, says Wackwitz, are a positive development. "Right now, [commercial drones are] in



the valley of the ‘Gartner cycle,’ he explains, referring to the low spot in the development curve of any technology where the early hype has faded and the excitement level has fallen to about as low a point as it will ever go. “And that’s the place where the product really matures a lot. So from here, we only will go up again.”

Chinese Manufacturers Take a Hit

Competent and reasonably well-financed UAS manufacturers, equipment and parts makers, and operators are now on the cusp of breakout success, Wackwitz says. And most of them stand to benefit from the disappearance of Chinese drone manufacturers from the government market for commercial drones.

Last year, several US government agencies issued orders to their teams in the field to stop acquiring Chinese-made drones and to stop using any already in their inventory. In January, President Donald Trump extended that order to all of the federal government.

The concern, apart from the deepening US–China battle over trade and economic regulations, is that all Chinese UAS are suspected of containing hidden technologies that could allow them to collect data the US government views as secret or sensitive—and to do so without their operators’ or owners’ knowledge. DJI, which is based in China and is the world’s biggest drone manufacturer, denies that its products contain such spying capabilities.

“This is going to become a bigger issue, not a smaller issue,” Draganfly’s Chell says. “Data is the new oil. It means everything, and there are going to be more and more situations in which obtaining and protecting data is paramount.”

Until now, despite the billions of dollars invested in Western drone companies, few have been able to thrive in competition against the Chinese. Draganfly, which by industry standards is a relatively small player, has survived on its reputation for producing reliable and versatile UAS for sophisticated commercial users, and on its low-profile work on military drones for the United States and allied nations.

“We are now being brought in on all kinds of levels to fill this \$500 million to \$600 million vacuum that has been opened up in the market,” Chell says. “Anything that touches



“Data is the new oil. It means everything, and there are going to be more and more situations in which obtaining and protecting data is paramount.”

– Cameron Chell, co-founder and CEO, Draganfly

government land or government work cannot have a Chinese product attached to it. Few companies can fill that need. But we can fill some of it. And I definitely think others will be trying to fill that same vacuum.”

Published reports also suggest that the Trump administration is working on an executive order that would ban all federal agencies and departments from buying or using any foreign-made UAS, putting the United States in the position of openly distrusting the products of even friendly nations.

In response to the changes regarding the use of Chinese drones, Draganfly has already expanded its operations and product line and expects to grow even further. Other Western drone manufacturers are taking similar steps, though to what degree those outside the United States might be impacted by the potential executive order remains to be seen.

Nor is it clear whether even Draganfly, with its track record of serving the US military, will be affected. Despite its operations in Southern California, it remains a Canadian company.

Moving Toward Ubiquity

For all the drone industry’s recent growth and hype, relatively few people have seen a commercial UAS at work. That, however, is about to change as drones move into the mainstream.

Because of the wide variety of both manned and unmanned aircraft, it’s difficult to compare purchase and operating costs unless you’re discussing specific aircraft and missions. However, it’s generally accepted that UAS are less expensive to purchase and operate than helicopters. Increasingly, drones are being used by businesses, governments, and individuals to accomplish aerial missions at a lower cost—and often more efficiently, too.

“I can put a man on the ground and [have him] walk it for several weeks to see where we’ll put in a logging access road, or I can put a LIDAR [light detection and ranging] unit on a drone and fly over



that same area in a day and get a very accurate map, more accurate than any man could produce working on foot,” Chell says.

While much has been written about the threat drones pose to aviation safety, many people are now coming around to the technology’s potential to improve aviation safety—by taking humans out of the aircraft (see Scott Burgess and Mark Colborn’s article “Unmanned Systems Can Save Lives in High-Risk Manned Operations” in the Summer 2019 issue of ROTOR).

Police forces have become some of the most enthusiastic users of drones. Scarcely a week goes by in the United States that some police agency doesn’t arrest a suspect, locate a missing or injured person, or solve a complex crime without the assistance of a drone.

“Out of every 10 stories I review for possible inclusion in our newsletter, six or seven of them are about drones these days,” says Dan Schwarzbach, executive director/CEO of the Airborne Public Safety Association. “There are about 18,000 law enforcement agencies across the country, and more fire departments than that, plus search-and-rescue and other organizations. But historically only about 350 of

them could ever afford manned aircraft. The distinct advantage of a low-cost aerial platform with access to the national airspace at the low altitudes where we operate is now affordable to almost all public safety agencies through UAS.”

In fact, Draganfly was hailed in 2013 for being the first drone company to produce a UAS that saved a human life. When a Royal Canadian Mounted Police unit in Saskatchewan received a 911 call from a driver whose vehicle had gone off a very remote road and into a deep gully, the injured, dazed driver couldn’t tell operators his location.

Faced with a needle-in-the-haystack search, the Mounties deployed a helicopter equipped with night-vision technology toward the driver’s last known location based on his cell phone GPS data. But after several hours without any progress, they flew a small Draganfly drone equipped with

an infrared camera. The smaller, more maneuverable drone could fly closer to the ground without risk to its pilot. Rather quickly, the drone’s camera picked up a tiny heat signature, which turned out to be the driver curled up in a ball at the base of a tree.



Researchers used this Draganfly drone to collect evidence that was used to successfully prosecute an incidence of poaching near Alvena, Saskatchewan, Canada.



DRAGANFLY PHOTOS

SASKATCHEWAN POLYTECHNIC

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Developing Nations See Utility

While Westerners assume UAS will have their biggest and best uses in North America, China, and Europe—and in difficult commercial environments such as working around offshore oil rigs—drones may have as much, if not more, of a positive impact on developing regions.

“Everyone automatically thinks ‘urban’ air mobility,” when the subject of drones comes up, Wackwitz says. “But we forget about ‘rural’ air mobility, which is where unmanned aerial vehicles have few negative social impacts and lots of potential for positive social impact.

“Right now in Kigali, Rwanda, they’re talking about ways to reach people who are unreachable,” Wackwitz continues. “A seventh of the world’s population—1 billion people—don’t have year-round access to roads. So the African Drone Forum is working on the idea that you just don’t build a road

to every village so long as you can easily and cheaply fly in the essentials,” using somewhat larger and more capable cargo drones than the smaller units that are more likely to be deployed in crowded cities.

If successful, using UAS in place of trucks to carry food, medicine, and other necessities to isolated areas would mimic the widespread introduction of cell phones in Africa, which has allowed a huge percentage of the population to simply leapfrog over the use of landlines. A San Francisco-based company called Zipline

is already delivering medicine and other life-saving goods to people in Ghana and Rwanda who can’t reach doctors or hospitals. Meanwhile, UPS in 2019 received approval from the FAA to fly commercial drones in the US with certain restrictions.

Social Acceptance Still a Hurdle

Aviation operations carry inherent risk, and UAS operations are no exception. Just as with manned aircraft, however, the risks incurred by operating drones can be mitigated, Wackwitz says. Much will depend, however, on how UAS are viewed by the communities they’ll fly over, which in turn will greatly influence the regulatory framework for drone operations in the United States, Europe, and, eventually, every other nation.

“In China, social acceptance [of drones] isn’t such a big concern yet,” says Wackwitz.

“A company



This Draganfly X4-P drone, shown here with the Tetracam multispectral camera, can be outfitted with a variety of payloads to accomplish specific missions such as photography, mapping, public safety, and precision agriculture.



called Ele.me, an Alibaba company, last year made more than 8,000 [drone] deliveries around Shanghai.”

Drones are accepted in that densely packed city for two reasons: they mostly deliver food, and the drones don’t actually stop on individual doorsteps. Instead, they land on street corners, in parks, or at other locations with adequate room to maneuver, where they’re met by scooter drivers, who perform the last mile of the delivery, including to high-rise apartments or offices.

“It would be much harder to do that here in Hamburg. These things flying around everyone would be unwelcome,” Wackwitz says. “Or, say, in Chicago, if you annoy a hundred people [just] so one person who’s too lazy to walk around the corner to get a pizza can get [a drone to deliver it] instead, you won’t get lots of social acceptance.

“But in a rural environment, a drone wouldn’t annoy anyone. And if it’s an urgent delivery of something important, like medicine, it represents such a great opportunity that everyone would accept and support it,” Wackwitz adds. “In fact, I think rural and smaller markets are likely to be the first where social acceptance of drone deliveries occurs.”

The global COVID-19 pandemic has also given us a glimpse of how UAS can serve humans in conditions that other humans can’t or are reluctant to venture into. In China and Europe, local authorities have employed low-flying drones

to warn people off the streets, to scan the public with heat-sensing equipment looking for telltale fevers, and to deliver medicine to people in quarantine.

Going the Last Mile

Still, UAS are far from a mature technology. Currently, they can be operated beyond the line of sight of the remote pilot only with special permission, which typically is granted for jobs such as inspecting miles of high-voltage electric wires, surveying forests, and inspecting remote or hard-to-reach structures mounted on deep-sea drilling platforms.

In the future, full autonomy and beyond-line-of-sight operations are likely to become ordinary. And Draganfly’s intentions are to be in those markets as they mature.

“We will be in that market from the aspect of providing systems and equipment, like the autopilot systems. That’s really an incredibly important piece,” Chell says. “It’s not happening today. In my opinion, it’s still a solid 10 years away before we see that on a regular basis.

“But before then, I think we’ll see creation of a lot of spaces where drones will be allowed to deliver a package the last mile or two.

“I do believe that we’ll see that happening over the next couple of years,” Chell says. “And Draganfly will be a part of that.”

FLIGHT PATH

QUICK FACTS

Eugene Reynolds

Coupeville, Washington, USA

CURRENT JOB

Assistant chief pilot for Life Flight Network, a medical transport company in the Pacific Northwest

FIRST AVIATION JOB

UH-60 Black Hawk pilot for the US Army

FAVORITE HELICOPTER

MH-47G Chinook (military);
AW139 (commercial)



"I like to say that there's a difference between 20 years of experience and one year of experience repeated 20 times."

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

I knew I wanted to fly since I was in high school. After graduation, I obtained my private pilot's license (ASEL) by working at an airport and trading my paycheck for flight time and instruction. I applied for the US Army Warrant Officer Flight Training Program, where I was introduced to the wonderful world of helicopters. Mastering these magnificent flying



machines and helping others master them has been my life's passion.

How did you get to where you are now?

I'd like to think it's been because of hard work, learning from my mistakes, building and maintaining positive relationships, and always trying to be better today than I was yesterday.

What are your career goals?

My career goals include continuing to have fun doing what I love, serving as a chief pilot and a mentor, and continuing to teach and promote crew resource management (CRM) and safety throughout the industry in all I say and do.

What advice would you give someone pursuing your career path?

Study, practice, read, trust but verify, never stop learning, foster strong relationships and

networks, keep your character and reputation clean, help others ... and treat your mechanics, teammates, coworkers, customers, superiors, subordinates, and all others with respect.

Who inspires you?

One deserves special mention, Randy Mains. Randy is probably one of the premier voices for helicopter CRM and air medical resource management in the United States, and the

impact he's had on helicopter and air medical crews throughout the industry is immeasurable.

What still excites you about helicopters?

Going to work every day and flying these amazing machines. Seeing others succeed and grow professionally. Performing complicated tasks and operating well in challenging environments.

What do you think are the biggest threats to the helicopter industry?

One of the biggest threats is pressure from organizations or customers that tempt operators to compromise on safety, operating practices, or training ... to keep profits high. Lack of strong CRM programs and policies, using one pilot and one engine in operations where there probably should be two of both, and using old methods to train and employ new technology and procedures are other threats.

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

I wake up each day excited to go to work, my students become safe and effective pilots, my crew members are happy to fly with me, my customers ask for me by name ... and I know I'm truly happy doing what I'm doing. 🌀



*First You Study,
Then You Practice*



Staying Alive.

Learning to Survive a Helicopter Ditching

A photo essay by Mark Bennett

Ditching a helicopter in water isn't an ideal way to end a flight, but as with everything flight related, training for such an eventuality improves your ability to, if not walk, at least dog-paddle away as safely as possible.

Depending on the environment, flight regime, equipment, skill, and luck, a water landing might mirror a ground landing and result in the aircraft resting comfortably upright on floats in placid water. Then again, elements of the environment, regime, equipage, skill, or luck might fail and you could find yourself in an inverted aircraft sinking in dark, stormy seas. Your fate might then rest entirely in your own hands—a destiny much more in your control if you've trained for that possibility beforehand.



I've recently flown several missions over the Gulf of Mexico. Even though I was wearing a life jacket and the aircraft had floats, when you fly over miles and miles of water, you do wonder how you would fare in a ditching incident.

With those experiences in mind, I audited "Aviation Survival and Egress Training with Emergency Breathing Devices," a course teaching the skills needed to survive a helicopter ditching. The class, provided by Survival Systems USA of Groton, Connecticut, as part of HAI's professional education program at HAI HELI-EXPO 2020, was a packed day that included both classroom lecture and in-pool practice.

Classroom Learning

For the lecture, held in a meeting room at the Anaheim Convention Center, videos were shown, procedures were explained, notes were taken, and a test was given. Unlike many classes I've attended, the students were clustered toward the front of the room—not the usual hanging around the back rows, half listening, half checking Facebook or sports scores. I guess when you're training to save your life, the Internet can wait.

One thing you realize when you begin egress training: there's a lot of medical information involved, born of the interrelated physics of air pressure and water pressure and your body's responses to each. And frankly, it's all bad news.

How's your knowledge of arterial gas embolisms? They're the result of air in your lungs bursting out of tiny alveoli, where that air normally exchanges its oxygen for carbon dioxide. (Blame the ruptures on the interrelated physics.) If the alveoli are ruptured during your time escaping an underwater emergency, bubbles of air can enter your bloodstream and move on to block blood flow in the brain or lungs. Neither result is good and, by the way, the two can occur simultaneously.

Ever heard of pneumothorax? That's when those bubbles escape into the space around the outside of the lungs. Air that collects inside your chest but outside your lungs can form large bubbles that compress the lungs and, thus, reduce the volume of air they can contain. Mediastinal emphysema is a pocket of air, again from ruptured alveoli, that forms adjacent to the heart, reducing its ability to pump.

At this point, you'll have covered four medical conditions related to underwater egress that can range from painful to debilitating to fatal.

How do you avoid those conditions? The very abbreviated answer is to exhale as you rise through the water. By allowing breath to escape your lungs during your ascent, you prevent overpressurizing the lungs and damaging the alveoli. But first, you've got to get out of the aircraft.

Thus far, you've experienced no more than a chilly meeting room and some hot coffee. Now, it's time to really learn how to survive an emergency egress—so, grab your swimsuit and your enthusiasm for introducing water into your sinuses, and head to the pool.

Opposite: Mike Mulford of Survival Systems USA delivers the classroom portion of the emergency egress training at HAI HELI-EXPO 2020 in Anaheim, California.

Right: In the pool, students cluster around the training devices, known as "chairs," for the practical exercises.



NO LIFEGUARD

Preparing to Ditch

In addition to techniques for escaping a fallen aircraft, some of the training is about what you should do before the aircraft and the water meet. One key tip is to memorize a few details about the aircraft interior: potential handholds, doors, kick-out window exits, and any other useful features that can help you orient yourself. While submerged in roiling water. In the dark. In an aircraft gone topsy-turvy.

Identifying the exits is just the first step. It's also important to understand how they relate to other features, as you may need to use physical cues such as the number of seats between you and the exit to find it in a dark or inverted aircraft.

Another tip: if your aircraft is headed for the drink (pond, lake, ocean), cinch yourself tightly into your seat—as tightly as you can—and assume a crash position. You've seen the illustrations on the safety card on airliners, right? If your restraint is a single lap belt, those illustrations are good. If you're belted with one or more shoulder harnesses, reach up, cross your arms as you grab the harness on each side of your neck, and tuck your chin into the resulting "V" of your crossed arms.

There are several modifications of crash positions based on the aircraft and the harness system you're in, and plenty of other bits of wisdom and advice dispensed during class, so I suggest you take this course from Survival Systems USA, or a similar course, to learn more. For now, though, let's take these two pieces of advice—know the aircraft and assume a crash position—and head to the pool.

Aircraft Meets Water

Finally, now comes the water-in-your-sinuses part.

The in-pool training includes becoming familiar with the sensation of being inverted in water, where, indeed, that water will flood your sinuses. It's an uncomfortable feeling, and when you surface you'll expel the water, but it's important to experience the non-life-threatening nature of that discomfort so you won't be distracted by it when your attention will be better focused elsewhere.

You'll gain that experience as you hang upside down from the pool's edge and, subsequently, while belted into a cage-like training device known as a "chair," with and without an emergency breathing device (EBD). The chair is constructed of aluminum tubing as a rough simulacrum of a helicopter—very rough—providing within its skeletal frame merely a seat with a harness



ON DUTY



Opposite: When someone's inverted in the training device known as a "chair," the above-water visual humorously resembles feet sticking out of an upside-down Flintstones cartoon car. Under the surface, however, the serious action is taking place.

Above: Members of the Huntington Beach (California) Police Department (HBPD) practice using an emergency breathing device.

Right: Once acquainted with the breathing device, the HBPD officers practice using it not just underwater but also inverted, surfacing afterward for a critique of their performance.





Above: A student assumes a crash position prior to being inverted in the pool, where his performance in extricating himself from the chair will be evaluated by the instructor, seen from behind.

Opposite, top: Serious training doesn't have to be devoid of fun, as evidenced here by a student who, after being inverted, surfaces once the instructor is satisfied with his performance.

Opposite, bottom: Survival Systems USA convened class in the indoor pool at the Hilton Hotel adjacent to the Anaheim Convention Center.

and window frames to which a clear acrylic panel can be loosely affixed on the left or right.

Unlike real-life conditions, the water in the well-lighted pool facility is warm and the bottom barely four feet below the surface. But despite being in a hotel pool with no helicopter in sight, you'll learn the procedures you'll need to know in a real ditching.

In all scenarios, one key piece of advice is to take in as many deep breaths as you can just before you become submerged. In our anxiety and panic, we might tighten up and forget that we're going to need all the breath we can hold, so get it while the getting is good.

During the in-pool training, you'll be dunked, flipped, get water in your sinuses, and sometimes all three during one exercise. You'll practice using an EBD. Sometimes you'll do all of the above while wearing opaque goggles to mimic an egress in the dark of night or in deep waters.

Part of the training is simply experiencing, understanding, and enduring these conditions so you'll be less rattled when you experience them during an actual ditching. Stay calm, the instructors advise. Being agitated can lead to doing the wrong things, or the right things in the wrong order. The more time and energy you waste, the less oxygen you have to make your escape.

Over and over you go, literally and figuratively, from both poolside and in the chair. In each exercise, an instructor monitors your actions, which, at times, means your intentional inaction. You see, immediately post-impact the best advice generally is to, believe it or not, allow any tumbling of the aircraft and rushing of water to settle down before releasing your harness and making your escape. Releasing too soon exposes you to more disorienting tumbling and rushing.

Despite the discomfort, degree of concentration, critiques, and serious discussions, there's a lot of smiling and chatting during the training, though I do discern a tinge of nervousness, and rightly so—the students are practicing to save their lives. Plus, they're aware of perhaps oversharing with their fellow students (think clearing those sinuses after surfacing).

The instructors wrap up the class with a question-and-answer session to ensure that participants retained the lessons and to clarify any details and decisions covered in the course. In the interest of safety, what with breathing compressed air and the other discomforts of the training, the students aren't released until they've been monitored for any symptoms of injury or illness. Once back home, they'll receive in the mail a certificate of completion or, if needed, a detailed letter of compliance.

All in all, a valuable, if not entirely pleasant, way to spend the day.



Lifesaving Recap

There's so much more to surviving a water landing than I've covered in this article, but if you can at least keep the following points in mind, you'll have improved your chances of surviving this *other* kind of IMC—inadvertent marine conditions:

- ~ Know the inside of the aircraft and how to get out
- ~ Assume the best crash position possible
- ~ Take a deep breath
- ~ Stay calm
- ~ Stay oriented
- ~ When the time is right, make your escape.

Even if neither your company policy nor federal regulation requires it, if a water ditching is a risk where you fly, training for that possibility is a great idea. **R**



PPE in These Unprecedented Times

During a global pandemic, personal protective equipment is hard to find—and still critical.

WHAT A DIFFERENCE A MONTH MAKES. Not long ago, many of us in my neck of the woods were counting the days until spring break, ready to cast away winter in favor of the great outdoors and warming temperatures. But then, on

March 11, COVID-19 was declared a pandemic by the World Health Organization, signaling a global health crisis and putting a clamp on both the present and the immediate future.

With so many people remaining at home, the crisis has had some obvious effects on the aviation industry, including reduced operations. But there's another, perhaps less-recognized concern.

Most of ROTOR's readers know I'm an active A&P

mechanic. Like many in our profession, I try to wear appropriate personal protective equipment (PPE) when I'm working on an aircraft. That includes a stash of Band-Aids and latex gloves.

Recently, I went to my favorite local mechanic's store to buy a box of latex gloves. I like the 7 mil variety in XL. They're not so thick that I can't feel a cotter pin or handle a small bolt, and they're durable enough to avoid tearing before I get the job done.

When I got to the aisle in the store where my favorite gloves are normally stocked, guess what? That's right, no gloves. In their place was a sign saying the store had donated all their latex gloves to the local hospital. Indeed, not a store in my area had mechanic-grade latex gloves. So, I did what we all do these days—I went on Amazon to order some, only to find there were none to be had in the grade I wanted for anyone but government agencies or health-care workers.

This shortage presents a problem because practically all the industrial world uses PPE daily, including mechanics/engineers of all disciplines, painters, agriculture

workers, factory workers, exterminators, restaurant workers, janitors, and so on. All these segments of our economy may lack access to proper PPE for the coming months as everything is routed to the health-care industry.


While many people around the world are working remotely, aircraft must be fixed up close and personal (even Captain Kirk had to send Scotty to fix things sometimes). You might even have to have a fellow mechanic help with a task, putting you in close contact with someone while we're all trying to follow social-distancing guidelines. A mask and gloves, if available, can help protect you and your comrades in these circumstances.

If you're fortunate enough to still have PPE available, be sure to take care of it to get the absolute most out of it before you're forced to discard it. Nonprotective equipment, too, requires extra attention during the pandemic.

Shared tools should be wiped down and disinfected before and after every use. The cockpit is a particularly hostile environment, as many of its surfaces are touched repeatedly by pilots and crew members. Flight controls, seats, restraint systems, avionics (especially touch screens), doors, handles, etc. should all be disinfected before and after each use. Don't forget your work stands, ladders, and hangar door handles. Yes, it's that bad.

Many locations, such as where my son works as a professional aircraft mechanic, are taking measures to mitigate risk that include performing body-temperature checks prior to permitting people to occupy group settings. As of this writing, it was still unclear whether temperature checks were an effective tool for determining one's potential for spreading COVID-19, as many reports note that a person can be a carrier of the virus while exhibiting no symptoms.

Working safely in our industry is always important, but in these unprecedented times, we need to take extra precautions to operate as safely as we can. That means being as sterile as conditions will allow. And always keep Band-Aids on hand ... as long as you can get them. If you ain't bleedin', you ain't mechanicin'!

Fugere tutum! 



Mike Sagely of the Los Angeles County (California) Fire Department demonstrates the new normal of PPE for pilots.

Unplanned VFR Flight into IMC: Stop the Insanity

What's your IIMC battle plan?

IT'S A QUIET SUNDAY MORNING on Jan. 26, 2020. The HAI HELI-EXPO® flight operations teams located at Fullerton Municipal Airport (KFUL) and the Anaheim Convention Center patiently wait for the morning fog to lift to allow the second of two fly-in days to resume.

Yesterday's 24 aircraft and their flight crews arrived safely. Once today's weather clears, the remaining 24 will do the same. A successful start to another HAI HELI-EXPO.

The HAI team breathes a sigh of relief, but celebrations are respectfully muted. Only 50 miles north of the convention center, a fellow helicopter pilot and his eight passengers are reported down. The news is grim—no survivors.

Since that fatal flight, we've learned the helicopter was operating under a special VFR clearance, causing news outlets and industry representatives to suggest that unfriendly meteorological conditions (UMC) could have been a factor in the accident. (For more on UMC and the tools aviators can use to address it, see the [March/April 2020 issue of FAA Safety Briefing](#).) As in all active investigations, HAI withholds speculation and instead looks forward to the NTSB's final accident report and proposed recommendations to enhance helicopter safety.

Regardless of what's ultimately revealed about the Calabasas tragedy, however, there's reason for many to scratch their heads about certain accidents. VFR flight into marginal weather conditions, in particular, remains one of the most common causes of fatal accidents in the commercial helicopter industry.

Many argue that, in response, bold changes must come on the regulatory side. Others see it quite


differently. Almost all, however, agree that something must be done to solve the problem.

That pilots die each year from inadvertent entry into instrument meteorological conditions (IIMC) isn't news, and the tips listed on p. 68 for combating IIMC are routinely recommended. But we mustn't stop fighting.

**If you don't take action
to avoid or survive your
unplanned entry into IMC, then
who or what
will save you?**

"If not now, then when? If not us, then who?" FAA Administrator Steve Dickson said at HAI's Annual Membership Breakfast on Jan. 27 as he asked HAI members to join him in improving helicopter safety. And for my pilot readers, that's certainly true when it comes to protecting yourself from the dangers of IIMC. If you don't take action to avoid or survive your unplanned entry into IMC, then who or what will save you?

On the next page, we've provided you with an IIMC battle plan and the steps to execute it. What would you add? (See p. 16 for a look at how your industry peers say they deal with IIMC.)

These tips are provided to get us all thinking more actively about how we can avoid or survive unplanned entry into IMC. Statistics show that if we fail to prepare for battle against IIMC before all VFR flights, our chances of survival are severely diminished. 

IIMC BATTLE PLAN *on next page*

IIMC BATTLE PLAN

Prepare for IIMC

- Get Rated.** Take the first step to surviving IIMC: get a rotorcraft instrument rating and maintain IFR flight proficiency in your type of aircraft.
- Practice IIMC Recovery.** Whether you're a VFR- or IFR-rated pilot, practice realistic transitions into simulated IMC as often as you can, even if it's only for a few minutes. If you can swing some hours in a Level D simulator, great. But don't be a simulator snob; aviation training devices or desktop programs are also effective—and less expensive—ways to accomplish this training.
- Fly IFR-Rated Aircraft.** Whenever possible, fly IFR-certified aircraft equipped with autopilot and stability augmentation systems. Know how to use these systems and how to transition to them in flight.

Before You Take Off

- Understand the Weather.** Complete a thorough weather assessment before every flight using every modern tool available. Make sure you understand the weather conditions throughout your route and their implications for safe flight.
- Know Your Route.** Before takeoff, obsessively plan your route of flight, and make every effort to avoid areas susceptible to changing environmental conditions.
- Create and Follow a Response Plan.** Always have a clear plan for when you WILL return, divert, or land if your flight-control inputs change in response to environmental conditions. These en route decision points must always be clearly announced, observed, and supported by management, air crews, and customers as NONNEGOTIABLE.
- Learn to Say No.** Delay or cancel flights when the weather is questionable or could deteriorate, or if you're just unsure you can continue the flight safely. Often, that gut feeling is trying to tell you something. Listen and conquer your desire to complete the flight at any cost. Professional pilots know when to say no.

During the Flight

- Stay in VMC.** Follow the FAA's guidelines on how to remain in visual meteorological conditions (VMC) during a flight (see [bit.ly/FAA-HFH](https://www.faa.gov/handbook/handbook-8083-21b), pages 11–24 through 11–26 for more information):
 - ▶ If the weather ahead appears questionable, slowly turn around BEFORE you're threatened by deteriorating visual cues. Proceed back to VMC or to the first safe landing area.
 - ▶ Don't proceed further when the terrain ahead isn't clearly discernible. It's called VFR for a reason.
 - ▶ Always have in mind a safe landing space (such as a large open area or airport) for every segment of the flight.
- Follow Expert Guidance.** If you do find yourself in the clouds, follow FAA guidance on how to respond to VFR flight into IMC. (A brief summary of these steps is included in this issue's "5 Dos and Don'ts," on p. 19.)
- Be Calm and Confident.** If you experience IIMC, remain calm and trust your instruments and your IFR/IIMC training. It will pay off.

Further Resources

The guidance available on dealing with IIMC is much too extensive to cover completely in this article. I strongly encourage all pilots to refer to the 2019 release of the FAA's Helicopter Flying Handbook, FAA-H-8083-21B. Chapter 11, pages 24–26, includes several updates that address how best to avoid and respond to VFR flight into IMC.

Additionally, the [US Helicopter Safety Team](https://www.usgst.org) has identified several helicopter safety enhancements focused on addressing the primary causes of fatal helicopter accidents, including IIMC. Visit www.usgst.org.

RECENT ACCIDENTS & INCIDENTS

THE ROTORCRAFT ACCIDENTS AND INCIDENTS LISTED BELOW OCCURRED between Jan. 1 and Mar. 31, 2020. The accident details shown below are preliminary information, subject to change, and may contain errors. All information was obtained through the official websites listed below, where you can learn more details about each event.

Australia – Australian Transport Safety Bureau (ATSB):

bit.ly/ATSBpub

Britain – Air Accident Investigation Branch (AAIB):

bit.ly/AAIBUK

Canada – Transportation Safety Board of Canada (TSBC):

<https://bit.ly/TSBofCanada>

New Zealand – Transport Accident Investigation Commission of New Zealand (TAIC):

bit.ly/NewZealandTAIC

United States – National Transportation Safety Board (NTSB):

bit.ly/NTSBrep

January 2020

Sud Aviation SE 3130 Alouette II

Mokelumne Hill, CA, USA
Jan. 4, 2020 | [NTSB WPR20CA059](#)
Injuries unknown | Flight type unknown
No description available.

Hughes OH-6A

Preston, GA, USA
Jan. 8, 2020 | [NTSB ERA20LA071](#)
1 injury, 0 fatalities | Aerial observation flight
Helicopter impacted terrain after loss of power.

Garlick UH-1H

Boydton, NSW, Australia
Jan. 9, 2020 | [ATSB AO-2020-003](#)
1 injury, 0 fatalities | Firefighting flight
Helicopter lost power for undetermined reasons and impacted water.

Robinson R66

Mechanicsburg, PA, USA
Jan. 9, 2020 | [NTSB ERA20FA074](#)
0 injuries, 2 fatalities | Personal flight
Helicopter impacted terrain during night flight for undetermined reasons.

Bell 407

Lautaro, Chile
Jan. 13, 2020 | [NTSB ENG20WA014](#)
0 injuries, 0 fatalities | Commercial flight
No description available.

Bell 206L-4

Lac Saint-Jean, QC, Canada
Jan. 22, 2020 | [TSBC A20Q0015](#)
1 injury, 0 fatalities | Search-and-rescue flight
Helicopter impacted frozen lake during search-and-rescue mission.

Bell 407

Minot, ND, USA
Jan. 22, 2020 | [NTSB CEN20LA068](#)
0 injuries, 0 fatalities | Air medical flight
Helicopter impacted helipad perimeter fence while landing.

Robinson R22

Charlotte, TX, USA
Jan. 24, 2020 | [NTSB CEN20LA066](#)
1 injury, 0 fatalities | Aerial mustering / personal flight
Helicopter hit power line during aerial mustering operation.

Sikorsky S-76

Calabasas, CA, USA
Jan. 26, 2020 | [NTSB DCA20MA059](#)
0 injuries, 9 fatalities | Air taxi flight
Helicopter impacted hilly terrain.

February 2020

Airbus AS350 B3

Bulga, NSW, Australia
Feb. 5, 2020 | [ATSB AO-2020-013](#)
0 injuries, 0 fatalities | Aerial work flight
Rescue hoist failed for undetermined reasons.

Bell 407

Laishevo, TA, Russia
Feb. 7, 2020 | [NTSB ANC20WA019](#)
2 injuries, 1 fatality | Flight type unknown
No description available.

Robinson R44

Marfa, TX, USA
Feb. 14, 2020 | [NTSB CEN20CA085](#)
0 injuries, 0 fatalities | Aerial mustering flight
Helicopter impacted ground after striking wire fence.

Schweizer 269C

Ormond Beach, FL, USA
Feb. 17, 2020 | [NTSB ERA20CA104](#)
0 injuries, 0 fatalities | General aviation flight
Helicopter's right skid impacted ground, and the aircraft rolled onto its right side.

Aérospatiale AS350

Tampa, FL, USA
Feb. 18, 2020 | [NTSB ERA20CA106](#)
0 injuries, 0 fatalities | General aviation flight
Helicopter departed taxiway after landing and came to rest in drainage ditch.

Bell OH-58A

Calexico, CA, USA
Feb. 18, 2020 | [NTSB WPR20CA092](#)
0 injuries, 0 fatalities | Agricultural flight
Helicopter lost lift for undetermined reasons.

Robinson R44

Talkeetna, AK, USA
Feb. 20, 2020 | [NTSB ANC20CA023](#)
Injuries unknown | Air taxi flight
No description available.

Innovator Mosquito Air

North Manchester, IN, USA
Feb. 23, 2020 | [NTSB CEN20FA098](#)
0 injuries, 1 fatality | Personal flight
Helicopter impacted terrain for unknown reasons.

Robinson R44

Astrakhan, Russia
Feb. 28, 2020 | [NTSB ANC20WA031](#)
0 injuries, 1 fatality | Flight type unknown
No description available.

March 2020

Bell 206

Clark, MO, USA
Mar. 4, 2020 | [NTSB CEN20LA113](#)
0 injuries, 0 fatalities | Air ambulance flight

Helicopter impacted terrain during forced landing after in-flight loss of engine power.

Eurocopter EC130

Kalapana, HI, USA
Mar. 5, 2020 | [NTSB ANC20LA028](#)
2 injuries, 0 fatalities | Sightseeing flight

Helicopter lost control, impacted terrain, and rolled over during precautionary landing.

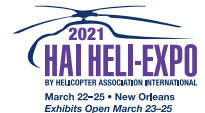
Bell 206

Konstantinovsky Cape, Russia
Mar. 23, 2020 | [NTSB ANC20WA035](#)
1 injury, 1 fatality | Flight type unknown
No description available.

Bell 206

Chicureo, Chile
Mar. 24, 2020 | [NTSB ERA20WA137](#)
0 injuries, 1 fatality | Flight type unknown
No description available.

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Untangling the East River Crash

A failure to “mitigate foreseeable risks” proves lethal.

AVIATION’S APPROACH TO RISK management has evolved into a two-pronged strategy:

- Try to identify every potential failure point and update your equipment, systems, and procedures to reduce or eliminate those hazards
- Devise strategies, preferably multilayered, for coping with whatever emergencies arise from the hazards that remain.

The results are safety features that have become so common that they’re taken for granted, from the redundancy of essential equipment to guards protecting flight-critical switches to company procedures limiting pilot discretion in marginal weather.

And the risk mitigation process is necessarily iterative: when previously

overlooked hazards or rare combinations of circumstances result in accidents or emergencies, the industry responds with a fresh round of analysis, ideally leading to further improvements.

Human nature and the high cost of equipment retrofits have made progress on some fronts very slow, but the long-term trend of aviation safety should arc toward the reduction of all risks not intrinsic to the act of flight itself.

The March 11, 2018, ditching of a Liberty Helicopters AS350 B2 in New York’s East River drew widespread attention for several reasons, from the sequence of events that brought down the ship to the peculiarly awful manner in which all five passengers lost their lives. The accident triggered

renewed scrutiny of the controversial practice of claiming exemption under 14 CFR 119.1(e)(4)(iii) to operate air tours under Part 91 without a letter of authorization through advertising them as photo flights, a practice that the National Transportation Safety Board (NTSB) for many years has urged the FAA to ban.

The incomplete inflation of the AS350 B2’s emergency floats prompted a fresh look at the rigging and maintenance of those systems. Most fundamental, though—and most damning—was the failure the NTSB called out as the first contributing factor in its finding of probable cause: the two operators’ “deficient safety management, which did not adequately mitigate foreseeable risks.”



The accident helicopter before the crash (passengers’ faces redacted). Note the configuration required for FlyNYON’s doors-off operation.

The Operation

NYONair offered low-altitude doors-off photo flights over New York landmarks under the brand name FlyNYON. As demand grew to exceed the company's capabilities, it contracted with sightseeing tour company Liberty Helicopters Inc. to conduct additional flights using Liberty's aircraft and pilots.

To open the field of view and allow the passengers to swing their legs outside the cabin, both right doors and the front left door were removed from the helicopter, and the sliding door on the left rear side was locked open. The arrangement accommodated five passengers, one in front and four in back.

To prevent passengers from falling out in flight, FlyNYON devised its own restraint system consisting of a commercial fall-protection harness of the type used by window washers or ironworkers and a tether made by a supplier of climbing gear.

The tether, fabricated from multiple loops of 11 mm webbing, was secured to a D-ring on the back of the harness and to an anchor point within the cabin. Locking carabiners with screw-type threaded sleeves to secure their gates were used to connect the tethers to the various anchor points; unlocking each carabiner required multiple turns of the sleeves.

To accommodate passengers of different sizes, the D-ring on the harness could be clipped to any one of the tether's loops. The remaining length of the tether was allowed to dangle free. A pouch containing a seat-belt-cutting tool was attached to one of the harness's upper shoulder straps.

The front-seat passenger's tether was fastened to a floor anchor located just behind that seat's right armrest. The rear-seat passengers' tethers were routed in a criss-cross fashion, with each outboard seat secured to the outboard anchor point on the opposite side of the aircraft and the inboard tethers likewise crossed over. Notably, the anchors to which the rear-seat passengers were tethered were designed by their manufacturer for lap-belt installation only.

Post-accident testing showed that unless the inboard passengers were to lean forward, they would obstruct the outboard passengers' access to their tethers. Additionally, outboard passengers' efforts to turn to reach their restraints would end up tightening the tethers enough to restrict their ability to reach the straps. Rapid evacuation thus would require a degree of coordination unlikely to be achieved without practice.

The passengers were required to fasten the helicopter's installed, FAA-approved occupant restraints over FlyNYON's harnesses during takeoff and landing. Once



The March 11, 2018, accident flight route.

authorized by the pilot, the two inboard rear-seat passengers were allowed to unbuckle those restraints and sit on the cabin floor with their legs outside, while the front and two outboard rear-seat passengers could loosen their lap belts and run their shoulder harnesses under their arms to pivot in their seats.

The Flight

The flight departed from New Jersey's Helo Kearny Heliport at about 6:50 pm and flew south to the Statue of Liberty, past other landmarks, and then northward along the East River. The helicopter climbed to 1,900 feet after the pilot received clearance from LaGuardia Airport's (KLGA) control tower to continue to the north end of Central Park at or below 2,000 feet.

Just after 7:06, the pilot heard an alert for low main-rotor rpm and saw the engine-oil and fuel-pressure warning lights illuminate. He immediately lowered collective and entered autorotation. Ruling out landing in Central Park because of the number of people on the ground, he turned toward the river. He found the fuel-flow control lever secure in its detent and turned the starter, but the engine didn't respond.

At about 600 feet above the river, the pilot reached down for the fuel-shutoff lever (FSOL) to prepare for ditching and found it already turned off. He "slammed it down" and tried the starter again, but though the engine temperature immediately began to rise, the engine didn't have time to catch.

At about 100 feet above the water, the pilot pulled the handle to deploy the emergency floats. He recalled hearing a "pop" sound, seeing parts of both front floats, and noticing additional drag; onboard recording equipment

At least one manufacturer announced at HAI HELI-EXPO 2020 that it's close to approval for installation of a protective cage for floor-mounted controls in missions where the public might be seated near those controls. (The helicopter shown is not the accident aircraft.)



captured “a ‘click’ sound followed by noise associated with float deployment.”

After a brief cyclic flare, the helicopter touched down in a somewhat shallow attitude into the East River and immediately began to roll right. Within 11 seconds, it had rolled inverted with the cabin completely submerged.

The pilot was unable to free the front-seat passenger and was himself under water before he could release his four-point harness, but he managed to escape. Unable to extricate themselves from their harnesses, all five passengers drowned. At least two never removed the cutters from their pouches. (One harness and part of another weren't recovered, presumably having been lost during extrication efforts by first responders, and one cutter was found loose in the cabin.)

The pilot was rescued by a tugboat crew; divers reached the scene and began recovery efforts about 18 minutes after touchdown.

What Went Wrong

Footage captured by a camera mounted inside the cabin showed that several times during the six minutes before the power loss, the front-seat passenger leaned backward over the center console with the tail of his tether hanging down by the helicopter's floor-mounted controls. At 7:06:08, as he pulled himself upright, the tail of the tether pulled taut and then popped loose; the engine noise began to diminish two seconds later. The pilot told

investigators that the tether had gotten snagged on the FSOL and pulled it up, breaking the safety wire intended to prevent unintended activation.

Photographs of the submerged wreckage showed the left skid's floats more fully inflated than those on the right. Subsequent examination found that only the left air reservoir had discharged, and the crossover hose included for that purpose hadn't fully balanced inflation pressures on both sides. (Follow-up testing showed that even with balanced pressures, one reservoir's supply didn't provide enough buoyancy to keep the helicopter upright on its floats.)


The right reservoir's failure to discharge was traced to a kink in

its activation cable. The manufacturer's instructions for continued airworthiness only require checking the rigging every 18 months. The 36-month inspection includes a full inflation test; it had last been completed on the helicopter 15 months earlier.

The Takeaway

At first glance, this accident sequence might seem like a constellation of individually unlikely events: an accidental fuel shutoff that initially went unnoticed in the darkness; an autorotation from an altitude too low to allow a restart after fuel flow was restored; and a malfunction of the emergency floats that left the passengers without time to escape their harnesses.

But a closer look confirms the NTSB's view that this tragedy was entirely foreseeable. On a low-altitude flight over an urban area offering few emergency landing sites, preventing inadvertent passenger interference with the floor-mounted engine controls should have been an urgent priority, and any passenger-carrying operation should anticipate that the cabin might have to be evacuated quickly.

Overlooking or ignoring those concerns created vulnerability to a single-point failure almost guaranteed to cascade out of control in the abbreviated time available to respond—particularly in an operation serving “off-the-street” customers with little training regarding the flight's risks and how to mitigate them. 

HAI Scholarship Recipient Sarah-Grace Blanton

Funds give Marine Corps veteran a sense of security and hope.

WITH HER AERONAUTICAL engineer father as a role model, Sarah-Grace Blanton knew since childhood that she wanted to work in aviation. But it wasn't until she joined the US Marine Corps that the 2020 winner of HAI's Commercial Helicopter Pilot Rating Scholarship was certain she wanted to be a pilot. While deployed overseas, the Kansas native met several pilots, an experience that ultimately led her to pick helicopters as her aircraft of choice.

After leaving the military, however, Sarah-Grace encountered several roadblocks when she tried to use the GI Bill to obtain her pilot's license and instrument rating. For one, she had to pay out of pocket for her license before receiving any GI benefits. Then, when she tried to use the funding for her instrument rating, she didn't receive her first payment for more than eight months. She found help only after writing to Congress to request assistance but even then was reimbursed for only 60% of her training costs.

She also had problems using her GI Bill benefits at the school where she originally enrolled in California. After she transferred to Precision Aviation Training in Newberg, Oregon, the process became much easier.

She says her HAI scholarship was essential to continuing her pilot studies. "If I hadn't won the scholarship, it would've been very hard for me to move to a different state and begin flight training somewhere new," says Sarah-Grace, who obtained her commercial rating in March.

The HAI scholarship has given her a sense of security and hope, she says. The funding, she explains, became a "safety blanket" that allowed her to concentrate on obtaining her commercial rating without the stress of accumulating more debt.



Sarah-Grace learned about HAI's scholarship program from her mentor Dan Megna, a photographer for *Vertical* magazine whom she met at her former flight school. Megna still mentors Sarah-Grace, helping her network with other professionals and tracking her progress toward achieving her ultimate goal of becoming an air interdiction agent for US Customs and Border Protection. She also aspires to becoming a certificated flight instructor.


In addition to Megna, Sarah-Grace cites as role models her Precision instructors Henry Sexsmith and Casey Campbell. "They're always available to help me and give honest feedback," she says. "They've taught me that hard work and not being afraid to ask questions will allow me to grow, as well as how to be a safe and efficient commercial pilot."

Like so many in the rotorcraft industry, Sarah-Grace has found her training stymied by the COVID-19 pandemic. Although she completed her commercial checkride before a stay-at-home order took effect in Oregon, under the GI Bill she won't be able to start CFI training and have her tuition

paid until the order is lifted. But Sarah-Grace, who's studying under an aviation science degree program developed by Klamath Community College in Klamath Falls, Oregon, in partnership with Precision Aviation, thinks things will work out.

Sarah-Grace frequently invokes her instructors' lessons, especially the concept of a mental safety checklist, which she employs before every flight. "Every time I get ready for a flight, I ask myself, 'Did I get enough sleep? How am I feeling? How's my preflight?' When I get in the cockpit, I think, 'Fly with a purpose,' because it keeps me focused so there's no room for error."

Her advice to other students is never give up. "Don't be afraid of failure and bad flights," she says. "Pick yourself back up, brush yourself off, and keep pushing toward your goal."

She appreciates what the HAI scholarship has afforded her and would eagerly return the favor if she could. "If money weren't an issue, I'd contribute to scholarships and anything that allows a pilot to build their passion for aviation," she says. "Just how it was done for me." 



Matthew Zuccaro

Past HAI President and CEO

FORMER HAI PRESIDENT AND CEO MATTHEW ZUCCARO died Feb. 25, 2020, at age 70, just weeks after retiring from the association.

“Matt was one of a kind in our industry,” says current HAI President and CEO James A. Viola. “Throughout his career, he made safe helicopter operations his priority, and we are a better, stronger, safer industry today because of his efforts on behalf of rotorcraft.”

An HAI member since the early 1980s, Matt was elected to HAI’s Board of Directors in 1987 and served as chairman in 1991. He became president of HAI in 2005 and retired in January 2020. During HAI HELI-EXPO 2020 in Anaheim that month, Matt was honored with the FAA’s Wright Brothers Master Pilot Award, recognizing his 50 years of professionalism and skill as a pilot.

During Matt’s time leading HAI, the association was a forceful advocate for its members on regulatory and legislative issues. When topics such as veterans’ flight-training benefits, air traffic control privatization, user fees, and the safe integration of drones into the airspace were debated, Matt and his team were there—often as the only ones representing the helicopter industry.

Among his many accomplishments, Matt may be best remembered for a 2013 ROTOR column encouraging pilots to “land the damn helicopter” in situations in which, by proceeding, they would endanger themselves and their passengers. From that column, HAI’s Land & LIVE program was born, saving countless lives around the world—a fitting legacy for a man who was passionate about safety in the industry he loved so much.

For more information on Matt’s life and career, please see [the Winter 2020 issue of ROTOR](#).



Michael A. Fahey

Former Columbia Helicopters President and CEO

RETIRED COLUMBIA HELICOPTERS PRESIDENT AND CEO MICHAEL A. FAHEY died Apr. 7, 2020, at age 76. Mike worked for the heavy-lift helicopter company for 39 years.

Mike grew up in Portland, Oregon, and graduated from Portland State University in 1966 with a bachelor’s degree in accounting; he became a CPA in 1968. From 1966 to 1975, Mike was employed by Arthur Young & Co., where one of his assignments was an auditing project with Columbia Helicopters, a small but growing firm with a hangar at Portland’s Swan Island Heliport. There, he met Columbia founder and industry pioneer [Wes Lematta](#), with whom he worked closely for many years. He joined Columbia in 1975 as the company’s director of finance and was later named VP of finance.

Mike was also involved in business and program development at Columbia, including acquisitions and contract negotiations. During his tenure with the company, he played a significant role in many initiatives, including purchasing Columbia’s first Boeing Model 234 Chinook. In 2006, Mike negotiated the purchase of the type and production certificates for the Boeing Model 234 Chinook and Vertol 107-II helicopters.

In January 1998, Mike assumed the duties of executive vice president in addition to those of VP of finance. In April 1999, he became company president, and in January 2012, CEO. Additionally, Mike served on Columbia’s board of directors. He retired in December 2014.

Elling B. Halvorson

Founder, Chairman, Papillon Grand Canyon Helicopters



ELLING B. HALVORSON, FOUNDER AND CHAIRMAN of the board of Papillon Grand Canyon Helicopters in Boulder City, Nevada, died Apr. 16, 2020, at age 88. With the opening of his helicopter tour company in 1965, he is credited with creating the site-specific helicopter tourism sector.

Before starting Papillon, Elling owned a construction company that specialized in geographically remote, difficult projects. In 1960, on one particularly challenging project for AT&T in the Sierra Nevada Mountains, Elling bought his first helicopter, a Bell 47G-3B-1, to ferry workers and light-construction materials up and down the mountain.

The project that spawned Papillon and its focus on providing aerial sightseeing tours took place in the Grand Canyon, where Elling and his team used helicopters to help build a water pipeline. Flying workers and clients to job sites in the beautiful landmark led to requests for scenic helicopter flights outside of working hours. To satisfy this new demand, Elling established Papillon, the first aerial sightseeing company to fly the Grand Canyon.

Sensitive to the concerns of Grand Canyon visitors, Elling challenged the top helicopter manufacturers of the time to create quieter aircraft. He developed the Whisper Jet helicopter, for which he designed a muffler that used passive noise cancellation technology.

Elling was a strong advocate of giving back to the helicopter industry. A longtime member of HAI, Elling served two terms as chairman of the association's Board of Directors. In 1986, he cofounded the Tour Operators Program of Safety, a group bringing together air tour operators to develop operating standards and best practices for safety that exceeded regulatory requirements. He was inducted into the Vertical Flight Hall of Fame in 2016.

More information on Elling's career can be found in this [2011 ROTOR interview](#).

William H. "Bill" Wells Jr.

President and Owner, Cascade Helicopters



WILLIAM H. "BILL" WELLS JR., PRESIDENT AND OWNER of Cascade Helicopters in Cashmere, Washington, died Apr. 15, 2020, at age 86.

Bill was born on Feb. 25, 1934, in Seattle, Washington. He joined the military in 1953 as an Alaska Communications System specialist in the US Army Signal Corps. In 1958, he and his family moved to Yakima, Washington, where Bill attended Perry Technical Institute, receiving his A&P license in 1960. The following year, he earned his FAA certificate as a private pilot, fixed wing, and in 1962 joined Cascade Helicopters as a pilot trainee and mechanic. He obtained his FAA commercial rotorcraft license in 1963 and his CFI rating in 1964.

Over the course of his career as a pilot, Bill logged more than 11,500 accident-free hours in various missions, including agricultural spraying, search and rescue, fire suppression, government contracting, and transmission-line repair. He once said the rescues he was able to perform were "what being a helicopter pilot was all about."

Bill was a dedicated HAI member, serving as the association's chairman from Jul. 1, 1994, to Jun. 30, 1995, after having served on the HAI Board of Directors as assistant treasurer and vice chairman. He also sat on the association's Government Safety Committee (as chairman) and Government Contracting Committee.

In 2001, Bill was honored for his outstanding achievement in the industry with HAI's Salute to Excellence Pilot of the Year Award.

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LAST LOOK

By Mark Bennett

Rotak Helicopter Services
Kaman K-1200 K-Max



ROTAK HELICOPTER SERVICES, FOUNDED IN 2016 TO SERVE the telecommunications sector in Alaska, specializes in precision external-load ops. The company has since expanded to projects nationwide, including helping rebuild Puerto Rico's infrastructure after Hurricane Maria.

Starting with a Eurocopter AS350 B2, the Rotak fleet now includes a Robinson R44 and R22, one MD Helicopters MD 500D, and three Kaman K-Max helicopters, two of which are from Kaman's reopened production line.

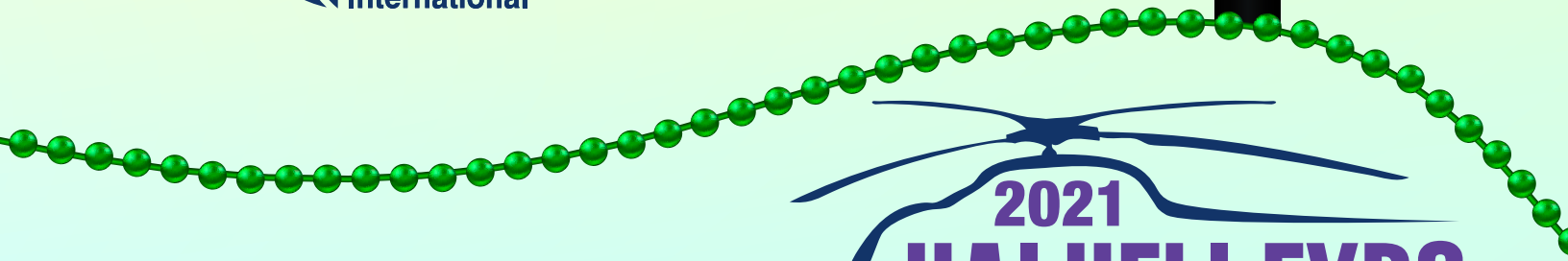
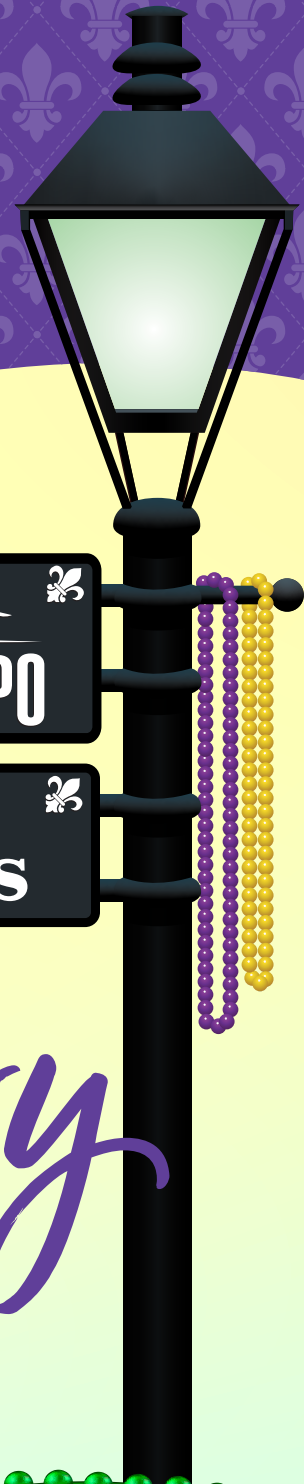
In this image, a newer Rotak K-Max places one of 80-plus fan units, some weighing over 5,000 lb., on the roof of the Las Vegas (Nevada) Convention Center expansion. This project turned out to be the largest number of "picks" ever conducted along the Las Vegas Strip.

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