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About the cover: Flying in the Grand Canyon features both beautiful views and difficult conditions, especially for the helitack team at Grand Canyon National Park. With operations ranging from firefighting to search and rescue to utility work, it’s a tough but rewarding job. The AS350 pictured here is mainly used for fire season support during the dry summer months.

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ROTOR® magazine invites its readers to submit articles about the international helicopter community for publication. The publisher reserves the right of final approval based on subject matter and space availability. Letters to the editor are also welcome. For information about submissions, please contact Gina Kvitkovich, director of publications and media, at 703-683-4646 or rotor@rotor.org.
Giving Thanks

Through my work on the HAI Board of Directors and several FAA working groups, I have recently gotten to know colleagues from different areas of the helicopter industry — people whom I’m not usually exposed to in my work in public safety aviation. I’ve been impressed with the passion they show for their respective areas of concern within the industry.

As a line pilot for a public safety agency, I never gave much thought to the engineering genius that goes into the modern helicopter. Through the FAA working groups, I’ve met some of the brilliant engineers who design these amazing aircraft. I’m constantly in awe of their analytic ability and the ease with which they solve complex problems.

I don’t have an engineering or manufacturing background; I’m a street cop who grew up working in retail. My dad was a CPA with no mechanical aptitude, a trait that was apparently inherited by me. So maybe I’m just easily impressed, but I don’t think so.

The passion these engineers have demonstrated for designing the safest aircraft and systems possible provides me with a new comfort level as a pilot. Through the FAA working groups, I’ve met some of the brilliant engineers who design these amazing aircraft. I’m constantly in awe of their analytic ability and the ease with which they solve complex problems.

Another benefit of participating in these working groups is validation that I work in the part of the helicopter industry in which my passion truly lies. I love to help others by using helicopters to catch bad guys. More specifically, I want to pilot the helicopter while we catch the bad guys.

When I’m not flying, my passion is developing and conducting training events for those involved in public safety aviation so they can complete each mission safely and successfully.

Like all of us, I feel I have the best helicopter job in the world. I’m not cut out to be a designer, engineer, maintainer, or even a crew member in any field other than public safety aviation.

This is my final message as chairman, so I’d like to share some parting thoughts. If I had to sum up the last 30 years, in one word, it would be “thankful.”

I’m thankful for the airborne law enforcement pioneers who made a career in public safety aviation possible. Mohammad Ali is credited with saying, “Service to others is the rent you pay for your room here on earth.” To have a job where I can serve others — while fulfilling my dream of being a helicopter pilot — is a privilege and an honor.

I’m thankful for the Houston Police Department, which has supported my years of association work and my chairmanship of the HAI Board of Directors. I’m also thankful for the members and staff of the Airborne Public Safety Association and its Board of Directors, who have supported and encouraged my participation on the HAI board. My colleagues in public safety have been with me every step of the way.

I’m thankful for the opportunities that HAI has provided me to make a difference and give back to this amazing industry we are all lucky enough to be a part of. My sincerest thanks to my fellow HAI board members, both past and present, for your guidance and support, and to the HAI staff, who work so hard to promote this industry.

HAI offers us a place to come together as a community, whether that’s to promote safety, discuss technical developments, or just tell a great story or two. And in coming together, we learn a bit about each other.

Most importantly, I’m thankful for my wife and family, whose patience, support, and sacrifice have allowed me to follow my dreams.

Finally, I want to thank all my fellow rotorheads. We work in a unique industry, one that is full of amazing people with a vast array of skills. While I love helicopters, they are, after all, just machines. The positive contributions helicopters provide to society are the result of your efforts.

“Give More; Expect Less,”

Dan Schwarzbach is the current chairman of the HAI Board of Directors, a senior police officer for the Houston Police Department, and the executive director of the Airborne Public Safety Association.
Participants of the 2018 HFI Scholarship Fundraising Golf Tournament kicked off HAI HELI-EXPO 2018 with a day to remember — all while supporting a worthwhile cause. All money raised went directly to the HFI Scholarship Fund.

A special thank-you goes to our sponsors and the companies that donated prizes for the after-play drawings. Without you and your willingness to support our industry, this tournament would not have been possible.

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President’s Message

Vietnam Pilots and Crew Members Come Home

Every once in a while, you have a perfect day. Not often, but when you do, it is something to behold.

I was lucky enough to have such a day recently. It was at the dedication of a memorial at Arlington National Cemetery in Washington, D.C. The monument was placed to recognize the Americans who lost their lives while serving as helicopter pilots and crew members in Vietnam.

Trying to place a memorial in a government facility such as Arlington National Cemetery can be a frustrating, time-consuming, and constantly changing process. This effort was all of these things and then some.

The good news is that the proponents of the monument, the Vietnam Helicopter Pilots Association, sustained the effort with their passion and commitment to ensure that their brothers-in-arms had a place to come home to. Their leadership and members provided the effort, sweat, and tears — and funds — that was needed to make it happen.

And happen it did, on a sunny afternoon in April 2018, within the sacred grounds of Arlington National Cemetery. It is hard for many to truly appreciate such an event unless they were involved in the events commemorated by the memorial. This is true for the Vietnam experience as well as other past, present, and even future life-changing experiences involving armed conflict.

As I looked around on that afternoon, it was apparent that those in attendance had made the journey from near and far, some needing the assistance of a cane, wheelchair, or loved one. All were filled with emotion, expectations, and personal thoughts.

Some were hoping to meet up with long-lost friends, some were seeking a sense of closure. Others looked forward to finally coming home. Many just wanted their service to be acknowledged. No matter what their individual reason was for coming there, the lifelong bond between the veterans could only be understood among themselves.

As I reflect on my own experience in Vietnam and the conversations over the years that I have had with other veterans, I choose not to focus on the horrors we witnessed, the politics of the situation, nor the lifelong baggage we carry. Instead I want to reflect on the subsequent good that comes from such events.

We cannot help but remember the identification of Vietnam as the “helicopter” war. Many consider that war to be the period when the helicopter came into its own as a military tool. I like to think that the thousands of highly experienced pilots and crew members who returned from Vietnam helped the civilian helicopter industry reach its next level of advancement and maturity by applying the abilities of the helicopter realized in war to serve the greater good of society.

We should never forget the many lives saved by our industry or the multitude of goods and services we deliver that enhance the lives of our neighbors every day. Of equal importance are the many skills and experiences gained by those of us who were trained in the military to fly and maintain these aircraft. Those skills helped us transition back to civilian life, giving us the ability to provide for ourselves and our families while serving the needs of our fellow men and women.

Although the dedication of this memorial was focused on those who flew and crewed helicopters in Vietnam, we never want to forget all veterans and active-duty military, men and women alike, of allied nations who put themselves in harm’s way to keep us safe and able to enjoy the freedoms we have come to expect.

In closing, I would note that one of the most personally gratifying things I have witnessed over these many years is a cultural change that has occurred in our society. It seems that we can now separate the politics of war from the patriotism and sacrifice of those who fight them on our behalf. Rather than the discomfort or outright hostility that many experienced upon their return from Vietnam, veterans now hear a simple acknowledgement of “Thank you for your service.”

To the families, loved ones, and friends of all veterans, thank you for being there for us.

To those veterans who joined me at Arlington National Cemetery, I say to you all: Thank you for your service. Welcome home. Be at peace.

That’s my story and I am sticking to it. Let me know what you think at tailrotor@aol.com.

As always, fly safe — fly neighborly! R

Best Regards,

Matt Zucaro is president and CEO of HAI.
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Flight Hours: When Is Enough, Enough?

There are many variables that define the experienced pilot. Hours accumulated, certificates and ratings held, number of different aircraft flown, and traffic environments flown in are just a few of the characteristics that define experience. However, the one metric that frequently receives the most attention is total flight time.

To meet mandated certification and currency requirements, the FAA requires that all helicopter-certificated pilots document their flight hours down to the nearest 1/10 of an hour. We commonly use accumulated flight hours as a shorthand for the proficiency and safety of pilots. With double the number of hours, the 6,000-hour pilot is twice as good as his 3,000-hour colleague, right?

But total flight hours accumulated do not always serve as a great platform for making assumptions regarding safety. Accident reports are full of examples of high-time pilots who have demonstrated poor judgment or taken excessive risks.

Aviation industry stakeholders are forever trying to determine what strategies will serve the industry best in predicting safe and efficient operations. Past research indicates that total flight hours should not serve as the only measure used to differentiate novice pilots from their expert peers. Total flight hours can provide a general sense of what a pilot has experienced, but they are not an overall predictor of pilot success when it comes to safety.

It is fair to note that experience often enhances a pilot’s awareness of certain risk factors, thus leading to a higher chance that risk mitigation strategies are effectively and consistently applied. Also, experience serves to improve a pilot’s general skill set compared to pilots without such experience.

However, total flight hours can be a double-edged sword when trying to quantify levels of safety. Pilots with high levels of experience can get snared by complacency, causing them and their passengers to be more at risk compared to pilots with low experience who may not take safety for granted.

Let’s look at some qualities that are important to safe operations that have nothing to do with the number of hours logged in the cockpit. Problem-solving skills are one. Some pilots employ a progressive style, aimed at uncovering the root cause of an issue. In contrast, others jump to a conclusion or have a knee-jerk reaction about how to fix the problem, which often makes things worse.

How a pilot handles stressful situations also comes into play. Studies have shown that pilots, regardless of experience, are more likely to make better decisions when they are not pressured by time, urgency of mission, or other factors when trying to handle critical events. In other words, pilots are human.

In many scenarios, pilots must utilize all available resources to determine the possible solutions for resolving certain situations successfully. Crew resource management (CRM) skills and the ability to remain as calm as possible when faced with pressure-intense situations are key factors not always reinforced by the number of hours a pilot has accumulated. Receiving CRM and scenario-specific training are two ways pilots can improve these skills without logging time in their flight book.

The problem is, there is no single metric about the pilot that guarantees a safe flight. Number of hours in a model, unexpected weather, fatigue level, personal stressors — all of these can affect pilots’ performance negatively, even when they are high-time pilots.

Regardless of pilot experience, a formal risk-assessment tool serves as a good reminder that every flight has some level of risk associated with it. A properly utilized risk-assessment tool can be a tremendous asset if used with discipline. This is true whether a pilot has 50 or 5,000 hours in his or her logbook.

Regardless of experience or pilot certificates and ratings held, HAI’s Land & LIVE philosophy stresses the importance of a pilot landing the helicopter before the situation becomes an emergency. This concept may sound like common sense, but all too often we read of situations where the outcome could have been entirely different had the pilot elected to follow this simple concept.

Our jobs would be simpler if there was a pass-fail test for safety. Or if once pilots passed a certain number of hours, they would never, ever have an accident. But until that happens, the safest pilots will be those who approach each flight as though it could be their last.

Steve Sparks is HAI’s director of safety and serves as coordinator for the US Helicopter Safety Team (USHST). He is a dual-rated pilot and has a doctorate in applied aviation and space education. Steve can be reached at steve.sparks@rotor.org.
THANK YOU TO ALL SUPPORTERS OF THE HFI ROTOR SAFETY CHALLENGE

HAI would like to recognize our presenters and volunteers who helped make the 2018 HFI Rotor Safety Challenge a success. We particularly want to thank the more than 1,500 attendees who “took the Challenge” and made learning about safety a priority at HAI HELI-EXPO.

We wish you all a safe year and look forward to providing new opportunities in safety education throughout the year and at HAI HELI-EXPO 2019 in Atlanta!

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A s a helicopter professional, you’re probably familiar with the concepts of rationalization and procedural intentional noncompliance (PiNC).

For example, let’s say you get to the base in the morning. It’s early, cold, and time to start doing your job. One of your medical crewmembers is whipping up some breakfast, and the off-going crew is hanging around, talking about one of the transports that took place during the night.

That mission was the perfect storm of everyone having to bring their A game, a multi-helicopter scene request with a lot of moving pieces. A great example of teamwork and crew coordination within your aircraft and with the other aircraft on scene. High-fives all around!

In talking about all the excitement, you allow yourself to get out of your routine. Your preflight inspection is subpar, mainly just checking the fluid levels. But hey, you have inspected this aircraft and flown it in the past two days and everything was fine.

You don’t pull a fuel sample — it’s a little windy and you don’t want to risk getting fuel on your flight suit. Besides, you have never had a problem with your airport’s fuel.

These small adjustments from standard operating procedures are examples of PiNC — when a person knowingly disregards an established or required procedure. PiNC does not always lead to an accident or incident, but in many cases when a mishap occurs, PiNC turns up as a causal factor.

PiNC is one of the reasons why human error is a factor in 80 percent of aviation accidents. After all, aircraft are machines. They have no feelings or concerns, and they don’t come in tired on Mondays or stressed from dealing with Mom’s hospitalization. Unlike people, aircraft don’t have bad days or good ones, and they don’t mind performing the same task over and over and over. They either perform properly or they don’t.

People, on the other hand, are prone to all of the above. We get tired, grumpy, stressed, and bored. Here is where our brain will let us down or deceive us. It has the ability to rationalize our behavior, to lure us into PiNC.

For example, you may think, “The weather doesn’t meet my personal minimums or the company minimums, but I am not flying very far, so it will be fine.” Or, “I do not need to sump the fuel tanks today because I am in a hurry, and besides, I’ve never found any water in my fuel tanks.”

Or even, “I don’t need a work stand to inspect the top side of the rotor blades because our rotor blades are low time and we have never had any cracked blades.”

There are as many rationalizations as there are pilots, mechanics, and days of the year. Accident reports are filled with rationalizations masked by good intentions.

If any of these rationalizations sound familiar, it is because I have been in these positions and know it happens. It takes honest discipline to be in an industry where you are the daily decision-maker, the one who is counted on to do the right thing. Even when no one is watching. Even when it is inconvenient to do so.

I am talking to both pilots and mechanics now. In many professional settings, you have co-workers or a boss to verify your work, to review your decisions. But when your mechanic says he or she performed the rotor blade inspection in accordance with the maintenance manual or the approved aircraft inspection program and signed off on the work in the aircraft logbook, normally no one else validates that statement. The integrity of a certificated aviation professional is the only link between the ink on a document and the safety of an aircraft.

When the pilot says he or she did a preflight inspection of the helicopter, everyone onboard that aircraft presumes the inspection was performed to the established standard and the aircraft is in an airworthy condition. After all, the pilot said so.

We are justifiably proud of being aviation professionals. The other side of that coin is that we must act like professionals — always.

Whether you call it rationalizing or PiNC, let’s do the right thing and do what is required. It will make us better aviators and mechanics. It will strengthen our position with our co-workers and passengers, and it will encourage our critics to change their opinions.

Politely challenge your comrades to keep the standard high. If they are doing the right thing, they won’t mind.

*Fugere tutum!*

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Zac Noble is HAI’s deputy director of flight operations and technical services. He is a dual-rated ATP, CFII, and A&P/IA. Zac can be reached at zac.noble@rotor.org.
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Since my last column, I now work for the FAA in the Aerospace Medical Certification Division. I hope to continue sharing insights with you about how to maintain your medical certification and fly safely.

I imagine you read the title of this article and asked, “What does HIMS stand for?” HIMS stands for Human Intervention Motivation Study. It originated as a collaboration between the FAA, the Air Line Pilots Association, and the major airlines as a program intended to return to the cockpit pilots who have a history of substance-use disorders such as alcohol or drug dependence.

As you can imagine, the founders of this program thought the public might have a strong reaction to an organization called the Alcoholic Pilot’s Program or similar, so they came up with an acronym that sought to be discreet. However, despite the public’s understandable concerns, HIMS is a highly successful program that allows experienced pilots to return to the cockpit safely after treatment, under close monitoring through their treatment providers, their employers, and the FAA.

A fundamental tenet of the HIMS program is that alcoholism is a disease. This applies to other substance-use disorders as well. These disorders are chronic, meaning they are lifelong; primary, meaning they exist independent of other medical or psychiatric disorders; and progressive, meaning they generally worsen over time.1

Some people still believe alcoholism and drug abuse represent a character flaw. Modern medical science disagrees with this sentiment, and there is robust evidence that chemical dependency is treatable.

How It Works
The HIMS program requires a structured treatment program, which involves inpatient or intensive outpatient treatment, followed by continued weekly meetings with a chemical dependency counselor called aftercare. HIMS also requires that pilots participate in a standard self-help recovery program, the most common and well known of which is Alcoholics Anonymous (AA).

HIMS allows its participants to work with any commonly practiced self-help recovery program (Birds of a Feather is an AA-based program for pilots and cockpit crewmembers), but AA participation is strongly encouraged and preferred. AA provides pilots with fellowship and accountability throughout the recovery process and is believed to be essential to a successful program.

During and after treatment, pilots complete no-notice drug and/or alcohol testing. Lastly, pilots are required to meet monthly with someone in their management, typically a chief pilot or employee assistance program representative. Many programs also provide pilots with a peer — a fellow pilot who can help guide them through the process.

There are additional components pilots in HIMS must complete, including a neuropsychological evaluation that involves a battery of testing designed to detect subtle brain dysfunction. Alcohol and drugs often cause damage to the brain, and this testing ensures an adequate amount of time has passed for this damage to resolve.

Assuming the neuropsychological testing is favorable, the pilot next meets with a HIMS psychiatrist. This psychiatrist is usually addiction-medicine certified and receives specialized training to evaluate pilots. Once this is complete, the pilot will then go for his FAA examination with a HIMS aviation medical examiner (AME). These AMEs, like the psychiatrists, receive specific training to evaluate and monitor pilots in recovery. The HIMS AME compiles the clinical information and submits the packet to the FAA.

If the FAA feels the pilot is in good recovery, it grants a Special Issuance Authorization for a medical certificate. As part of the Special Issuance, the FAA requires ongoing monitoring that typically includes continued AA meetings, aftercare, monitoring through the pilot’s employer, continued no-notice drug and/or alcohol testing, and yearly visits with a HIMS psychiatrist.

The Results
This probably sounds like an involved process, and it is. However, the results speak for themselves. Eighty-five percent of pilots in the HIMS program maintain successful long-term recovery; that figure compares to around 20 percent in the general population.

Most of the major airlines pay for their pilots’ treatment (yes, you heard that right). If you are thinking this sounds like an expensive investment, a cost-benefit analysis of the program

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1 HIMS Program. Disease Model. Available at http://www.himsprogram.com/Content/DiseaseModel.
showed a $9 return for every $1 spent on treatment.

Most importantly, HIMS enhances aviation safety. Estimates are that about 11 percent of the US population will suffer from a substance-use disorder during their lifetime. Pilots are no exception. Intoxication or unsupervised withdrawal from these substances could lead to unsafe operation of an aircraft or an accident.

In addition, simply replacing an experienced pilot with a less experienced one can also diminish safety. A 2003 study showed pilots with more than 5,000 total hours of flight time were 57 percent less likely to be involved in an accident. The HIMS program not only helps pilots get the treatment they need, it also enhances aviation safety and can provide your helicopter operation a substantial return on investment.

For more information, visit the HIMS Program website at www.himsprogram.com. Although the major airlines helped design this program, you can set up a HIMS program in a helicopter operation. If you have questions, contact any of the HIMS program committee members listed at the bottom of the program website. You can also find a list of HIMS AMEs online at www.himsprogram.com/Content/HIMSAMEs.

Dr. Charles H. Mathers serves as a medical officer in the FAA Aerospace Medical Certification Division, located at the Civil Aerospace Medical Institute in Oklahoma City. He is board-certified in aerospace medicine and internal medicine. Dr. Mathers previously served as a HIMS senior AME at the University of Texas Medical Branch in Galveston, Texas.

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At HAI HELI-EXPO in Vegas, we celebrated the stunning news that the proponents of air traffic control (ATC) privatization were standing down. We won. I send a sincere thank-you to all who heard our call to action and acted.

Before we move on to new legislative issues, however, I want to discuss our lessons learned from the campaign.

First, how did we win? Our success was by no means a given. The proponents of the bill had deeper pockets and more resources than the helicopter industry. They were well respected, politically savvy, and the ultimate professionals. This was a legislative fight for the ages.

To boil it down to the simplest explanation, we won because of you. HAI members flooded Capitol Hill with letters, tweets, Facebook posts, visits, and calls. Your voices combined with the tens of thousands of calls from other general aviation (GA) professionals and backers to demand that we modernize, not privatize ATC.

It is easy to be cynical about Congress. However, elected officials really do care about their constituents’ concerns. When that many people reach out on the same issue, they get their representatives’ attention.

We also had numerous GA organizations working together to oppose this legislation. In fact, we had almost 300 GA organizations sign an industry letter expressing opposition to ATC privatization. So many different groups uniting to oppose an issue attracts a great deal of attention from the media, elected officials, and their leaders.

The individual associations also made hundreds of visits to Congress during this legislative battle. HAI was in the middle of it, reaching out to the committees of jurisdiction, leadership, and rank-and-file members. HAI educated them about the legislation’s negative impacts on the helicopter industry and why passing the bill would not be in the best interest of their constituents. This message was reinforced when HAI members flooded the offices with their individual outreach.

This old-fashioned advocacy work was important in raising awareness among undecided representatives as well as in securing supporters who eventually became advocates for our industry. It was also critical to raise the issue among the congressional committees. These committees would have been directly affected by this legislation, with some losing jurisdiction and oversight authority — an outcome rarely favored by committee members.

An important part of my job is developing relationships and becoming part of the everyday legislative environment, so I’ll be able to read the signals when something is about to happen. Because of everyone’s hard work, time and time again, votes were scheduled on the ATC privatization proposal and then pulled back because proponents did not have the votes necessary to pass.

Finally, the White House looked at the level of opposition in the House and the Senate and determined there was not enough votes to prevail. Once administration support evaporated, proponents of the bill were forced to pull it. Our industry won the day because we stood united, voiced our position, and educated our elected officials about why we opposed the bill.

What does this mean moving forward? First, the GA community must never forget our collective power. Yes, we often have different perspectives on legislative issues. Certainly, we will disagree in the future, but there will be just as many times when we can unite, just as we did around ATC privatization. When we find consensus within our community, we must stand together and push forward those policies.

Second, we must continue to foster our relationships with elected officials. Your representatives heard and understood your position on ATC privatization and as a result acted. You now have a very powerful connection to them — work to keep it going. Reach out to your elected officials and thank them for their actions. Politics is all about relationships. Don’t be that friend who only calls when they need something.

In a stroke of good luck, this is an election year. Politicians are out campaigning, some to keep their job and others to get a job. They are especially attuned to listen to voters. The congressional schedule allows for multiple recesses throughout the year, including a long stretch in August, for officials to get back home and campaign.

Make plans today to set up a visit with your elected representatives. If you have a business, bring them out, show them around, and let them see the value you bring to the local community. If you don’t have a business, reach out to the local office and schedule a visit to talk about the issues important to you. The stronger the relationship you have with your elected officials, the more power you wield in future legislative battles.

Our advocacy campaign against ATC privatization is a political action model for any HAI member, wherever you are in the world. Step up, reach out, get involved. The power of the individual, the clout of the association, the impact of our industry standing united. It’s a beautiful thing.

Cade Clark is HAI’s vice president of government affairs. Cade can be reached at cade.clark@rotor.org.
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Flying in the Grand Canyon: A Dream Job with Unique Challenges

By Jenna Scafuri

The helitack team at Grand Canyon National Park has to be prepared for anything. With weather conditions ranging from sun and 125-degree heat, to snow, wind, and dust, it takes more than just skill to operate in the canyon — it takes hard work and dedication. The combination of weather, remote terrain, and canyon flying requires advanced mountain flying skills.

The helitack team is drawn from Grand Canyon National Park staff and employees at Papillon Airways, working under contract with the park. Its MD 900 is on 365 days per year, while an AS350 comes on May 1 to add fire season support for about 90 to 150 days per year.

The helitack team performs a variety of missions inside the park during daylight hours. What started as park maintenance support in 1972 has expanded to firefighting, search and rescue, and utility work. The team also helps support management of threatened and endangered species by flying in personnel and equipment for research management, and even animals when appropriate.

With only a small staff available for any given mission (there are four employees on staff in the winter, and six more are added in the summer for the fire season), it’s not uncommon for the team to get pulled in many different directions. “We’ll be working on a pipeline break and literally switch hats and do a medical mission or respond to a fire, or even all three in one day,” says Eric C. Graff, Grand Canyon Flight Crew helicopter program manager.
From Leaky Pipes to Stranded Boats

One of the biggest projects in the National Park Service maintenance workload is managing the Trans-Canyon Pipeline, a 50-year-old system that pumps water to the rims of the canyon, where water is scarce. The 15 miles of 8-inch pipe breaks between five and 30 times per year, according to the National Park Service. The helitack team helps respond to each break, in addition to supporting regular maintenance on the pipeline. “We spend a good portion of our time moving people, pipes, and gear for those projects,” says Graff.

Access to the canyon can be tricky because of terrain. But strategically placed helispots ensure the team can get where they need to go. “There are a lot of established helispots for both helicopters,” says Graff. “Not only are there many helispots along the Trans-Canyon Pipeline for access to things like control valves, but every major ranger station within the main corridor of the canyon also has a place for us to land.”

Medevac missions are also common in the park. Typical injuries that require medevac include broken or sprained ankles or knees — injuries that prevent hikers from being able to complete their hikes and exit the park safely.

Heat exhaustion and dehydration are also major worries. The canyon features both extreme temperatures and minimal access to water. The park ranger staff often performs what they call preventive search-and-rescue, which includes leading people back toward correct trails when they have wandered too far off course, or taking them to shaded areas when they are at risk of overheating. The helitack team responds to these calls when the rangers are not able to solve the issues.

Rafting is a popular sport in the canyon, but fluctuating tides and a rocky floor can sometimes lead to rafting accidents and injuries. “Of the 161 medevacs performed within the park during the last year, 30 to 40 percent of them were on the river,” says Graff.

This makes river-access helispots essential to their operations. “River tour companies know the common spots they can pull over where a helicopter can get to them in an emergency,” says Heather Saur, who pilots both the MD 900 and the AS350. “But those spots can change throughout the year as the terrain changes, such as bushes growing or tide erosion. Rafters or hikers will also rearrange rocks if they stop to rest, so one spot that may have been clear yesterday might not be clear today.”

But the team doesn’t just rescue people — sometimes they rescue the boats themselves. One recent mission involved removing a 22-foot boat that had gotten stuck on a large rock in the middle of the river. “We had to short-haul the people off the boat and remove gear to reduce the weight on the boat to allow it to become more buoyant, then wait for the tides to change through the output of the dams,” says Graff.
Unique Challenges ...
Operating in such a varied environment has its challenges. “The geography and terrain of the canyon changes our environment every minute of every day,” says Graff.

“Even though it’s blowing 40 knots later today, there might be areas where it’s dead calm in the canyon. Or it could be 125 degrees at Phantom Ranch but only 80 degrees on the South Rim, so you have a degree change that is very unique. And then you could still have 4 to 5 feet of snow at the North Rim and nothing at the South Rim. Varied climate is a big challenge for us.” The extreme heat can make operations so difficult that sometimes the AS350 needs to be shut down because of overheating concerns.

Performance calculations always have to account for elevation. “We plan for missions by determining the worst-case scenario,” says Saur. “We plan our performance calculations for the base at 7,000 feet, which is the most limiting. Anything else would be an increase in performance as we descend into the canyon.”

Most of the flights the team runs are short, such as going out to Phantom Ranch, which is a 12-minute round-trip flight. But depending on the events of the day, the team might run four to nine flights per day. Even though the flights are typically short, the volume makes up for it. Noise is a concern for both local residents and visitors. “The MD 900 has noise-reducing technology to limit our impact to the visitors and wildlife throughout the canyon,” says Graff.

Between the Grand Canyon’s remote location and rugged terrain, communication isn’t always easy. Most helicopter-to-ground communications are done using satellite phones, which tend to drop a signal while inside the canyon. “When you’re flying 270 river miles and the only way to send communication out is satellite phone, it can be difficult when the signal is constantly dropping,” says Bryan P. Hakanson, helitack squadleader for Grand Canyon National Park. “There are lots of scenarios where we’re on scene and need to relay back to the base what other equipment we may or may not need.”

“When you land at the river, sometimes you can’t get through with the satellite phones,” Saur agrees. “In that case, we calculate what we need, take off to where we can get a signal, then contact the base.”

Although the Colorado River runs through the canyon, gathering water for firefighting can be a challenge. “There is no water on either rim, so if there is a larger fire, which mostly occurs on the North Rim, we bring in the Skycranes and Chinooks,” says Graff. “They have to go to the Colorado River for water, which is a long turnaround, so supporting larger fires can be a challenge with the terrain and plateaus that we’re on.”

For smaller-scale fires, the park’s AStar draws water from a heliwell located on the South Rim, which is filled from about April through November. The heliwell is an above-ground water tank (10 feet wide by 15 feet tall) that any helicopter can draw water from. “These spots make it much easier for us to get water on the South Rim,” says Saur.
... And Rewards
The use of unmanned aircraft systems (UAS) has grown across the country, including inside the park. While visitors are not allowed to fly drones recreationally inside the park, the National Park Service uses UAS to supplement its missions. Being at the forefront of this technology has been useful and exciting for the helitack team. Started about three years ago, the park’s drone program now has six 3DR Solo UAS that are mainly used for search and rescue and fire support.

When they’re not flying, the staff manages a helitack training academy offered through the National Park Service for interagency partners. Now in its 19th year, the program starts with the basics and trains participants to be working helitack crew members. Each session is two weeks long and trains two people at a time, with six to eight sessions per summer. More than 400 students have completed the program and learned the basics of helicopter crewing, managing an aircraft, and even helibase management.

The helitack team considers themselves lucky to have the opportunity to fly in such a unique area of the country. Because of the remote location, pilot turnover can be frequent. But the team embraces those challenges. “I really enjoy utility work, and short-hauls are a lot of fun,” says Saur. “The diversity of this job is so cool — we can do anything from medevac to Bambi Buckets or park support. Every day is different.”

Saur was hired by Papillon Airways at HAI HELI-EXPO 2010 in Houston. She worked her way through the program to complete her utility training and landed her current gig with the National Park Service in 2015, a coveted position that is only filled by internal candidates. As of March 2018, she had nearly 5,000 flight hours in the canyon.

Everyone on the helitack staff has a wildland firefighting background that led them to aviation. In addition, 40 percent of the staff are female. “This is a huge benefit because it provides us with a new perspective. It allows us to think of new ways to do things so we’re constantly improving,” says Graff.

“People get really excited when you land a helicopter and an all-female crew gets out,” says Saur. “It’s really empowering for people to see that.”

In 2009, Grand Canyon National Park Helitack and Papillon Grand Canyon Helicopters received HAI’s Igor Sikorsky Award for Humanitarian Service “for outstanding service, demonstrating the value of helicopters to society through the saving of life, protection of property, and amelioration of distress.”

The team has helped many people over the years, and some even show their gratitude by sending thank-you cards or visiting. “One man we rescued still stops by to say hi and thank us every year on the anniversary of his rescue,” says Graff. “It is very rewarding to know you have made a difference.”

Jenna Scafuri is an editor in HAI’s Publications and Media Department.
It’s Not Just a Tour ... It’s an Experience

Helicopter Sightseeing at the Grand Canyon

By Dan Sweet

It’s called the Grand Canyon for a reason: it’s really big and it’s really beautiful.

One of the most visited national parks in the United States, the length and depth of this marvel are difficult to visualize from a single vantage point. It’s easy to understand why visitors are taking to the skies to experience this awe-inspiring natural wonder.

International Appeal

The city of Las Vegas is also a significant tourist attraction. Given their proximity to each other, it’s understandable why Las Vegas is a common starting point for tours of the Grand Canyon, particularly for international visitors.

“About 75 percent of our Grand Canyon guests are from outside of the United States,” says Bryan Kroten, vice president of marketing for Maverick Helicopters. “And about 75 percent of our customers for flights over the Las Vegas strip are from within the United States.”

Arlene Bordinhão, public relations manager at Sundance Helicopters, echoes these statistics. “Our most popular flights are to the Grand Canyon, followed by our city lights tour over the Las Vegas Strip.”

Depending on budget and schedule, there are several ways for international and domestic visitors to experience the Grand Canyon. The least expensive method typically takes the most time — driving or riding on a bus. Next, fixed-wing tour flights are an option for those who want to see the spectacular sights, but these do not allow visitors the opportunity to stop and experience the Grand Canyon on foot.

Several helicopter tour operators operate in and around the Grand Canyon from the Las Vegas area, and at least six of the companies are HAI members: 702 Helicopters, FLYNYON, Maverick Helicopters, Papillon Grand Canyon Helicopters, Sundance Helicopters, and Sunshine Helicopters (see contact information for each company on the opposite page). Some of the companies also have representatives on the HAI Helicopter Tour Operators Committee.

These companies offer tours into and above the canyon from Las Vegas; Boulder, Colorado; Henderson, Nevada; and Tusayan, Arizona (at the main South Rim entrance to the park), with a variety of lengths, added options, and price points available.

With such a variety of helicopter tour operations, each tour company markets to slightly different niches or customer bases, and Papillon, Maverick, and Sundance each market themselves extensively to international customers.

“We used to wait for the tourist to arrive in Las Vegas to sell our services,” says Maverick’s Kroten. “This was typically through rack cards...
at the airport and in hotels. Today’s travelers are booking their experiences before they ever leave home.”

Each of the “big three” tour companies report carrying between 225,000 and 300,000 passengers per year, marketing to their guests through the Internet and social media advertising, as well as working with international travel agents, travel groups, and associations. Many of the helicopter tour companies offer in-flight narration about the tour over headsets, and some offer the narration in multiple languages to better meet the needs of their customers.

**A Historic Operation**

One of the first companies to begin providing regular helicopter tours of the Grand Canyon was Papillon. In 1965, industry pioneer Elling Halvorson owned a construction company that was building a 13.5-mile-long water pipeline across the Grand Canyon. Halvorson had previously purchased a helicopter to provide access to hard-to-reach locations for construction work, and he again used his helicopter to deliver supplies and crews to the constantly moving construction site. Over time, his crews and guests recognized the advantage of seeing the canyon by helicopter and began requesting tours.

Today, Papillon offers tours of the Grand Canyon from Las Vegas, Boulder City, and Tusayan. The company also holds the contract to provide helicopter services to the National Park Service (see story, p. 16). Papillon remains one of the largest providers of tours in the Grand Canyon and the Las Vegas region.

**The Height of Luxury**

In a market with so many tour options, each company works to distinguish themselves from the others. “Many of the companies pick their guests up from hotels,” explains Bordinhão. “Sundance picks up our guests in VIP-style stretch limousines so that the customer service experience quite literally begins at their door.”

“We don’t see ourselves as a tour company,” says Maverick’s Kroten. “We are a helicopter experience company. We don’t market to the discount crowd. We invest in our people, and we look for pilots with personality who can provide a better tour.”

Additionally, many of the helicopter tour companies have agreements in place with the Hualapai Tribe that allow their helicopters to land at the bottom of the canyon. Landing at sites a few hundred feet above the Colorado River, operators often provide guests with a champagne lunch before returning to Las Vegas.

“Our most popular tour is the Grand Celebration Tour,” says Marina Nicola, Papillon spokesperson. “It includes pick-up from area hotels, flying over the Hoover Dam and Lake Mead, and landing at the bottom of the canyon for a picnic before returning to base.”

Most Las Vegas–based helicopter tour companies offering tours of the Grand Canyon operate under FAA Part 135 guidelines. Many of these companies also offer personalized charter flights and may provide packages that include wedding, birthday party, and combination packages that include ground-based tours as well.

“My favorite tour is our Grand Canyon Flight with Landing Tour that returns to Las Vegas right at sundown,” says Bordinhão. “You leave the city in the afternoon and fly out over Lake Mead and the Hoover Dam before you get to the canyon. After you finish your picnic lunch in the bottom of the canyon, the helicopter comes up out of the canyon just as the sun is starting to set. The tour route comes in on the north end of town and flies down the strip just as the lights are coming on. It’s spectacular!”

![Dan Sweet is HAI’s director of public relations and communications.](Image)

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**HAI Members Offering Grand Canyon Tours**

Many of these companies offer more information through their websites, particularly for international guests. Please visit their websites for specific contact information or for tour details.

- **702 Helicopters**
  - Website: [www.702helicopters.com](http://www.702helicopters.com)
  - Email: bookings@sunshinehelicopters.com
  - Toll free (US): 877-203-6823
  - International: 702-508-3288 (North Las Vegas office)

- **FLYNYON**
  - Website: [https://www.flynyon.com/las-vegas](https://www.flynyon.com/las-vegas)
  - Email: info@flynyon.com
  - Telephone: 855-696-6247

- **Maverick Helicopters**
  - Website: [www.maverickhelicopters.com](http://www.maverickhelicopters.com)
  - Email: reservations@flymaverick.com
  - Toll free (US): 888-261-4414
  - International: 1-702-261-0007 (Las Vegas office)

- **Papillon Grand Canyon Helicopters**
  - Website: [www.Papillon.com](http://www.Papillon.com)
  - Email: reservations@sunshinehelicopters.com
  - Toll free (US): 888-635-7272
  - International: 1-702-736-0606

- **Sundance Helicopters**
  - Website: [www.sundancehelicopters.com](http://www.sundancehelicopters.com)
  - Email: res@Sundancehelicopters.com
  - Toll free (US): 800-653-1881
  - International: 1-702-736-0606

- **Sunshine Helicopters**
  - Website: [www.sunshinehelicopters.com](http://www.sunshinehelicopters.com)
  - Email: bookings@sunshinehelicopters.com
  - Toll free (US): 888-501-7738
  - International: 855-558-5799 (Henderson office)
Bell Sets a New Course

By Dan Reed

For a company focused on multimillion-dollar aircraft sales to government, military, and commercial clients around the world, Bell was behaving curiously. Its big reveal at HAI HELI-EXPO 2017, the FCX-001, was less aircraft than a customer-experience concept vehicle. Bell followed up that mold-breaking exhibition by becoming the first aircraft company to ever make a big splash at the annual, quirky, and hip display of cutting-edge consumer technology that is the Consumer Electronics Show in Las Vegas.

There (and at HAI HELI-EXPO 2018), Bell displayed a cabin mock-up of its proposed entry in the race to develop the world’s first commercially successful air taxi. And though that mock-up looked more like a smallish, more angular, and cooler version of a passenger cabin in one of Bell’s helicopters, the company assured everyone that the vehicle will be a very, very different kind of machine, one powered by hybrid electric engines and capable of operating quietly, quickly, and in an environmentally friendly way within urban environments.

What next? On February 22, the company announced its first name change since 1960, when Textron Inc. acquired the Bell Helicopter division of Bell Aircraft — evolving from Bell Helicopter to simply, “Bell.” Of course, some — maybe even most — rebranding is merely cosmetic. But for Bell, shedding the one word that has defined not only its products but its very essence for the last 60 years is game changing.

Beyond Helicopters

Very few people alive today remember when the Bell name was not automatically followed by the word “helicopter.” Its pioneering Model 47, which the US Army flew under the name H-13 Sioux throughout the Korean War, was the first helicopter ever certificated for civilian use. It later became even more famous via the opening credits of the TV show M*A*S*H. Then the Bell UH-1 Iroquois (better known as the “Huey”) became the icon of the Vietnam War, in part because of its ubiquitous presence in TV news reports, documentaries, and movies about the American experience in Vietnam.

Now the Fort Worth–based company isn’t so much turning its back on the helicopter as it is opening the door to a variety of new aviation concepts outside the technological envelope to which the helicopter has limited it all these years.

Just as importantly from a business perspective, under still–relatively new CEO Mitch Snyder, Bell is searching for a potentially immense new vein of sales that someday could decouple the company’s business performance from the volatile offshore oil production industry — and from the even iffier US Department of Defense (DOD) procurement cycles.

“We’ve been working hard for several years now to turn …,” says
Bob Hastings, Bell’s executive vice president for communications and government affairs and chief of staff, catching himself before completing the sentence with the word “around.” From Bell's perspective, the company isn’t working on a turnaround so much as it is creating a new future.

“If you look backwards in our history, going all the way back to our founder, Larry Bell, Bell Aircraft was very much an innovating company that was involved in most of the major milestones in aviation, from early jet aircraft designs for the US military and Chuck Yeager flying the Bell X-1 through the sound barrier for the first time, to key technologies and engines used in the X-15 and Mercury programs, to the jet packs that James Bond flew in the movies.

“But we sort of settled in the 1960s into being a helicopter company. And we were a very good helicopter company and have been for a very long time,” Hastings says. “Now we are moving beyond being only a helicopter company.

“In fact, we already make more than helicopters. We’ve been producing tiltrotor aircraft for many years now. But we want to be able to move in any direction going forward. We will stay in the helicopter business, but we’re focusing on the future of vertical-lift flight beyond helicopters. In particular we’re looking in three areas right now: air taxi, on-demand air mobility, and autonomous pod transport,” Hastings says.

Of course, changing the future of a conservative-by-nature defense contractor and aircraft maker does not happen quickly, or easily. During the last decade, while Bell churned out close to 400 V-22 Ospreys for the military and hundreds of conventional helicopters for the inherently hot-and-cold — but mostly tepid — commercial market, the company has invested in new engineering and test facilities, new manufacturing capabilities and, most importantly, new thinking.

Before being named CEO in 2015, Snyder led the V-22 program. But quickly after assuming the top job, he began the process of creating a new vision for Bell. This has included laying out new, forward-looking values and workforce development policies and pushing those down through the organization’s manufacturing plants in Texas and Quebec. And while the company has been trying to change its culture, it’s also in the midst of defining new business plans for both the short and long term.

A Crowd of Innovators

Bell is not the only helicopter maker currently trying to map a new future. Sikorsky was sold three years ago to Lockheed Martin by longtime parent United Technologies in a deal that took off some of the shackles limiting the Connecticut-based company’s ability to attack the future vertical-lift aviation market.

With Lockheed’s strong support, Sikorsky is pitching its S-97 Raider,
a high-speed compound helicopter design, as the basis for the US military’s next family of vertical-lift aircraft. The S-97 design, which is going head-to-head in the DOD competition against Bell’s V-280 Valor third-generation tiltrotor design, also points to new capabilities and future technical developments that will push beyond the historical envelope of the basic helicopter.

Similarly, Eurocopter signaled a major change with its name change to Airbus Helicopters in January 2014. Though the company remains focused on helicopters, taking on the Airbus brand name signaled its intent to compete globally in the vertical-lift market even as it pushes new, unconventional, and advanced designs like the X3 high-speed compound helicopter. At the same time, Airbus engineers are working on designs that, if brought to market, would compete in the nascent urban air-taxi market.

Meanwhile, a number of new aviation companies, many with financial backing from tech industry titans like Google co-founder Larry Page, are working on designs that would compete in the commercial vertical lift/urban air taxi/autonomous air-vehicle markets that Uber and others are promoting. In mid-March, Page’s Kitty Hawk advanced design company unveiled its proposed air taxi, called Cora. It features a small, four-place cockpit and wings fitted with 12 small electric-lift fans that would get the aircraft off the ground, plus a pusher prop in the back that would turn it into a more-or-less conventional airplane.

Other entries in the race to create functional air taxis or “flying cars” include the Dutch Pal-V Liberty, the Slovak AeroMobil 3.0, the long-promised and MIT-designed Terrafugia Transition (now being funded by Chinese investors), and a proposed new vehicle from startup Zee.Aero (also backed by Page).

Bell’s strategy, however, goes beyond simply producing a flashy flying car. The company’s aim is to be a successful, relatively high-volume manufacturer of such aircraft.

“Look, we’re not going to be the first to build an air taxi,” Hastings says. “But we do believe we can be the first in developing a manufacturable, certifiable and, most importantly, profitable air-taxi-type vehicle. And we think that probably will come sometime in the mid-20s.”

That time frame, he says, will allow the FAA to figure out both how it will manage air traffic in the low-level urban flying environments where such vehicles presumably will spend most of their time, and how to certify these newfangled aircraft and their pilots (though eventually most such vehicles are envisioned as operating autonomously).

Certification promises to be a slow process because, quite literally, no one at the FAA or anywhere else has ever determined what the certification criteria should be, what the manufacturing and materials requirements should be, or even when and where such aircraft can and cannot be flown. In a way, it’ll be like going back to the 1920s and 1930s, when the first aviation regulators had to set the rules for airplanes, often through trial and error. Or in the 1940s and 1950s when they first determined what rules would govern the manufacture and operation of the early civil helicopters.

“We don’t think ‘air taxi’ is going to be a helicopter,” Hastings says. “It’ll be an advanced vertical design, but to operate in that environment you’ve got to reduce the noise, which means the elimination of the tail rotor and using some other means of stabilization. It’ll probably need a different kind of propulsion because the turbine engine is noisy, too. And it’ll need new, lighter materials.”

Beyond that, Bell is banking on its long history as an actual maker of aircraft to set it apart from the startups that not only must design, build, and certify new designs but also find a place to build factories and invent the machinery and tooling to build them — all in the complex, demanding industry of aircraft manufacturing, a field to which many of these

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**About That New Logo**

Bell’s new logo strongly implies that the company is taking a new direction. The striking new logo has three elements:

- The name “Bell,” which was included in the logo because the company is a long-respected builder and servicer of aircraft
- The shield shape of the logo, which represents the sought-after qualities of dependability, ruggedness, and safety
- A dragonfly, to signify the mastery of flight in all aspects.

It’s the inclusion of the dragonfly element that stands out. And if that’s a bit of head-scratcher for you, you’re not alone. Bell officials know it’ll take a while for everyone to understand the imagery. Still, they are happy to have this agile flyer represent them.

“Dragonflies are masters of flight,” Hastings says. “They do all the things we’d like our products to do. So, for us, the dragonfly represents an unlimited future. When your kids see dragonflies, they stop and watch them in fascination. Your kids squash bugs or flick them away, but they stop and watch dragonflies. They’re fascinating and versatile.”

Adult dragonflies are, however, short-lived creatures, surviving no more than seven months from the time they emerge from their larvae form. But Hastings is quick to counter any suggestion that Bell’s use of the dragonfly symbol could be a bad omen for the storied helicopter maker.

“Dragonflies have been on the face of the earth for 300 million years and constantly change and adapt to the environment,” he says. “That’s what we’re doing, adapting to a new environment, and we intend to survive for a very long time.”
companies are new. Such a task promises to be both hugely expensive and slow, a combination that does not bode well for making profits.

The path to profitability for new products at Bell will depend on the business case for each, Hastings says. “Uber will tell you there’ll be thousands of air taxis flying relatively soon,” he says. “If you buy that, you’ve got to get the price [for one such vehicle] down into the hundreds-of-thousands-of-dollars range — which is not out of the question if you can build them by the thousands.”

A slower buildup in the market or a more limited market overall would, of course, push the price lower, well below the $1 million threshold that has been a theoretical floor for all but the smallest of helicopters. “Whatever the price, they’ve got to be significantly cheaper than helicopters today,” he says.

But Bell is looking to compete in more than just the urban air-taxi market. “On-demand air mobility is the headline term for a new range of aircraft that can move products and people from Point A to Point B in the vertical dimension, but with the difference being in the propulsion systems,” Hastings says. That eventually could mean developing different types of propulsion systems, whether it’s lightweight-but-powerful battery-driven electric fans or very small-but-quiet conventional engines, as well as hybrid power that switches from more powerful combustion or even jet engines for heavy work to quiet electrics for flying in very low-level or noise-sensitive environments.

And what we call autonomous pod transport would be something like a tail-sitter that takes off vertically, flips horizontally for flight like a biplane, and then lands vertically — but not a tiltrotor — and it would be done autonomously, without human pilots onboard,” he says.

Among other designs Bell is exploring is a circular-wing vehicle that features multiple electric-lift fans for vertical takeoff and landing, with the capability of the whole vehicle flipping on its end to fly forward, using the fans for propulsion and the circular wing for lift.

“We are looking at the logistics aspect of how new vertical-lift aircraft would be operated and how they can be put to the most effective and profitable use,” Hastings adds.

“We don’t necessarily believe that one day you’ll order a pizza and have it delivered by a drone,” he says. “But with something like what we’re looking at in terms of autonomous pod transports, you could move 5,000 pounds from one side of town to the other side of town to support local logistics and delivery operations. Or the military could move 50,000 rounds of ammunition from a forward supply base to the front lines without exposing a helicopter and its crew to enemy fire.”

Bell Still Makes Helicopters

With the US Army’s recent retirement of the OH-58 Kiowa, Bell no longer has any conventional helicopters flying with that service, while the Marines continue to operate Hueys and AH-1 Cobra attack helicopters. But the company is not giving up on either conventional helicopters or on the military aviation market.

Bell continues to produce several commercial models, and production is ramping up on its new five-place Bell 505 Jet Ranger X model, certificated just last summer. After a lengthy delay following the July 2016 crash of the first test model of the 525 Relentless, Bell recently restarted certification testing of the new 19-place design with the FAA. It hopes to be delivering the first models to customers in 2019, in time, ideally, to get in on the current uptick in the offshore energy business for which the 525 primarily is designed.

Meanwhile Bell is competing aggressively in the US DOD’s search for the next family of military vertical-lift aircraft. Its V-280 Valor tiltrotor appears, for now, to be ahead of the
competition to replace the US Army’s fleet of Sikorsky Black Hawks and its variants in the other services. And the V-280 design could be scaled up or down to meet other military needs for heavy lift, attack, and even light scout vertical-lift aircraft.

“The Army has made its Future Vertical Lift program its No. 3 modernization priority,” Hastings says. “And within Army aviation it’s the No. 1 priority, so we see a lot of opportunity there and a lot of momentum building.”

But make no mistake about it, while helicopters — and tiltrotors — will continue to be the primary drivers of Bell revenues for the next decade or so, the company is seeking a path to major revenue growth through its new focus on future vertical-lift aircraft.

Textron is a $14.2 billion conglomerate that also owns the Beechcraft, Cessna, and Hawker aviation brands; Lycoming engines; various other military hardware and technology support companies; an industrial finance company; plus a handful of manufacturers of consumer products such as E-Z-GO golf carts, Cushman utility vehicles, and Jacobson lawn care machines. But Bell continues to be Textron’s single largest revenue producer.

Last year, Bell by itself brought in 23 percent of Textron’s revenues. Yet Bell’s revenues have been rather stagnant in recent years as military sales wound down and the depressed offshore sector led to soft commercial helicopter sales. Last year Bell reported revenues of $3.3 billion, up a tick from $3.2 billion in 2016, but down 4.7 percent from 2015.

Bell officials see unconventional future vertical-lift vehicles that can be manufactured and sold in large numbers as the route to a dramatic boost in revenues. At least so far, Textron officials appear content to keep on funding the research and development work on such vehicles in expectation of a big payoff in the mid to long term, based on potential high-volume sales of such aircraft.

In short, while Bell and Textron are in no way ready to walk away from their strong, but barely growing position in the global helicopter business, they are betting heavily on a new technology-driven future in the vertical-lift world.

Dan Reed is an award-winning journalist who has covered the airline industry, aircraft manufacturing, aviation, aviation safety, and related fields for 29 years, first for the Fort Worth Star-Telegram and then for USA Today, where he also served as Texas bureau chief. Now a freelance writer and communications consultant, Dan and his wife are the parents of three adult sons. They live in Fort Worth with Bella, a relentlessly energetic 93-pound Labrador Retriever.
Yes to the ultimate laser wire marker, Tri-Star’s M-100L FG-TT, most advanced, cost-effective marker on the planet.

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**Superfast 150** high-speed option **YES**
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With nothing to slow down production and everything to speed it up, the M-100L FG-TT is the fast, low-cost high performer. Now the world’s favorite laser wire marker.

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Vietnam Helicopter Pilots and Crew Members Honored

By Douglas Nelms

On April 18, 2018, a memorial marker was unveiled at Arlington National Cemetery (ANC), just outside of Washington, D.C., to honor the young men who gave their lives flying and maintaining the helicopters flown in Vietnam.

A crowd of more than 1,000 Vietnam veterans, families, and others attended the dedication ceremony. Mini-reunions sprang up among men who had flown together nearly half a century ago. The dedication was capped by a flyover of four UH-1s from the U.S. Air Force.

It was an event three years in the making. In 2015, the Vietnam Helicopter Pilots Association (VHPA) submitted a proposal to the U.S. Army for a memorial to both the pilots and the crew members who died in the war. When that proposal was rejected, VHPA member William Dennison approached his congressman, Rep. Mark Amodei (R-Nev.), for assistance.

“We went to see the folks at Arlington, who were nice to us but pointed out that they were in the burial business, not in the memorial business,” Amodei says, who spoke at the memorial’s dedication. “But what the VHPA members were asking for was just 5 square feet. I was thinking that surely Arlington National Cemetery had 5 square feet for almost 10 percent of the casualties of the Vietnam War.”

Of the 58,220 American servicemen and women who died in Vietnam, 4,901 were either helicopter pilots (2,197) or crew members (2,704).

Amodei worked both sides of the aisle to get support for a bill that would require the secretary of the army to place a suitable memorial stone at the cemetery. The bill passed the House, but its Senate counterpart got wrapped up in bureaucratic red tape. A subsequent bill also failed to pass.

Finally, the VHPA and Karen Durham-Aguilera, ANC executive director, reached a compromise. A monument measuring 22 inches high, 21 inches deep, and 32 inches wide would be placed in Section 35, along Memorial Drive, not far from the Tomb of the Unknown Soldier. VHPA paid for the construction and placement of the monument.

“As a Vietnam veteran, I want to express my gratitude to the members of VHPA for their leadership on this issue,” says Matt Zuccaro, HAI president and CEO. “For so many reasons, we need to remember the courage and selflessness of our comrades who paid the ultimate price in service to their country.”

HAI hosted a group of Vietnam veterans and their families for the event. Some of their stories are on the following pages.
James “JJ” Aretz and Tom Aretz, Crew Chiefs

Tom Aretz actually started out in Army aviation in flight school at Fort Wolters, Texas. After he became medically disqualified, he was offered the opportunity to attend crew chief’s school at Ft. Eustice, Virginia.

The youngest of three brothers, Aretz was the third to serve in Vietnam. His oldest brother, JJ, had been a crew chief with the 334th Armed Helicopter Company until he was hit with shrapnel, losing an eye. He was medically discharged from the army but later went back to Vietnam as a civilian with the Lear Sigler corporation. He was “in country” when Tom arrived in March 1969 to begin an assignment with the 116th Assault Helicopter Company to crew UH-1C gunships.

On Memorial Day 1969, the youngest Aretz gained a bit of unwanted fame when JJ talked Tom into letting him fly along on a mission. “We got shot down, and he shouldn’t even have been in the aircraft,” says Tom, also remarking that while he saw the men he served with as brothers, it’s another thing to be in a ship that’s going down and see your actual brother. “We had to be all right because I wouldn’t have known what to say to our old man.”

Fortunately, everyone survived the crash. It was the only known instance in the Vietnam War when two brothers were shot down in the same aircraft. The two brothers have spent every Memorial Day since together.

Tom was actually shot down three times before leaving Vietnam in April 1970. He was discharged immediately upon returning to the States and became an independent insurance salesman and financial planner.

Following his retirement, he met some members of the Friends of Army Aviation out of Ozark, Alabama, and five years ago, he joined the unit. This group restores old Hueys that then travel around the country, giving people rides and promoting Army aviation. “We now have our own flying Huey, a UH-1H. We picked it up as just a hulk from the Florida Forestry Department. We bought three of them. A second is in the process of being made flyable. We also have an AH-1 Cobra in the hangar that we’re working on, hoping to get it up,” says Tom.
Ernest Hare, Crew Chief

Ernest Hare, nicknamed “rabbit” for obvious reasons, attended the army’s aviation maintenance school at Ft. Eustice, Virginia, and arrived in Vietnam in January 1970, assigned to the 1st Aviation Brigade.

At the end of his initial tour, Hare extended for two more tours. He stayed in Vietnam for almost two-and-a-half years, returning to the States in April 1972.

“There wasn’t any particular job I wanted to come back to in the States, and I was doing what I loved to do,” he says. “I started out as just a door gunner, got trained on the aircraft, then became a full crew chief.”

After his discharge, Hare kept looking for a job in aviation, “but nobody was hiring in my field.” He finally got a job with the Veterans Administration hospital that had just opened in the Tampa Bay area.

“I spent a year there, but my heart was in aviation. None of the local FBOs would hire me without an A&P license, so I went to the Florida Academy of Aerospace Technology [now the National Aviation Academy] at St. Pete–Clearwater International Airport and got my A&P ticket.”

He then got a job with the Tampa Flying Service FBO but left after six-and-a-half years to work for the Hillsborough County ( Fla.) sheriff’s department. “The reason I left the FBO was to make more money,” he says. “In my area of aviation, mechanics were making less money per hour than automobile mechanics. But now that the demand for mechanics is growing, the pay scale is growing. Because of the demand, the FBOs are having to get the pay scale up.”

He left the sheriff’s department work be an aviation mechanic for the Tampa Police Department. He retired from the City of Tampa in 2012. A member of both the Vietnam Helicopter Pilots Association and the Vietnam Helicopter Crew Members Association, Hare occasionally accompanies aircraft for “show-and-tell” demonstrations.

Hare says that, back in the day, aviation mechanics were more hands on. “With the technology today, they have the computerized ADs and service bulletins, so they can just type in the aircraft type and serial numbers and get all the ADs for that aircraft, whereas before we had to flip through all the books page by page to make sure that we had them all.”

William C. Beversluis, Pilot

Bill Beversluis flew B and C model Huey gunships for B Troop, 1st Squadron, 9th Cavalry Regiment from May 1967 to May 1968, earning the Silver Star and a pair of Distinguished Flying Crosses while flying.

Upon returning from Vietnam, he flew as a contact instructor at Hunter Army Airfield in Savannah, Georgia before being discharged. After earning a degree in geography at William Paterson University in Wayne, New Jersey, Beversluis was hired by Executive Air Fleet (EAF), flying Bell 206 JetRangers for Prudential Insurance.

To get that first flying job, “I just kept pounding on doors, handing out resumes, visiting and revisiting companies,” he says.

In 1978, Beversluis left EAF to join AT&T as chief pilot, flying JetRangers, AW109s, and then an S-76B. He spent 20 years with A&T and was named director of aviation in 1992, supporting the company’s fixed- and rotary-wing aircraft. In 1998, Beversluis moved to Gulfstream to sell corporate jets. He left in 2004 to work for Jet Aviation as its vice president of aircraft management, retiring in 2015.

Most of his flying was done in the metropolitan New York area. “It was a very small band of people who were flying corporate aircraft in those days. Everybody knew everyone else. You knew who someone was, just by the sound of his voice. The camaraderie was absolutely incredible. It was sort of like the air mail pilots of the 1920s and ’30s — they all knew each other.” And because many pilots today are civilian-trained, they lack the common bond of military service that most pilots of his generation shared.
Ken Nye, Flight Engineer

Prior to going to Vietnam in June 1968, Ken Nye had already been in the army for eight years, maintaining and crewing the CH-37 Mojave, the army’s last, and largest, piston-engine helicopter. “So I was the ‘old man’ of the outfit,” he says.

“I was with the 273rd Assault Support Helicopter Company, based in Vung Tau and Long Binh. They changed my MOS [military occupational specialty] from the Mojave to the CH-54 Skycrane, but it wasn’t that big of a deal. The engines, of course, were a big deal, going from piston engines to turbine engines, but the rotor head, flight control systems, and tail rotor were comparable to the CH-37. I was the flight engineer, the GIB (guy-in-back).”

Nye left Vietnam in June 1969 and was assigned to Ft. Rucker as a Skycrane student pilot instructor. He retired from the army in 1980.

“I went to Mountain View College in Dallas to get my A&P license, then went to work for Aerospatiale [now Airbus Helicopters, Inc.] in Grand Prairie, Texas, as a maintenance instructor. I went into their field service as a technical rep, working in-house for a while, then signed on for a program Aerospatiale had in Israel. I was a service rep on the HH-65A there for two-and-a-half years.”

From Israel, Nye moved to Florida, serving as Aerospatiale’s technical rep for seven southern states and six Caribbean islands from 1989 until his retirement in 2007. He then worked freelance maintenance for three years. “I had made a lot of contacts in the southeast, and worked with some service centers, helping them with scheduled maintenance. I also worked with a company that had news helicopters scattered all over the Eastern seaboard.”

Todd Petersen, Pilot

Todd Petersen went to Vietnam as a young warrant officer grade 1, arriving in March 1969. He served a year flying “slicks” — Hueys used to transport troops in tactical air assaults — with the 48th Assault Helicopter Company supporting the Korean 9th Infantry.

He returned to the States in March 1970 and immediately re-upped for another tour, returning to Vietnam the next month. After returning to the States the second time, he was discharged and started looking for a job.

“I went to a flight school in St. Petersburg, Florida, to get a commercial fixed-wing rating and instrument ticket,” he says. “I got it, and never flew fixed-wing again.”

He eventually found a job with Helitrans in Cairns, Australia, flying Boeing Vertol 107s, the civilian equivalent to the CH-46 “Phrogs” flown by the US Navy and Marine Corps. “Most of the jobs were in Papua, New Guinea. I spent almost a year in Australia, then the project slowed down. All of the American pilots were released. However, the helicopters had been leased from Columbia Helicopters in Portland, Oregon. Columbia was just starting helicopter logging and offered jobs to the guys who had been flying their aircraft in Australia.”

He worked for Columbia for about a year and then had the opportunity to go back to Southeast Asia with Air America, flying as a civilian pilot for the CIA. However, as the war wound down, he was released from Air America.

Petersen then went back to Columbia. His second stint there lasted 40 more years than his first. He flew as a line pilot doing long-line work for about 10 years, then became a logging project manager, then an overseas project manager.

“I came out of the field to work for the operations manager, the chief pilot, setting up overseas jobs. We did that in Sudan, Burma, Laos, Malaysia, Indonesia, as well as Africa and South America.”

Compared to when he started, Petersen says the helicopter industry today has an increased emphasis on professionalism and safety. “The regulatory environment is much stricter, the operators are becoming more process oriented, with more emphasis on planning. Those are good things.”
Ralph Timmons, Army Ranger

Ralph Timmons arrived for his first tour in Vietnam in March 1966 as a marine. That tour, however, lasted only until August 1966, followed by his return to the States and discharge from the Marine Corps.

In July 1967, Timmons enlisted in the army. By December, he was back in Vietnam, assigned to the 101st Airborne Division. He later volunteered for Long Range Patrol (LRP) duty.

“One of the differences in being in a LRP unit is that we had our own [aviation] assets,” he says. “Most people who got on a helicopter in an infantry unit were going in and dropped off by someone they didn’t know, then picked up later by someone else they didn’t know.” LRP teams knew the pilots who flew them on their missions.

“Those pilots were fearless,” Timmons said. “I know they were as scared as we were, but they went through some pretty hot and nasty stuff to come in and get us out of there.”

A typical mission was like his last one: Timmons and the rest of the five-man team were set down on a ridge in the A Shau Valley and immediately heard NVA — the “bad guys” — looking for them with dogs. The Americans called in a report and were told to get to the extraction point. “Some fast movers [jets] were brought in, who shot along the ridge line. The bad guys suddenly got very quiet.” The helicopter pilot who came to pick them up had to stay at a high hover and drop a ladder, allowing the team to climb to safety.

After retiring from the Army in 1984 as a first sergeant, Timmons joined “the Feds,” working as a program and management analyst at three different agencies, including an 11-year stint with the FAA, until his final retirement in 2006.

Matt Zuccaro, Pilot

Matt Zuccaro arrived in Vietnam in July 1969 as a warrant officer, fresh out of flight school. He was assigned to the 7th Squadron of the 17th Air Cavalry, flying UH-1 helicopters. On returning stateside in August 1970, he was assigned to Fort Rucker, Alabama, as a flight and classroom instructor. Upon his discharge in 1971, he returned home to New York City, making the rounds to operators, resume in hand. After six months, he landed his first job as a charter and instructor pilot with Island Helicopters in Garden City, New York.

Over the next 35 years, Zuccaro held various pilot and executive management positions with operations such as the Port Authority of New York and New Jersey, Resorts International Airlines, Union Carbide, and various charter, aircraft management, and maintenance organizations.

A member of HAI from the late 1970s, he served on the HAI Board of Directors and as chairman. In 2005, he assumed the full-time position of HAI president (and later CEO). Zuccaro has been an outspoken advocate for improving safety in the international helicopter community, including the development of the Land & LIVE program, which promotes the use of precautionary landings by pilots faced with deteriorating flight conditions. “Today the focus and commitment to safety is the highest I have ever seen in the 50 years I have been in the industry,” he says.

His transition from flying in Vietnam to civilian aviation forced him to leave behind the “can-do, will-do, at-all-costs military mentality.” On the other hand, he notes that safety and operational oversight were not priorities in civilian operations at that time. Zuccaro also expressed thanks for the help he had along the way: “Your family lives the Vietnam experience with you. That is why I am so grateful for my co-pilot on this 50-year journey, my wife, Doreen.”
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Business Bounces Back at HAI HELI-EXPO 2018

By Jen Boyer

The mood at HAI HELI-EXPO 2018 in Las Vegas was one of optimism, with several small signs — and one big victory — pointing toward bluer skies ahead for the helicopter industry.

This year, more than 17,300 attendees walked the halls, visiting 705 exhibitors and 51 helicopters. What’s more, 2,368 people attended the HFI Rotor Safety Challenge education sessions, doing their part to make the industry safer.

“The exhibitors really loved the activity on the floor, and the ability to bring in aircraft using our temporary heliport just outside the doors was a real benefit,” says HAI President and CEO Matt Zuccaro. “From an HAI perspective, we were able to do what we wanted most — focus on safety. We rolled out our online certificate program for safety managers and were able to provide 50 free Rotor Safety Challenge courses, where in many of them it was standing room only.”

While business was brisk on the show floor, a victory in Washington, D.C., on February 28 also fueled the fires of optimism. U.S. House Transportation and Infrastructure Committee Chairman Bill Schuster (R-Pa.) withdrew his proposal to privatize US air traffic control (ATC) services from the House FAA reauthorization bill, ending, for now, talks of privatizing ATC. Under the proposed scheme, US ATC would have been run by a private board dominated by airline interests — a group unlikely to prioritize services for general aviation (GA).

“This is a great example of what can happen when people unite and speak with one voice. I offer my deepest appreciation to the entire GA community for its tireless work defending our industry,” Zuccaro said in an email to all HAI members shortly after the announcement. “HAI stands committed to working with Congress to modernize the FAA to maintain its world-class level of service and safety.”

Subtle Signs of Recovery

A consistent theme throughout HAI HELI-EXPO was the impact of a recovering oil industry. With improvements in the price of oil, a key indicator of helicopter industry health, recovery seems to be on the way. As proof, manufacturers exhibiting in Las Vegas reported increased inquiries and orders while parked aircraft are beginning to take to the skies.

“The good news is there is an increase in the price of oil; an upward trend is coming,” says Zuccaro. “The
The helicopter industry is extremely resilient, and the diversity of a helicopter is a big part of the success of our industry."

At Sikorsky, where several of its models are popular oil-and-gas-support aircraft, the upward trend is very real and opening new opportunities. “New oil and gas exploration and leasing is slowly picking up with the increase in oil prices and the release of exploration blocks on the Mexican side of the Gulf,” says Dana Fiatarone, vice president of commercial systems and services at Sikorsky. “This opens the door for medium-range helicopters. In 2017, we certified the S-92 in Mexico in preparation for this move.”

Signs are similar at Bell, where the manufacturer is seeing increased interest in the Bell 525 Relentless. “We feel these inquiries are attributed to an improving offshore market, as the Relentless straddles the super-medium and heavy-aircraft line, something being closely reviewed by offshore operators,” says Chuck Evans, director of marketing at Bell.

At Safran, Federic Bugeon, vice president of sales and marketing, sees changes across the industry, not just oil and gas. “After three years of a flat market, we are now starting to see helicopter air ambulance (HAA), military, tourism, and utility showing the first signs of ramping up to a new cycle,” he says.

This newfound optimism may be attributed to several factors, from talk of increased infrastructure spending by the current US administration to changing trends in specific sectors, such as HAA. Chris Emerson, president of Airbus Helicopters Inc., has seen changes in HAA, for example, where demands by customers are driving aircraft decisions.

“Today it is all about the level of service,” Emerson says. “Hospitals
are requiring more equipment in the helicopter, such as ECMO machines and Isolette incubators, which requires larger aircraft. I see these hospital requirements leading to new twin helicopter sales.

“There is also a big need for market reentry and replacement of aircraft. The North American market is behind on replacing old aircraft. In fact, during this downturn we’ve seen something that is very uncommon — operators letting their warranties run [out]. Now we’re beginning to see operators looking at replacements, which has started with utility operators. I also see the tax incentives translating into new business for operators, which is one more [avenue] to bring in new aircraft.”

The VIP market is also taking flight. Sikorsky’s Fiatarone says his company is seeing increased interest by VIP customers in the S-76D, mainly in North America, but also globally. Emerson also says Airbus’s largest growth in the past year has been in the VIP sector.

“Airbus didn’t explore this in the past, but recently we’ve seen the VIP percentage of our business rise to 20 percent,” Emerson says. “We had 16 new customers in 2017, and half of them were private VIP owners.”

**Surplus No Longer**

Another sign of recovery across the industry is new life for aircraft that were victims of the downturn. Helicopters that were no longer needed when prices fell were reduced from operator inventory and in some cases even parked, creating surplus pressure on market. Some of these aircraft are now finding work, and others a whole new life.

“Even with the uptick in oil and gas, there is a lot of surplus on the market that will need to be utilized before we see a real increase in new aircraft sales,” says Fiatarone. “We’re seeing an increase in aircraft coming to Sikorsky and other manufacturers to be reconfigured for different missions. Folks are looking for ways to put these assets back to use, and there are a lot of them on the market right now.

“The truth is, the S-76 and S-92 love to be flown. We see considerable reliability increases when an aircraft flies 600-plus hours per year, or about 50 hours a month. With aircraft flying that much or more, it provides an impressive way to create value for the customer.”

At Leonardo, a partnership between the helicopter manufacturer and Waypoint Leasing and Eagle offers expired-lease aircraft a new life. Working with Eagle for the interiors, Waypoint is reconfiguring these aircraft for the utility market, with parapublic and electric utilities being the highest demand.

“The focus is to open the market to operators who may not have had the ability to utilize these aircraft before due to cost,” says Lyke McNee, commercial associate at Waypoint Leasing. “By leasing a used aircraft, completed to their needs, they can now expand their operations and abilities with a helicopter upgrade.”

At Airbus, however, surplus aircraft aren’t cause for concern. “Surplus aircraft seem to be mainly in the medium to heavy markets, but for the light twins it can be a benefit,” says Emerson. “What we’re seeing is former Enstrom and Robinson owners upgrading to used Airbus single-engine helicopters, which opens the door for them to become loyal Airbus customers, and later move to a new Airbus. In this instance, having surplus is a positive thing for our new aircraft sales.”

**The New Normal**

While the overall outlook is positive, the recent downturn took its toll and left a mark that will define the future of the industry. Progressive companies are realigning services to match this new “normal” in hopes of maintaining market share and growth as the industry recovers.

“The recent downturn restructured the industry around tighter margins and more utilization,” says Nicolas Chabée, vice president of helicopter engine marketing and sales at Pratt & Whitney Canada. “The industry has adapted itself to this permanent cost reduction. Even as the industry recovers, this new mind-set will not change. We must strive to serve it with services aimed at helping to reduce costs and maintenance, while increasing aircraft availability and productivity.”

One clear sign of changing times was Bell’s big rebrand unveiled at HAI HELI-EXPO (see that story on p. 22). “Based on interest, we’re feeling optimistic that 2018 will be an improvement over 2017,” says Evans. “At the same time, we see air taxi as a future growth market. We’re building around passenger experience, experimenting with how we can provide propulsion for this emerging market.”

**A New Player**

As legacy manufacturers found new opportunities, Kopter, with its large-interior, single-engine SH09, made waves at the show with a slew of new orders and memorandums.
of agreement. The Swiss manufacturer, formerly known as Marenco Swisshelicopter, also unveiled at the show a new HAA interior for the aircraft, highlighting the versatility of the new model, and announced plans to create a US subsidiary and begin production in the United States.

“There was a very clear need in the market for a large cockpit, versatile, single-engine helicopter,” says Christian Gras, executive vice president of Kopter Group AG. “The Kopter is a natural replacement for the Airbus H125 and H130, and the Bell 206 and 407. It flies 20 knots faster than the H130, allowing tour operators, for instance, to fly one more flight per day.”

Gras added the SH09 also flies circles around the competition in safety. “It is certified to 2014 safety standards, giving it a much higher crash resistance in fuel and fuselage, and offers safety features like dual hydraulics,” he says. “Together this offers the largest, safest HAA single-engine helicopter on the market.”

**Driven to Innovate**
To build market share, manufacturers are continuing to innovate. Robinson turned heads with expanded offerings for both the R66 and R44 line of helicopters. Most notable was the company’s new R66 external-load modifications and cargo hook, capable of lifting up to 1,200 lbs., which opens the aircraft to the utility market.

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Optional enhancements to the aircraft include left-seat operating approval, left-seat hydraulic switch and start button, a load weight gauge, and a second set of engine power gauges (torque and gas temperature) located by the left seat door, allowing the pilot to monitor engine operations while keeping an eye on the external load. The manufacturer also announced an approved wire-strike kit and cockpit video and data recorders.

Over at MD Helicopters, company president Lynn Tilton continued her call for innovations to decrease weight and increase mission effectiveness. Holding up her mobile phone during the press conference, she asked why it takes 150 pounds of equipment in the back of a helicopter to run a glass cockpit when we have the technology to hold a supercomputer in our hands. “The success of every company comes down to innovation and evolution,” she said. “MD has been steeped in this philosophy, and we are committed to getting lighter.”

Referencing her several other companies in the automotive industry dedicated to software and app development for smart electronics and autonomous operation, Tilton emphasized that while 2017 brought several glass upgrades to MD, there was far more work to do to leverage advancements in the automotive industry.

Sikorsky President Dan Schultz discussed the “optionally piloted Black Hawk” during the Sikorsky press conference, describing further automation to make the aircraft single-pilot. He said removing the first officer could provide increased efficiency and cost-effectiveness for operators.

Engine manufacturers are also adapting time-saving offerings to better support their customers. Both Safran and Pratt & Whitney Canada highlighted digital offerings and real-time connectivity to, for instance, help operators quickly identify potential issues to preempt unscheduled maintenance.

Overall, exhibitors and attendees left HAI HELI-EXPO with optimism and a positive outlook for 2018. “There is a very bright light at the end of the tunnel,” says Roberto Garavaglia, Leonardo’s senior vice president of strategy and competitive positioning. “There is definitely life in the market. We are being prudent and cautiously optimistic, but it is an improvement. It’s one thing to expect the turnaround and another to see it start to happen.”

Jen Boyer is a 20-year journalism and public relations professional in the aviation industry, having worked for flight schools, OEMs and operators. She also holds a rotorcraft commercial instrument license with flight instructor and instrument ratings. Boyer currently runs her own public relations and communications firm and freelances regularly for aviation companies and publications. She can be reached at jen@theflyingpenguinpr.com.
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“What’s new?”

Trying to answer that question is one reason why thousands attend HAI HELI-EXPO® each year. New and improved products, new companies, new alliances — there’s so much to see on the show floor, and HAI HELI-EXPO 2018 in Las Vegas was no exception.

**New Exhibitors**

LICO SOLUTIONS showed its new ground-handling wheel, a universal wheel set for skidded helicopters. It fits virtually any skid system, is lightweight, and breaks down in seconds for easy transport. LICO Director Thomas Kabilka says his family-owned 40-year-old business is well-known in Europe and specializes in solutions for rotorcraft.

With its first exhibit at HAI HELI-EXPO, the company is introducing its designs to the American market. With all engineering and development performed in-house, LICO can be responsive to specific needs. Products such as the ground-handling wheel and the Flyer-Truck Heli Loader are a natural progression from specialized designs. Visit www.lico-solutions.com to learn more.

**PRECISION GEAR INC.**’s samples remind us of the intricacies involved in the materials and machining of close-tolerance, flight-safety-critical components. Sometimes Einstein’s admonition that “Everything must be made as simple as possible, but not simpler” just doesn’t apply to helicopters.

Rodney Tache, sales and marketing director, and John S. Nortey, program director, noted that individual consumers are unlikely to know that Precision Gear exists, but the company’s defense and commercial customers in the helicopter, fixed-wing, unmanned aircraft systems, and satellite industries rely on its expertise every day of the year. Learn more at www.precisiongearinc.com.

**TACOR PRECISION AIRCRAFT WELDING** was also new at HAI HELI-EXPO 2018. Alan Reeves, general manager, said that the company wanted to let the rotary-wing world know that the long-established precision aviation welder was officially entering the vertical market. Their exemplar display showed a technically difficult, perfectly executed seam-and-edge welding of a stainless-steel thermal blanket to a section of stainless-steel ductwork. Not simple work! Visit www.tacor.net to learn more.

**Batteries**

Amanda Halsted, aftermarket sales manager for aviation, at SAFT, showed the company’s legacy ruggedized batteries. “Nothing ‘spectacular’ here,” she says, “just powerful, safe technology.” Even established technology is constantly being reevaluated and improved, Halsted says, “So we always keep our eyes open, and we’re always developing improvements and new technologies.” Maybe we should be watching for an announcement from Saft. Learn more at www.saftbatteries.com.

Gill Sealed LT Batteries no longer have matching pink tops. They’re red. “This is to distinguish them from the iconic dry-charge flooded batteries Gill still offers and older sealed technologies,” says J.D. Anderson, general manager of **TELEDYNE BATTERY PRODUCTS**.

“LT is an improved sealed technology. Typically, we’re looking at better performance across the board: for example, 30 percent or more on first-start power, 20 percent-plus on residual (second) starts, and a 50-percent faster charge on the LT 44-amp hour battery,” he says. This was achieved through advanced chemistry that delivers more power per pound and improves reliability.

“Capacity check is now at 18 months versus 12, and our LT warranty is two years,” says Anderson. Teledyne’s proprietary Safe Li-ion technology developed for the military may be making its way to the commercial marketplace soon. Visit www.teledyne.com to learn more.

**Communications**

Continuous voice and data in the air — that’s what **FLIGHTCELL** delivers, with its dual satellite and cellular modem technology. “It will do pretty much anything your cell phone will do: preset phone numbers, GPS tracking, and cellular data,” says Marketing and Communications Manager Michael Eddy, “but it will do it anywhere.”

The Flightcell DZMx phone system is considered a minor modification and can be installed under an FAA Form 337, Major Repair and Alteration. Learn more at www.flightcell.com.

**Displays**

A full-line avionics supplier to the fixed-wing market, **AVIDYNE** has been a long-time leader in active traffic systems for helicopters. Its first dedicated helicopter upgrade is big news.

“Our new R10.2.1 certification comes on the heels of our announcement last week that we received STC [supplemental type certificate] approval for our IFDs [integrated flight displays] in Robinson helicopters,” says Avidyne CEO Dan
Schwinn. “We have incorporated helicopter enablement features that focus on the specific needs of helicopter operators.”

Features like VFR waypoints, helicopter SID/STAR/approaches, remote COM channel increment and frequency transfer capability, improved METAR decoding, adding AWIS frequencies to the frequency list, and allowing fuel range ring time to be configurable — “These illustrate our responsiveness to the rotary-wing market,” says Schwinn. Visit www.avidyne.com to learn more.

HOWELL INSTRUMENTS, with its launch customer, MD Helicopters, is now delivering its H420 7-inch engine display driven by its data acquisition unit. Field Engineer Steve Villaman says, “We tailored the system to MD Helicopters’ specific requirements, but it can be customized for use in any aircraft. Some of the best features of our display are its vivid colors, brightness, daylight readability, and our super-wide viewing angles.” Learn more at www.Howellinst.com.

TRAKKA SYSTEMS brought a spectrum of products to HAI HELI-EXPO. Stacey A. Bennett, marketing manager, says, “We can bring a complete package to a customer — moving map and synthetic vision, searchlights, IR and UV imaging, camera systems, overlays for terrain or streets, landmarks.” The company exhibited its TLX searchlight with integrated daylight and IR (infrared) cameras. “Recently, we put together an affordable and complete package for an OH-58 for a county sheriff’s operation.”

Recognizing the workload of a pilot and the load-carrying capacity of small helicopters, Bennett notes that “in a single-pilot situation, he can even operate the searchlight from a switch on the collective.” However, she adds, “Beyond that, we think it’s good to have someone aboard to run and monitor the systems. Pilots are busy.” Visit www.trakkasystems.com to learn more.

Equipment

AKV INC. debuted an industry-first Bluetooth-connected iPad app for external-load operators as an option for the AKV ETM1000 Exceedance and Trend Monitor. This allows remote mounting of the engine indicators for external reference work wherever they are needed.

AKV also displayed its line of STC’d engine-cycle counting systems for both singles and twins. “Cycle counting isn’t as simple as it seems,” says Jonathan Gunn, president. “All pilot manual counting methods are overly conservative, resulting in early retirement of the engine by up to 25 percent or more. Only an accurate, computer-controlled method of counting engine cycles can give your operation accurate and less conservative counts, both to preserve capital and properly maintain its engines.” Learn more at www.akvinc.com.

John Yow, Business Development Manager, Asia, of LUMINATOR AEROSPACE highlighted the Orion high-power searchlight platform with improved hand controllers, plus myriad external LED lighting in both fixed-position and powered-gimbal units for all helicopter platforms — smaller, lighter, cooler, with lower current draw. Many units incorporate near-coaxial white, infrared, and ultraviolet lighting, enhancing bird-strike avoidance for multiple mission use. “The consistent feedback we get,” Yow says, “is that the lights are far brighter and more versatile than anything they have ever flown, very useful to their missions.” Learn more at jyow@luminatorusa.com.
Life Extension

When you need to remove the inevitable scratches, swirls, and little blemishes from your windscreen, windows, or bubble, experts recommend MICRO-MESH. National Sales Representative Ted Thomas had a complete line of liquid and cushioned abrasives and finishing products, and perhaps more importantly, advice on how to use the well-known products. Particularly useful was the Micro-Mesh Heavy Damage Removal Kit for removing crazing. The kit

* A new spirit of optimism permeates the industry.

We don’t always think of such things, but many expensive ball and roller bearings can be rebuilt. Matthew Dragomier, senior sales engineer at TIMKEN AEROSPACE, touts the merits of rebuilding. “Some bearings are quite expensive,” he says, “and many of these can be rebuilt to ‘new’ specification by replacement of only some of the parts — typically the balls and separators.” Save money and restore like-new performance. Why not? Learn more at www.timken.com.

Build It Yourself – Or Not

Even with the optional air conditioning, the new SAFARI 500 is still lighter than the original Bell 47-inspired machine (which remains in the Safari lineup). While saving weight, the new bodywork looks modern and adds a whole new look to the kit-built Safari. A carbon-fiber cabin covers the familiar Chromoly tube cage.

A little faster, 60-years-newer-looking, the Safari 500 uses the same basic mechanicals and proven airframe. And for those with a desire for the two-place machine but not for building it, the factory occasionally offers its demonstration machines to customers on a first-come, first-served basis. Visit www.safariheliicopter.com to learn more.

Tim Kern is an aviation writer whose work has appeared in more than 50 aviation publications. He is a private pilot and holds an MBA in finance and operations from Northwestern University. He has extensive experience in machining and both motorcycle and auto racing, and was CEO of an airplane engine company in the early 1990s. Tim is the only journalist to complete the ALEA Accident Investigation course or to have earned NBAA’s CAM (Certified Aviation Manager) certification.
HAI has offered a slate of professional education opportunities at HAI HELI-EXPO®. However, not everyone is able to attend a formal course or travel to a trade show. To better meet the needs of our far-flung industry, HAI has created the Center of Rotorcraft Education (CORE) portal on the HAI website (core.rotor.org).

CORE is a one-stop shop for helicopter-specific professional education that can be accessed 24/7, from anywhere. The portal will allow users to browse and register for online education, as well as HAI HELI-EXPO courses, regional events, and committee webinars.

The convenience of logging on and taking a class, from anywhere, at any time, is especially important in aviation, where travel, unusual duty schedules, and working from remote locations are the norm. Also, research has shown that students retain material better if they can learn at their own pace, as CORE students do.

Three New Courses
HAI will be offering three new online courses designed to provide fundamental concepts for safety, maintenance, and operations managers in the helicopter industry.

The three courses were developed by Dr. C. Daniel Prather, AAE, CAM, who has an extensive background in aviation. He served as assistant director of operations at Tampa International Airport from 1998 to 2006 and as associate professor of aerospace at Middle Tennessee State University from 2006 to 2012. Since July 2012, Prather has served as professor and founding chair of the Department of Aviation Science at California Baptist University.

Each course is comprised of several modules. Students must successfully complete a quiz after each module before moving on to the next one, as well as a test at the end of the course. Students who pass the final exam will receive a certificate of completion.

These courses are the first step in what will eventually become an assessment-based certificate program, approved and validated by the Institute for Credentialing Excellence.

Safety Managers Course
The Safety Managers Course, which is online now, is designed to help the current or newly assigned helicopter safety professional create or enhance the safety management system (SMS) within their organization. Students will learn the fundamental concepts of a functional SMS and how they can use SMS to improve their organizations’ safety.

Maintenance Managers Course
The next course, scheduled to come out this summer, will be the Maintenance Managers Course. This course will touch on topics such as labor relations, operations, and safety management. The maintenance professional will learn how to forecast workloads, maintain inventory, and keep operating costs down.

Operations Managers Course
The Operations Managers Course is scheduled to go online in the fall. This course will help the newly assigned or experienced helicopter operations professional to acquire or enhance skills such as time management, task and resource efficiency, and maintaining profitability.

How to Register
To access the online courses, visit core.rotor.org, then select the course you would like to take. HAI members receive a 37 percent discount on registration fees: $170, versus $270 for nonmembers. Visit rotor.org/join to become an HAI member and take advantage of this discount.

When registering, if you are an HAI member, enter your member number and use your discount code to get the member price of $170. Once the course is added to your cart, you will be asked to create an online account. After you have registered and paid, you will have access to the first module of the course.

The course modules must be completed in sequence: the second module will not be accessible until the first module and quiz have been completed successfully.

Other CORE Benefits
CORE will be the education portal for HAI and its sister foundation, Helicopter Foundation International (HFI). For example, the HFI Rotor Safety Challenge each year provides safety education sessions for thousands of HAI HELI-EXPO attendees. Now, select Rotor Safety Challenge sessions will be available on CORE, helping HAI members to stay up-to-date with safety initiatives in the helicopter industry.

The CORE website will also be where you can get information about future HAI educational opportunities. Please check core.rotor.org for further updates.

If you have suggestions for future courses or feedback on our education program, please email me at education@rotor.org. I truly believe that education is CORE to helicopter professionals, and I am excited about how CORE can help you reach your professional goals.

Greg Brown is HAI’s manager of education. He can be contacted at education@rotor.com.
EVERY DAY, ON EVERY continent, members of the vertical lift community do amazing things with helicopters and other vertical lift aircraft. They get jobs done that can’t be done any other way.

But for some, simply getting the job done is not enough. Whether in a single instance or throughout a career, these pilots, maintenance technicians, flight instructors, safety professionals, and operators and industry leaders from around the world excel — and set an example of excellence that inspires our industry.

For more than 50 years, HAI has encouraged and celebrated the highest standards of professionalism within the vertical lift community through its Salute to Excellence Awards. The awards reflect outstanding achievements from across our industry.

At the 2018 Salute to Excellence Awards dinner on Feb. 28 during HAI HELI-EXPO 2018 in Las Vegas, the following honorees were recognized. HAI congratulates them and celebrates their contributions to our industry. Their passion for excellence is an inspiration to us all.

Nominations for the 2019 Salute to Excellence Awards, to be celebrated at HAI HELI-EXPO 2019 in Atlanta, will be accepted beginning July 13, 2018. Visit rotor.org/salute for more information.
LIGHTSPEED AVIATION EXCELLENCE IN COMMUNICATIONS AWARD

Frank Colucci  
*Senior Contributing Editor, Vertiflite*

**During the course of** his 35-year career, Frank Colucci has authored more than 1,000 feature articles, including stories and leadership profiles for nearly every issue of *Vertiflite*. He has written in depth about rotorcraft design and testing, civil and military operations, manufacturing and materials, avionics integration, flight simulation, and other rotorcraft industry topics.

Colucci has contributed articles on rotorcraft and aviation technology to numerous industry publications, including *Avionics*, *Rotor & Wing*, *Helicopter World*, and *Defence Helicopter*, as well as the Sikorsky Archives newsletter. He also wrote for *Wings*, *Airpower*, and *AIR International* magazines, creating seminal works on numerous vertical flight development programs.

Colucci authored an early design history of the AH-64 Apache and served as an editor for AHS’s forthcoming book on 75 years of AHS International history. He also contributed significant amounts of material for the society’s website.

Colucci’s nominations included praise for his style of writing. “His articles stand the test of time,” wrote one nominator. “They are noteworthy for their accuracy, excellent writing, and clarity of thought that allow the reader to see the subject through intelligent eyes.” Another nominator praised his ability to explain complex, technical material to a wide range of readers — from college students to the world’s leading technical experts.

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W.A. “DUB” BLESSING FLIGHT INSTRUCTOR OF THE YEAR AWARD

**SPONSORED BY H. ROSS PEROT, JR., AND THE PEROT FAMILY**

John W. Williams  
*Pilot Training Safety Manager (retired), Bell Helicopter*

**John W. Williams’s career** as a certificated flight instructor (CFI) spanned more than 35 years, all with Bell Helicopter. Following military service that ended in the 1970s, Williams first joined Bell as a production test pilot. He also worked in the Experimental Flight Test Department before becoming a CFI at the Bell Flight Academy, where he trained countless pilots in 19 countries.

As a flight instructor, he was known for stressing safety both in the helicopter and on the ground. He later became pilot training safety manager for Bell and was a Part 141 night-vision goggle instructor.

Of Williams’s 12,500 flight hours, more than 4,000 hours were earned during flight training. Williams received multiple nominations and letters of recommendation for this award, including one from the namesake of the award, W.A. “Dub” Blessing.

Williams has also led an extraordinary career away from the training department. He participated as a U.S. Precision Helicopter Team pilot (Bell Crew) in the World Helicopter Championships in the U.S.S.R. in 1978, and again in 1981 in Poland, where the team won the gold medal for the first time. He currently holds five international helicopter speed records, including the Around the World (westbound) record with Ron Bower. He is a lifetime member of the Society of Experimental Test Pilots and was president of the Helicopter Club of America.
Charles “Chuck” Hagen  
*Sales, Training, and Field Service Manager, AeroMaritime America*

In the field of helicopter engine repair services, Charles “Chuck” Hagen is known and respected for his expertise, troubleshooting skills, and commitment to excellence and safety for his customers. He is known to drop everything to focus on a specific maintenance issue, leveraging his own experience with a significant professional network of trusted peers.

Chuck has even been known to drive six hours to help a U.S.-based customer or fly for 15 hours to support the requirements of an international client. As a result, he is the recipient of numerous letters of gratitude from customers, and his nomination package included eight letters of support from helicopter professionals who recognize and appreciate his abilities and service to customers.

Chuck’s career in helicopter maintenance began when he received his A&P license in 1992, followed by six years of service in the U.S. Army, working as a 68B10 turbine engine mechanic, where he worked in both depot level and line maintenance units servicing all U.S. Army turbine-powered aircraft.

He joined AeroMaritime America, Inc., part of the ITP Group, in 1996 as a technician/test cell operator, gradually working his way into higher levels of responsibility. He has served as production manager and worked in the company’s Quality Department as a representative for Return to Service.

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Eric Bashta and Jerry Osterloh  
*Deputies, Riverside County (CA) Sheriff’s Department*

On the night of January 11, 2017, Riverside County Deputies Eric Bashta and Jerry Osterloh responded to a call for assistance by a California Highway Patrol (CHP) officer who had stopped a suspected DUI/reckless driver. As the helicopter approached the scene, Tactical Flight Officer Osterloh observed the driver remove a rifle from the cab of his pickup truck and begin firing at the patrol officer and his vehicle.

Osterloh immediately broadcast a call for assistance as the suspect emptied an entire magazine, then fired additional rounds into the driver’s door after reloading. He then returned to his vehicle and fled. The CHP officer radioed that he was uninjured, adding that the driver also had a woman and two children in the truck.

Bashta and Osterloh pursued the truck, keeping the helicopter’s spotlight trained upon it and broadcasting its location, speed, and direction over the radio. The suspect left the freeway and entered a suburban neighborhood. The driver then exited the vehicle and prepared an ambush for pursuing ground officers, firing at the arriving units. Using the aircraft’s FLIR camera, Osterloh directed SWAT officers toward the suspect’s location.

At that point, the suspect began firing at the helicopter orbiting 600 feet overhead, shooting 60 to 80 rounds at the deputies. The deputies held position, circling the suspect, and continued to broadcast his actions and location. The suspect entered and reentered the home, repeatedly seeking officers to shoot. Osterloh’s updates over the radio allowed officers on the ground to advance safely. After approximately 30 minutes, a SWAT deputy witnessed the suspect exit the building and engaged him, ending the threat. Law enforcement officers believe the suspect intended this to be a murder/suicide.
AIRBUS GOLDEN HOUR AWARD

Jonathan “JR” Roebuck
LifeFlight of Maine and MedComm

Jonathan “JR” Roebuck is being honored for his work in the creation of the Remote Access Project. Quickly locating and evacuating critically ill and injured patients in the remote areas of Maine is essential to survival. With an extensive Atlantic shoreline, hundreds of coastal islands, dense forests, mountains, and extreme temperatures, LifeFlight of Maine operates in one of the most complex aviation environments in the United States.

In many cases, it previously took up to eight hours for a patient to reach a hospital. Roebuck oversaw the creation of more than 120 remote access landing zones (LZs), all on private land, that provide sites where helicopters can land to assist in rescue operations. In dire situations, minutes can literally make a difference between life and death, and the Remote Access Project LZs provide helicopters with space to land in remote areas.

The importance of the LZs was proven during the rescue of an injured snowmobiler. The patient, a woman, had crashed her snowmobile into a 40-foot ravine and sustained critical injuries. Following the 911 call, responders dispatched a helicopter to the nearest Remote Access Project LZ, changing the destination during flight as more information became available.

The LifeFlight of Maine helicopter landed just 50 yards from the patient, carrying medical personnel and vital emergency supplies. This would not have been possible if it were not for the strategically placed Remote Access Project LZ. The patient survived the horrific ordeal and has returned to work and snowmobiling.

BLR AEROSPACE SAFETY AWARD

Claude Vuichard
Creator and Promoter of the Vuichard Recovery Technique

Claude Vuichard receives this award for his ongoing commitment to safe helicopter operations. He is best known for refining and promoting the Vuichard Recovery — a technique that trains helicopter pilots to recover from a condition known as vortex ring state with a minimal loss of altitude.

In those conditions, a helicopter loses the ability to maintain lift and begins to descend. For more than 30 years, pilots have used the Vuichard Recovery to adjust their flight controls so that they exit the ring state by moving the aircraft to the side, thereby preserving as much altitude as possible.

The significance of the Vuichard Recovery technique within the helicopter industry is widespread. The International Helicopter Safety Team and U.S. Helicopter Safety Team have both published Airmanship Bulletins supporting its use. Robinson Helicopters has integrated the technique into its safety course, and helicopter operators around the world have adopted the procedure.

Vuichard took an early retirement from the Federal Office of Civil Aviation in Switzerland to conduct safety courses worldwide. Today, he continues to teach globally and to develop new techniques to improve helicopter flight safety, dedicating his retirement to reducing helicopter accidents and saving lives. He has also set up a nonprofit organization, the Vuichard Recovery Aviation Safety Foundation (www.vrasf.org), to further assist in spreading his message of helicopter safety.
SIKORSKY HUMANITARIAN SERVICE AWARD

Christchurch Helicopters

At 12:02 a.m. on November 14, 2016, a devastating 7.8 magnitude earthquake shook New Zealand’s South Island. Ruptures occurred on multiple fault lines in a complex sequence that lasted for about two minutes, causing massive landslides and destroying roads and rail links.

Crews from Christchurch Helicopters were among the first to arrive in Kaikoura, a seaside tourist community that was completely cut off from the rest of the country. Thousands of residents and tourists were stranded in an area with damaged infrastructure and no way of replenishing supplies. Within six hours, Christchurch Helicopters was transporting urban search-and-rescue personnel to Kaikoura and starting to rescue more than 130 stranded Chinese tourists.

Once the damage was assessed, New Zealand Civil Defense recognized that a coordinated aerial program was necessary to deliver vital supplies, continue evacuations, and support the recovery project. In addition to working on the project, Christchurch Helicopters worked with Civil Defense to coordinate the work of several helicopter companies. Among the work completed was transportation of roughly 1,300 workers, delivery of vital cancer medications, and flying a plumber to a family’s isolated farmhouse without water or sewage.

The services provided by Christchurch Helicopters and the consortium of other operators was the largest air brigade in New Zealand history. While it tested the company to its limits, the team at Christchurch Helicopters stepped up to the challenge and maximized its resources to provide the greatest level of support. Coincidentally, just a few months after the earthquake, Christchurch Helicopters crews also saved lives and property in the Port Hills fires in Christchurch.

APPAREO PILOT OF THE YEAR AWARD

Maria Rodriguez
Owner and Operator, Caribbean Buzz

When the company Maria Rodriguez flew with for several years decided to move from the U.S. Virgin Islands (USVI) to the mainland United States, she chose to stay and open her own helicopter companies: Caribbean Buzz and Caribbean Buzz Management. As an owner/operator, Maria and her husband manage a multi-aircraft operation that provides helicopter services throughout the Caribbean and yacht support operations around the globe, specializing in remote/adventure helicopter and seaplane support.

In late summer 2017, Rodriguez’s home in the USVI was in the path of both major Caribbean hurricanes — Hurricane Irma first, followed by Hurricane Maria a few weeks later. With roads impassable after Hurricane Irma, Rodriguez walked from the safe shelter to her home, which was battered and flooded but still standing. She hiked for an additional two hours to reach the airport. Her hangar was damaged, but the helicopters had survived unscathed. She rolled them onto the ramp and immediately began to fly support missions wherever she could. “Every evac flight started with tears,” says Maria, “but ended with smiles!”

As Hurricane Maria bore down upon her home again, Rodriguez moved her helicopters to a reinforced hangar in Puerto Rico. As quickly as possible after the storm passed, she returned to the USVI to again fly support missions.

In both instances, Maria documented the devastation to the islands with her camera, posting hundreds of photographs to social media. In turn, these images — often the only photos coming from the region and without compensation to her — were picked up by media outlets and reproduced throughout the world. Her images helped to convey the devastation sustained by her island home to millions around the world, resulting in forewarning to others in the hurricane’s path and waves of support for the devastated islands.
BELL HELICOPTER LIFETIME ACHIEVEMENT AWARD

James Russell Spray
President and CEO (retired), Safran Helicopter Engines USA

James Russell Spray’s career in aviation operations and management spans 53 years, including 42 years in executive administration. His career includes working as a helicopter pilot for Pacific Airmotive Corporation and as a helicopter flight instructor for Bell Helicopter Textron and Southern Airways, where he was responsible for the accident-free training of more than 500 pilots.

He held the position of vice president of medical operations for Rocky Mountain Holdings, growing the Air Medical Services Division from seven helicopters and $3 million in revenue to more than $100 million in revenue per year with 90 aircraft. Spray later took over as chairman and CEO of Rocky Mountain.

More recently, Spray held the position of president and CEO of Safran Helicopter Engines USA, formerly Turbomeca USA, from 2003 until his retirement in late 2016. While he was with Safran, he concurrently held the positions of president and CEO of Microturbo, Inc., Turbomeca Canada, Ltd., and Sagem Avionics. During his tenure with Safran Helicopter Engines USA, the company doubled its number of employees, saw multiple facility expansions, was awarded two major military contracts, and developed or strengthened relationships with Airbus and Bell Helicopter.

Spray has also served as chairman of the Emergency Medical Services Committee for HAI (now Air Medical Services), was the co-sponsor of the American Society of Hospital Based Emergency Air Medical Systems (now called the Association of Air Medical Services), and has been an officer and member of numerous other boards and associations.

DONATE TO HELICOPTER FOUNDATION INTERNATIONAL

Your tax-deductible donation will go to HFI programs that preserve and promote the rich heritage of vertical aviation and support the next generation of pilots and maintenance technicians.

HFI is a 501(c)(3) nonprofit organization; your donations are tax deductible as far as federal law permits. Questions? Contact Allison McKay, vice president, at allison.mckay@rotor.org or 703-302-8476.

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PRESERVING THE PAST
Heritage of Helicopters Display
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ENSURING THE FUTURE
Scholarship Programs for Pilots and Mechanics
Mentoring Experiences • STEM Education

Donate Now at helicopterfoundation.org
Helicopter Foundation International (HFI) offers scholarships to support those embarking on education programs to become helicopter pilots, maintenance technicians, and safety practitioners. HFI offers four different types of scholarships — up to 19 in all:

- The **Commercial Helicopter Pilot Rating Scholarship** is awarded to up to four pilots who have their private license and are in the process of attaining their commercial rating.
- The **Maintenance Technician Certificate Scholarship** is awarded to up to six students who are studying to become maintenance technicians.
- The **Michelle North Scholarship for Safety** is awarded to a pilot who has already attained his or her commercial rating and demonstrates an outstanding aptitude for safe flying and aviation best practices.
- The **Bill Sanderson Aviation Maintenance Technician Scholarship** is awarded to up to eight students in the maintenance technician field. Each winner will attend a course from a selection made available by helicopter airframe and engine manufacturers.

Beginning June 1, 2018, HFI will accept applications for next year’s Bill Sanderson Aviation Maintenance Technician Scholarship and Michelle North Scholarship for Safety. Beginning September 4, 2018, HFI will accept applications for next year’s Commercial Helicopter Rating Scholarship and Maintenance Technician Certificate Scholarships. Please encourage any deserving students to submit their applications at the website below. A scholarship review committee will select the winners, who will be notified prior to HAI HELI-EXPO 2019.

**Apply for HFI scholarships at [www.helicopterfoundation.org](http://www.helicopterfoundation.org)**
Pilot and Mechanic Shortage Looms

During the next 18 years, the US helicopter industry will experience a shortage of more than 7,600 pilots, according to a study conducted by the University of North Dakota (UND), in partnership with Helicopter Foundation International (HFI) and HAI. The study also projects a shortage of 40,600 aviation mechanics in the United States during the same period.

Presented at a news conference at HAI HELI-EXPO 2018 in Las Vegas, the UND-HFI Rotorcraft Pilot and Mechanic Supply Forecast confirmed industry suspicions regarding labor force trends and highlighted the need for drastic changes to ensure industry growth and viability into the future.

Compiled from a survey of 250 helicopter companies and operators and tying responses together with historical data and forecasts, including FAA records of current pilot and airframe and powerplant (A&P) licenses, the study is the most comprehensive to date focusing on the helicopter industry’s labor trends.

“We commissioned this study because we wanted to provide documented proof of the shortage, not just ‘heard on the street,’” says Matt Zuccaro, who is president and CEO of both HAI and HFI. “The numbers indicate we have the potential for a serious shortage. We as an industry must start addressing this issue and finding creative ways to attract and keep our workforce in the helicopter industry.”

Pilot Numbers Concerning

The study identified several factors contributing to a shortfall of pilots. Since 2009, the number of newly certificated pilots has remained equal to those retiring. However, according to the study, during the next 12 years, the scale will tip, with more leaving than entering.

And some evidence of the shortage is already here. More than 50 percent of study respondents reported they had a harder time hiring pilots in the last year. Almost 54 percent believe the lack of qualified pilots will definitely or probably interfere with their ability to grow over the next five years.

The UND researchers uncovered one factor that is making an immediate impact on the number of helicopter pilots: a recent trend in hiring by regional airlines. Faced with their own workforce supply issues, the regionals are actively recruiting rotorcraft pilots to fill empty seats in their cockpits — offering steady employment with attractive pay and benefits, including a career path to the larger major airlines.

The study’s authors queried three regional airlines and determined that in 2017 alone these three airlines recruited and trained more than 500 helicopter pilots to be airline pilots. There are more than 60 regional airlines operating in the United States, and the total number of transitioned pilots is undoubtedly higher. However, the study authors noted that the effect of airline recruiting was not reflected in the study, meaning the pilot

HFI Workforce Sustainability Round Table

Sep. 26–27, 2018 · Alexandria, Virginia
For more information, email Allison.McKay@rotor.org

The helicopter industry can no longer rely on how it has previously developed its workforce — the UND-HFI study is proof that those methods are no longer working.

HFI will hold a meeting for interested stakeholders from industry, government, military, and education, to discuss how we can attract, train, and develop our workforce. At the initial meeting, attendees will identify key factors in helicopter workforce development, including:
- Boosting helicopter/STEM awareness in K-12 education
- Increasing helicopter curricula available to high school and college students
- Making aviation post-secondary education (flight and A&P schools) affordable
- Expanding the number of A&P schools that offer helicopter-specific course material
- Improving industry recruiting practices, including developing career pathways and moving from passive to active recruiting
- Easing the transition to the civilian industry for military pilots and maintainers
- Closing the experience gap, so low-time pilots and mechanics have defined paths to get the experience they need for more-skilled positions
- Reviewing compensation and benefits — our industry needs to be competitive and appeal to the best and brightest.

Round Table attendees will discuss strategies that will move the needle on industry workforce development and will form working groups tasked with creating action plans.

If you have experience in these areas, including success stories or best practices to share, and would like to help our industry chart a course to workforce sustainability, please email Allison.McKay@rotor.org.
64% of operators anticipate more difficulty in finding qualified pilots.

7,649 Helicopter pilot deficit expected by 2036.

500 The number of military helicopter pilots lost to regional airlines in 2017 alone.

Learn more at rotor.org/und-hfi
60% of operators report hiring mechanics with less experience than in previous years.

67% of operators report more difficulty in hiring mechanics in 2017.

40,613 Aviation mechanic deficit expected by 2036.

Results are from the UND-HFI Rotorcraft Pilot and Mechanic Supply Forecast, a 2018 survey conducted by the University of North Dakota for Helicopter Association International and Helicopter Foundation International.
Airlines Aggressively Recruiting Rotorcraft Pilots

FAA regulations prompted by the Colgan Flight 3407 accident in February 2009 require more experience and an ATP rating for airline first officers but makes an exception for military pilots and those holding aviation degrees. At the same time, major airlines are reducing their requirements for first officers and captains. They are also taking regional pilots sooner than in the past, amplifying the staffing pressure on regionals.

Regional airlines are going outside their normal recruiting channels to look at pools of pilots who can quickly receive their ATP rating. One group that is now being targeted: helicopter pilots.

“A very real indicator of this overall pilot shortage is the aggressive campaigns by the regional airlines,” Zuccaro says. “Three airlines exhibited at HAI HELI-EXPO 2018, and another three or four recruited at the Military to Civilian Workshop the day before the exhibit floor opened. They’re here offering jobs now. When you are hiring people who do not have the skills you need and you’re willing to train them, it’s a very real indication of a staffing issue on all levels.”

Airline recruitment strategies include aggressively recruiting pilots at schools, pilot organizations, military events, and airshows. They maintain full recruitment teams, including line pilots, who are available to talk to candidates about the day-to-day of the job.

For the rotorcraft transition programs (RTP) targeting helicopter pilots, compensation ranges from $25,000 to $40,000 in training and post-completion bonuses for qualified pilots who achieve 250 hours of airplane pilot-in-command time and the FAA’s restricted airline transport rating. The airlines have agreements with specific flight schools to provide the training.

Candidates are often offered transition packages that spell out exactly what training they must acquire and an approved source where they can get the training, accompanied by payment for the training and entry into a pathway program from the regional airlines to the majors. This creates an attractive offer for pilots, with a clear, lucrative, and predictable career path — something that many say the helicopter industry lacks.

This strategy is working. Airlines are reporting several helicopter pilots in each monthly training class and those pilots are succeeding.

“I had an instructor call me to say he was very impressed with the helicopter transition pilots,” says Dan Watts, PSA Airlines captain and RTP recruiter. “They are motivated, have strong translatable skills, and do very well.”

Pilots talking to airline recruiters during HAI HELI-EXPO expressed a variety of reasons for their interest. The largest factors included a desire for better pay and benefits, a regular and reliable schedule, and a sense of being appreciated. Several shared laments about regular layoffs in downturns, lack of previously expected upgrades (again because of downturns), low pay and benefits, and an overall sense of fatigue with “paying their dues” for 10 years.

Taking a page from the airline book may be an option. PSA’s Watts sees this shortage as a wakeup call for all industries to become more focused on their workforce. “Making an employee feel valued is so much more than throwing money at them. The best job is the one that gives you the best quality of life, whether that’s at an airline or a helicopter operator.”

shortage projection could be much larger due to this factor alone. (Read the sidebar above to learn more about how regional airlines are aggressively recruiting helicopter pilots.)

Maintenance Numbers

Alarming

For mechanics, the outlook is considerably more ominous. More than 67 percent of respondents to the survey reported current difficulties finding mechanics to employ, with more than six out of 10 respondents being forced to hire mechanics with less experience than required in the past. More than half of the respondents surveyed are concerned this difficulty to find mechanics will inhibit their companies’ ability to grow and expand.

Obstacles to gaining and retaining mechanics in the industry include the cost of A&P training, entry-level pay in the helicopter industry, and competition with larger aviation companies, airlines, and even industries outside of aviation, such as automotive.

The UND study highlighted another factor in the coming competition for aviation personnel: China and India are both poised for aggressive aviation expansion, and there will likely be a corresponding need for expat pilots and mechanics from other countries. This will only add to the shortfall in numbers for both positions.

Drastic Changes Needed

The UND study highlights an urgent need to reevaluate how the helicopter industry develops and supports its workforce. “Unless there are some fundamental changes in policy, outreach, scholarships, and access to financing, the industry faces large-scale deficits in the amount of available and qualified licensed and certificated pilots and mechanics,” the study stated.

The issues range from a lack of awareness of helicopter careers, to the struggle to move beyond low-paying entry-level jobs. For example, the study quotes one respondent as saying, “The problem with this industry is an oversaturation of jobs that require very high levels of experience and a major deficit of jobs in which pilots can build said experience.”

The same is true for maintenance. Everyone wants the highly skilled
pilot or mechanic with thousands of hours, yet entry-level personnel often have trouble obtaining the experience needed to fill these positions.

“The biggest obstacle is that huge hurdle and gantlet new pilots have to run to get to a viable level of experience,” Zuccaro says. “I’m hearing people can’t afford to support themselves as flight instructors and are stepping out of the industry before they’ve gained the experience they need to advance their career.”

For maintenance technicians, the gap often begins with their education. “Many brand-new A&Ps have never touched a helicopter — their school only used fixed-wing aircraft — and yet we expect them to choose a career in the helicopter industry,” Zuccaro says.

“Our industry needs to stop waiting for people to come to us. Yes, there will always be that guy or gal who has dreamed of helicopters since they were kids — I should know, I was one of them,” he says. “But there aren’t enough of them to fill our cockpits and maintenance hangars. We need to learn how to actively go out and find our workforce — and we need to ensure that the industry offers attractive, rewarding careers.”

“The UND-HFI study uncovered issues that will require efforts by multiple stakeholders to resolve,” says HFI Vice President Allison McKay. “But this study is a start: we’ve identified the problem. Now we will bring together interested parties to work on solutions. Our next step will be to hold a meeting for stakeholders, including representatives from industry, education, government, and military.”

The HFI Sustainable Workforce Round Table will be held in late September 2018 in Alexandria, Virginia (see more details in the box on p. 53). Meeting participants will define core issues around workforce development and then will form working groups to create strategies and tactics aimed at building a sustainable workforce for the helicopter industry.

McKay already has some volunteers; anyone wishing to take part in the round table can email her at allison.mckay@rotor.org.

Jen Boyer is a 20-year journalism and public relations professional in the aviation industry, having worked for flight schools, OEMs, and operators. She also holds a rotorcraft commercial instrument license with flight instructor and instrument ratings. Boyer currently runs her own public relations and communications firm and freelances regularly for aviation companies and publications. She can be reached at jen@theflyingpenguinpr.com.
Jet Fuel: The Lifeblood of Our Flying Machines

By Walter Chartrand

In aviation today with all our technology, we have redundant systems for many things. But there’s no backup for fuel. What’s in the tank when you take off has to power the aircraft until you land.

Ensuring the quality of that fuel is mission critical, both to protect the investment in the aircraft and the safety of pilot, crew, and passengers. In aviation, maintaining fuel quality means that only clean, dry, on-specification fuel is delivered to your fuel storage systems and aircraft.

Maintaining fuel quality is an ongoing daily process and the responsibility of all parties concerned. It requires performing quality-control checks every day and at every step of the fuel delivery process. Let’s look at how you can ensure the quality of your fuel.

Note: in this article, we will focus on jet fuel (aviation turbine fuel). Piston-engine aircraft use avgas, which is governed by different standards for production and handling. We’ll take a look at those procedures in a future article.

Global Standard for a Global Industry

Aviation is a global industry. When a helicopter manufactured in England by an Italian company is sold to an operator in Malaysia, nobody blinks. And nobody worries that the aircraft may not operate properly with Malaysian fuel. Because aviation fuel is manufactured to a global standard, flight operations around the world can be assured that they are purchasing a product that will meet their needs.

Aviation fuel standards were created by ASTM International, one of the largest voluntary standards development organizations in the world and a trusted source for technical standards for many different materials, products, systems, and services, ranging from toy safety to indoor air quality. In the aviation industry, ASTM provides standards that govern everything from the materials used to build aircraft to methods for measuring tire friction on runways.

Working with virtually every interested party in the fuel supply chain, including oil refineries and airframe and engine manufacturers, ASTM has developed and refined D1655, Standard Specification for Aviation Turbine Fuels. The current standard is ASTM D1655 – 18 (http://bit.ly/astmD1655-18), which means it was just updated this year, in 2018.

Producing Aviation Fuel

Aviation turbine fuel must be something refiners can consistently produce to ASTM standards while also being compatible with fuel tanks and engines, as well as everything else it will touch along the way, including pipelines, fuel tankers, fuel lines, valves, and gaskets. Furthermore, the finished product must perform in a wide range of temperatures. An aircraft leaving a Miami airport during the summer months might realize a 150-degree temperature change by the time it reaches cruising altitude.

To satisfy all these requirements, the refined batch has to meet or exceed a battery of some 56 different tests. When aviation turbine fuel leaves the refinery, it is accompanied by a Refinery Certificate of Quality that verifies that the specific batch meets all the requirements of ASTM D1655. (An interesting side note: it takes 42 gallons of crude oil to produce approximately 3 to 4 gallons of jet fuel.)

When the product is shipped via pipeline, rail, ship, or barge to a distribution terminal, it again is tested and issued a Certificate of Analysis, which is one of the three documents that must accompany the fuel when received at an airport, FBO, or other fueling point. The other two
documents are the Bill of Lading, which is a shipping document, and a Release Certificate, which ensures the driver performs pre- and post-loading inspections.

The Certificate of Analysis should include the following information:
- Specification name, issue, and any amendment number
- Name, address, and contact information for the testing laboratory, including phone, fax, and email
- Batch number or unique identifier
- Quantity of fuel in the batch
- Properties tested, including specification limit, test method, and test result
- Name, position, and signature (real or digital) of person authorized to sign off on the batch
- Date of certification.

When the fuel leaves the refinery, it receives documentation that it is clean, dry, and “on spec” (the Refinery Certificate of Quality). The fuel’s quality is tested again when it arrives at the distribution terminal, which is where the Certificate of Analysis is issued.

Now it is in front of you, ready to be pumped into your fuel storage tanks. The next step is to determine if the fuel is still clean and dry or if some contaminants have been introduced since it was last tested.

Maintaining Fuel Quality
Maintaining fuel quality is all about detecting contaminants, if present, and ensuring their removal. ASTM defines contaminants as “any substance, foreign or natural, that adversely affects the intended performance characteristics of the product.” What are some of the likely suspects that can show up in your fuel?

Foreign Particulates
Foreign particulates are solid particles in the fuel; filtration is the easiest way to remove them. Keep in mind that while most of us can see a speck as small as 30 to 40 microns in diameter, we filter jet fuel for particles measuring less than 1 micron.

The last line of defense for particulate contamination is the 100 mesh/micron screen in the fueling nozzle, which should be inspected and cleaned monthly. If contamination is found, analysis should be performed to determine exactly where the contamination is being generated.

Delta Air Lines is offering opportunities for travel discounts for HAI HELI-EXPO 2019. Use Meeting Event Code NMRS6 for discounts on round-trip flights to and from Atlanta, February 24 – March 18, 2019.

**BOOK NOW!**

To find out if your Expo trip is eligible for discounts:
- Book your flight on delta.com and use meeting event code NMRS6 OR
- Call the Delta Meeting Network at 1.800.328.1111 Mon. – Fri., 7:30 AM – 7:30 PM (CT) and refer to meeting event code NMRS6 (no service fee will be added to reservations booked and ticketed using the network)

Please note:
- Not all fares are eligible for a discount
- Discounts apply to round-trip travel only
- Not valid with other discounts, certificates, coupons, or promotional offers
- Fare rules determine eligibility
Water is the No. 1 contaminant in jet fuel. Middle distillates such as jet fuel condensate moisture. That means as temperatures change, water accumulates in the airspace in a tank and because water is heavier than jet fuel, it falls to the bottom and must be physically removed.

Water degrades ignition properties, can form ice crystals at altitude, and can easily become a breeding ground for microbial growth. In addition, water is detrimental to jet fuel containing Prist, the world’s most well-known fuel-system ice inhibitor.

There are two types of water contamination in jet fuel. The first is free water, which is easily identified as water droplets in a fuel sample and can be discovered in a fuel storage tank using water-finding paste.

The second type of water contamination is dissolved or emulsified water. This is the water that resolves to free water as temperature changes. It can be identified using field test kits such as the Velcon Hydrokit or the Shell Water Detector.

Microbial Growth

There are more than 250 different “things” that can grow in jet fuel, including mold, fungi, and bacteria. They all need one thing to grow, and that is a water bottom. These hydrocarbon-utilizing microorganisms (HUM bugs?) live at the fuel-water interface. They consume the minerals in the fuel as food and produce sulfur waste byproducts that resolve into sulfuric acid, causing tank corrosion.

Surfactants

Surface active agents (surfactants) are compounds that lower the surface tension (or interfacial tension) between two liquids such as fuel and water. Surfactants are commonly used as detergents, wetting agents, emulsifiers, foaming agents, and dispersants. The presence of surfactants is readily identified when water does not quickly separate out of fuel, causing a sample to appear cloudy. An excessive amount of foam that remains atop a fuel sample is another indicator of surfactant contamination.

Product Mixtures

The only field test to determine if jet fuel has been cross-contaminated with a dissimilar fuel product is to perform an American Petroleum Institute (API) specific gravity evaluation using a thermohydrometer. This is one of the three essential tests to be performed during any fuel delivery, which will be discussed in more detail in the “Taking Delivery of Fuel” section below.

Additives

Although some aircraft require additives for safety of flight, filter manufacturers caution us to not use filter-monitor type elements in jet fuel that has been pre-blended with Prist anti-icing additive. Additionally, users of jet fuel that has been treated with a fuel phase biocide such as Biobor JF must be notified that the additive is present.

Taking Delivery of Fuel

When you take delivery of a load of fuel, it is critically important to ensure that the aviation turbine fuel has not been cross-contaminated during transportation. There are three basic field evaluations that should be performed during every product receipt.

Clear and Bright Test

First, confirm that all compartments of the product grade-specific transport are clear and bright. This is done by drawing a small sample of the fuel into a glass jar and visually inspecting the contents.
Figure 1. Aviation Fuel Receipt Checklist

<table>
<thead>
<tr>
<th>BEFORE UNLOADING</th>
<th>PRODUCT TYPE 1</th>
<th>PRODUCT TYPE 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position Operable Fire-Fighting Equipment</td>
<td>Appropriate size and type fire extinguishers should be easily accessible and properly charged.</td>
<td></td>
</tr>
<tr>
<td>Locate and Be Aware of Emergency Shutoff</td>
<td>Locate and be familiar with emergency shutoff controls.</td>
<td></td>
</tr>
<tr>
<td>Ground/Bond Trailer</td>
<td>Once properly positioned, connect grounding/bonding cable and allow any static charge to equalize.</td>
<td></td>
</tr>
<tr>
<td>Open Internal Valves – Allow 10 Minutes for Settling</td>
<td>Allow minimum of 10 minutes for settling of water and particulates once internal valves are open.</td>
<td></td>
</tr>
<tr>
<td>Review Paperwork</td>
<td>Ask driver for any appropriate paperwork.</td>
<td></td>
</tr>
<tr>
<td>– Correct Location on Bill of Lading (BOL)</td>
<td>BOL is a delivery document. It should be correctly addressed and include product type and volume.</td>
<td></td>
</tr>
<tr>
<td>– Release Certificate (RC)</td>
<td>RC is a document completed at time of loading, eliminating confusion as to product specifics.</td>
<td></td>
</tr>
<tr>
<td>– Certificate of Analysis (C of A)</td>
<td>C of A of the product being delivered will document that it meets standard specifications.</td>
<td></td>
</tr>
<tr>
<td>– Documents All Match</td>
<td>All documents should match general information, such as addressee and common carrier.</td>
<td></td>
</tr>
<tr>
<td>Inspect Each Compartment</td>
<td>Each opening should have a banded security strip.</td>
<td></td>
</tr>
<tr>
<td>– White Bucket</td>
<td>White-bucket test each compartment to assess contamination visually; record results.</td>
<td></td>
</tr>
<tr>
<td>– Clear and Bright</td>
<td>Aviation fuel products should be without particulate or water contamination.</td>
<td></td>
</tr>
<tr>
<td>Evaluate API Gravity Evaluation</td>
<td>Retain a composite sample of more than one compartment for API gravity evaluation test.</td>
<td></td>
</tr>
<tr>
<td>– Record Documented API Gravity</td>
<td>Write down the corrected API gravity from receiving documentation.</td>
<td></td>
</tr>
<tr>
<td>– Record API Gravity Test Results</td>
<td>Perform API gravity evaluation, correct finding to 60 degrees F, and record finding.</td>
<td></td>
</tr>
<tr>
<td>– Record Difference</td>
<td>If there is a difference of +/- 1.0 degrees API, notify appropriate authorities and discontinue receipt.</td>
<td></td>
</tr>
<tr>
<td>Prepare Receiving Tank</td>
<td>Determine correct receiving tank for product being delivered.</td>
<td></td>
</tr>
<tr>
<td>– Size of Receiving Tank</td>
<td>What is maximum capacity of proposed receiving tank?</td>
<td></td>
</tr>
<tr>
<td>– Volume of Fuel in Receiving Tank</td>
<td>Determine volume of product in proposed receiving tank.</td>
<td></td>
</tr>
<tr>
<td>– Delivery Amount vs. Available Space</td>
<td>With volume already in proposed receiving tank, can tank hold the amount to be delivered?</td>
<td></td>
</tr>
<tr>
<td>– Sump Receiving Tank Until Clear and Bright</td>
<td>Drain low points of proposed receiving tank until clear and bright.</td>
<td></td>
</tr>
</tbody>
</table>

UNLOAD PROCEDURE  Everything should be in place to safely and properly receive the fuel delivery

| Uncap Offload Hoses and Inspect | Remove caps from receiving hose and inspect for particulate contamination. | |
| Connect Inspected Hoses | Connect hose to proper inlet piping connecting to selected tank. | |
| Align Valves for Offloading | Ensure that all valves are properly aligned to receive product in the select tank through filtration. | |
| Engage Offload Pump | Energize offload pumps. | |
| Operate Deadman Control | Operate deadman control throughout offload. | |
| Inspect for Leaks | Observe operation for leaks and address any leaks immediately. | |
| Sump Receiving Filter Vessel Under Pressure | Drain receiving filter sumps under pressure while product is being received. | |
| Remain Onsite and Observe Entire Offload | DO NOT leave immediate area during fuel transfer. | |

AFTER UNLOADING  Appropriate compartments should be empty and offloading complete

| Disengage Offload Pump | Release deadman control and turn off power to pumps. | |
| Close/Realign Valves | Realign valves for normal use. | |
| Ensure Compartments are Empty | Confirm that all product has been offloaded. | |
| Disconnect Hoses and Install Caps | Disconnect delivery hoses and reinstall dust caps. | |
| Disconnect Bond/Ground Cable | Remove grounding/bonding connection and secure appropriately. | |
| Note New Volume in Tank | Restick receipt tank and note new volume. | |
| Finalize and Sign Release Certificate | Complete paperwork and sign acknowledgment of proper receipt; complete exchange. | |
| Assist Driver in Exiting | Sign receipt paperwork and assist driver in exiting safely. | |
| Note Start of Settling Time | Write down time when offloading was complete. | |
| – One-Hour-Per-Foot Jet Fuel | Calculate when jet fuel delivery will be ready to have the low-point drains sumped. | |
| – Fifteen-Minutes-Per-Foot Avgas | Calculate when avgas delivery will be ready to have low-point drains sumped. | |
| Sump Tank When Settling Time is Reached | Set time for product to be sumped. | |
| Secure Fuel Farm | Ensure fuel farm is secure before departing. | |

This checklist was developed by Walter P. Chartrand of the Aviation Training Academy, www.aviationta.aero.
The sample should be a clear liquid with no visible particulates. Its color should be light straw to appearing colorless. Any cloudiness, haziness, or visible particles is a sign of contamination. Continue sumping until clear and bright samples are obtained.

Because dissolved water is not visible to the naked eye, you must test for it. As mentioned above, several field test kits, the Velcon Hydrokit or Shell Water Detector, are available for that purpose.


### White-Bucket Test

Second, confirm that all compartments of the product grade-specific transport are contaminant free by using the white-bucket test. Use a 3-gallon bucket with a bonding cable and lined with white porcelain or epoxy to obtain a sample under operating pressure from each compartment. Table 1 contains a list of possible ratings for both particle and water contamination. Use the alphanumeric ratings to record your results for the delivery.

### Contamination with Other Fuels

Third, perform an API gravity field evaluation using a thermohydrometer to determine the temperature-corrected specific gravity. The result of this evaluation must confirm a +/− 1.0 API from the gravity already documented for the fuel reveals that the fuel has been contaminated with another fuel product. If any of these types of contamination are found and cannot be easily resolved, the fuel should be rejected and appropriate parties contacted.

### Sample Evaluation and Documentation

When performing tests to determine the quality of the fuel, use a checklist to ensure all tasks are performed (see sample checklist on p. 61; visit rotor.org/fuelchecklist to download your own copy). Perform evaluations on the first sample taken, and note any findings for both solids and moisture, using a standard scale offering a numeric and alpha identification, such as the one listed in Table 1.

Fuel samples should not be retained for more than one day, but the industry standard is to maintain the records of your evaluation of that fuel for 12 calendar months.

### Field Evaluation Safety

When you handle jet fuel, you are working with a flammable, toxic chemical. Wear appropriate personal protective equipment in accordance with OSHA regulations, particularly 29 CFR 1910 § 95, 133, 136, and 138.

---

**Table 1. White-Bucket Test Results**

<table>
<thead>
<tr>
<th>Particle Contamination Rating</th>
<th>Water Contamination Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Clean</td>
<td>No water present after settling, sample should sparkle</td>
</tr>
<tr>
<td>2 Slight Particulate</td>
<td>Fine water droplets throughout sample</td>
</tr>
<tr>
<td>3 Particulate Matter</td>
<td>Extremely fine droplets or particles throughout sample</td>
</tr>
<tr>
<td>4 Dirty</td>
<td>Droplets or free water found at the bottom of the container</td>
</tr>
<tr>
<td></td>
<td>Slime, lacy substance on bottom or at fuel/water interface</td>
</tr>
<tr>
<td></td>
<td>Unusual appearance, color, or odor</td>
</tr>
</tbody>
</table>

---

A thermohydrometer is an essential tool for determining if aviation turbine fuel has been cross-contaminated with other types of fuel.
Use Filtration at Every Point of Transfer

Fuel contamination is an active process. Even though you put clean, dry fuel into your holding tank, contaminants such as microorganisms, water, or even rust from the tank can develop. This is why, in accordance with API standards, jet fuel should be filtered for particulates and to remove water during every point of transfer. That means we filter the fuel when we pump it into our tank from the transport, and we filter it again when we discharge the fuel from storage to fill a fuel truck or fuel an aircraft.

Use coalescer/separator filters when moving fuel into and out of storage. They filter for particulate contamination down to 0.8 micron and cause water droplets to physically come together and separate from the fuel, ensuring less than 15 ppm of free water is delivered to the aircraft.

Many helicopter operations employ an additional filter just prior to the fueling hose reel. This filter is typically a full-flow monitor filter. It filters contaminants and also absorbs free and emulsified water, again making sure we do not deliver any water to the aircraft. Monitor filters also act as a water defense, slowing the fuel flow when water accumulates in the element. They have the added benefit of being impervious to surfactants.

All filters must be drained while under pressure to ensure the complete evacuation of low points. And all filters should incorporate a differential pressure gauge to indicate when they have become clogged or otherwise need maintenance.

Walter P. Chartrand draws from 40 years of aviation experience to share ideas and practices on how to set your aviation operations apart in a competitive general aviation marketplace. Walter began his career at a local airport fueling small aircraft. He has a multi-engine Instrument pilot rating and has flown for a living. He now operates the Aviation Training Academy, a training and consulting company for aviation support personnel. Walter can be reached at wpc@aviationta.aero.

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What Can We Learn from an Accident?

Accident Recovery: $1 + 1 + 1 = \text{Tragedy}$

By David Jack Kenny

Unlikely things do happen during flights … and not always one at a time. Some of aviation’s most catastrophic accidents are the products of extended sequences of events and miscalculations, each almost prohibitively unlikely, yet combining to create an event that changes lives.

The immediate cause of the March 2009 crash of Cougar Helicopters Flight 91 (CHI91), a Sikorsky S-92A ferrying workers to a North Atlantic oil platform, was traced to a design flaw aggravated by real-world maintenance practices more intensive than those scheduled by the manufacturer, and compounded by certification standards based on unrealistic assumptions. Faulty decision-making arising from a misunderstanding of the aircraft’s systems and survival gear imperfectly matched to the environment of a ditched aircraft also contributed to the loss of 17 of the 18 people on board.

The Flight

CHI91 took off from St. John’s International Airport in Newfoundland (CYYT) at 9:17 a.m. on a scheduled flight to the Hibernia offshore oil platform, a trip of about 170 nautical miles (nm). Weather was good for the North Atlantic in March, with south winds gusting to 20 knots and 15 miles visibility under an 8,000-foot overcast. The aircraft was less than three years old and had been operated for 1,773 cycles, comprising slightly less than 2,200 hours.

Both pilots held Canadian airline transport pilot licenses with S-92A type ratings and current Group 4 (helicopter) instrument ratings. The 34-year-old captain was the pilot flying. He had 5,997 hours of flight time, including 1,061 in type, and was described as “a confident, skillful pilot, with a strong personality.”

The 48-year-old first officer had 2,854 hours of experience with 94 in type and had recently completed 24 years of military service, 11 of them flying the Sikorsky CH-124 Sea King. All 16 passengers were current in the survival training required for Canadian offshore oil workers and had been fitted with approved immersion suits.

Fifteen minutes after takeoff, the helicopter leveled at its filed altitude of 9,000 feet and an indicated airspeed of 112 knots. Power was set at 70 percent torque.

At 9:45:27 a.m., the captain made a Mayday call to the Gander Aircraft Control Centre reporting an indicated loss of main gearbox (MGB) oil pressure. During the next 30 seconds, the helicopter reversed course and began descending as Gander provided radar vectors back to CYYT, 54 nm to the west, and notified the Joint Rescue Coordination Centre in Halifax.

The pilot and first officer initially discussed ditching the aircraft, but indicated oil temperature remained normal and there were no unusual noises or vibrations. The captain chose to continue back to St. John’s at an 800-foot altitude, but at 9:55 a.m., almost 10 minutes after his original Mayday call, he interrupted a conversation with company dispatchers to announce that they were ditching immediately.

Based on information recovered from the aircraft’s monitoring systems, the helicopter went down less than 60 seconds later. The first fixed-wing patrol aircraft arrived 17 minutes after that and found two empty life rafts and two people on the surface, one waving at the aircraft and the other floating facedown. The sole survivor was rescued at 11:15 a.m. with seawater in his lungs and a core temperature of 86 degrees. The only other passenger who escaped could not be revived.

Investigation and Explanation

The wreckage was located two days later about 35 nm east of St. John’s at a depth of 550 feet. Recovery was accomplished with the aid of remotely operated submersibles and a salvage ship equipped with a sophisticated
dynamic positioning system, heave-compensating 50-ton crane, and improvised cargo cage. The bodies of the remaining victims, most of the aircraft, and the multipurpose flight recorder (MPFR, a combined cockpit voice and flight-data recorder) were all retrieved during the next five days.

Transportation Safety Board of Canada investigators found that only one of the three titanium studs securing the MGB oil filter bowl remained intact. Two had fractured, allowing the bowl to slip and dump the gearbox oil. Scuff marks on the bowl showed that the lower-front stud had broken first, increasing the load on the lower aft until it also fractured. Heat damage was apparent throughout the assembly. The tail take-off pinion’s teeth had been destroyed, disrupting power transmission to the tail rotor.

Data recovered from eight internal electronic monitoring systems were correlated with the MPFR recordings. MGB oil pressure reached 0 at 9:47 a.m., two minutes after the warning light illuminated. The co-pilot pointed out three times between 9:50 a.m. and 9:52 a.m. that the emergency checklists identified the combination of the red warning light and indicated pressure below 5 pounds per square inch as a “land immediately” condition: the risks of continuing flight exceeded those of ditching under power.

The pilot responded that he wouldn’t ditch unless “the helicopter started to come apart.” Instead of reducing power and airspeed to minimize mechanical stress, he maintained 73 percent engine torque and 135 knots, hoping to reach shore as fast as possible.

He changed his mind after a sudden fluctuation in main rotor rpm at 9:55:15 a.m., reducing power to 34 percent and beginning a slow descent. Ten seconds later came a brief right yaw. After 19 seconds of pitch and bank excursions, yaw abruptly surged to 20 degrees per second as the tail rotor drive failed.

Three seconds later both engines shut down. A brief increase in collective passing through 400 feet caused a drop in main rotor rpm and rapid acceleration of the descent.

At 163 feet of altitude and...
93 percent rpm, the pilot applied aft cyclic and full-up collective. Main rotor rpm was 81 percent and decaying at 90 feet; the descent rate was 2,300 feet per minute. The ship hit the water with 20 to 25 Gs of force, broke into three pieces, and sank.

**Mechanical Concerns ...**
Based on its similarities to the S-60 Black Hawk, both Sikorsky and the FAA expected the S-92A MGB to be able to operate for at least 30 minutes without lubrication. The actual test came very late in the certification program — and the MGB failed catastrophically after 11 minutes, about the same interval as in CHI91.

Both Sikorsky and the FAA concluded that a loss of oil for any reason other than leaks from the cooler or supply lines was “extremely unlikely” — on the order of once per 10 million flight hours. Working from that assumption, they modified the design by incorporating a cooler bypass valve and then repeated the test, this time draining the system via an oil cooler leak. About 4.3 gallons of oil remained for splash lubrication, compared to the 1.3 gallons left after draining the MGB directly. The aircraft passed this test, and Sikorsky’s analysis of possible failure modes was eventually accepted en route to North American and European certification.

Field experience, however, began to show that the titanium studs were subject to galling that worsened each time the self-locking nuts were removed and reinstalled, especially if the same nuts were reused. The galling increased friction so that the specified torque on the nut no longer put the designed preload on the stud.

And while Sikorsky’s specification of 500-hour maintenance intervals during a 2,700-hour service life led it to expect five filter removals per unit, operators (including Cougar) adopted the practice of replacing the filter any time the impending bypass valve opened, a far more common event. In 2,200 hours of service, the accident helicopter’s filter had been replaced 11 times.

A similar failure in Australia had been blamed on a dubious field repair, but after the CHI91 accident, the FAA issued an Emergency Airworthiness Directive requiring immediate replacement of the titanium studs with steel equivalents. All 59 titanium studs returned to Sikorsky afterward had damaged threads.

**... And Human Factors**
The indication of normal MGB oil temperature was a crucial factor in the captain’s reluctance to ditch. Believing that rising temperature would provide a secondary indication of oil loss, he concluded that the pump must have failed, leaving oil to provide splash lubrication to the gearbox. The voice recording suggests that neither pilot understood that the temperature probe only transmits accurate indications when immersed in oil, making it unresponsive to a sudden complete loss.

During his years as a Sea King pilot, the first officer regularly trained in ditching procedures, including annual water landings. This likely contributed to his greater comfort with a precautionary landing at sea. However, a “lack of assertiveness” had slowed his upgrade to aircraft commander and then mission commander in the Canadian Forces, while the captain was described as strong-willed and confident. Both had done full-down autorotations in other helicopters but had only simulator practice in the S-92A, whose rotorcraft flight manual prohibits the maneuver.

Post-mortem examination showed that the pilots, who were not wearing helmets, suffered head and chest injuries that may have been incapacitating. Both drowned.

Eight of the 16 passengers had either no or minor traumatic injuries, while injuries to the remaining eight were serious but potentially survivable (principally lower-body fractures). All but one passenger, however, drowned.

The combination of injury and cold shock almost surely kept them from holding their breaths long enough to escape the rapidly sinking helicopter. The Transportation Safety Board raised the prospect that emergency underwater breathing aids, which provide an additional two to four minutes of air, might have significantly improved survival prospects. Canadian military maritime helicopter crews have had this equipment since 2001, but the program to introduce it to the civilian offshore fleet had not become operational at the time of the accident.

**The Takeaway**
An open-ocean ditching is a daunting prospect under any circumstances, not least in winter with water temperatures near freezing. However, prospects for successful evacuation and rescue are vastly better following a controlled touchdown under power than an autorotative or, worse, uncontrolled descent.

The Cougar S-92A had emergency floats that might have provided passengers and crew with a reasonable chance to deploy and board the life rafts and trigger the aircraft’s emergency locator transmitter. Most of the overwater pilots who contributed to Internet discussions about the accident, however, said that if faced with the same indications, they too would have tried to fly back to shore.

An unexpected design flaw, a failure mode that lacked the expected symptoms, crew dynamics preventing the better-trained pilot from following the prescribed emergency procedure, immersion suits without supplemental air — it could be discouraging to realize we can fall victim to such a constellation of unlikeliness.

But just as many accidents are caused by multiple factors going wrong, many flights land safely because enough of those factors went right instead. Cutting one link does break the chain.

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David Jack Kenny is a fixed-wing ATP with commercial privileges for helicopter. He also holds degrees in statistics from Stanford and George Washington University. From 2008 through 2017, he served as the statistician for AOPA’s Air Safety Institute, where he authored eight editions of its Joseph T. Nall Report, multiple other research findings, and nearly 500 articles for popular audiences. He’d rather be flying.
Calendar of Events

2018

May 14–17
74th Annual Forum and Technology Display: The Future of Vertical Flight (Forum 74)
AHS International
Phoenix, Arizona, USA
vtol.org/forum

May 21–23
PAvCon Europe 2018
Warsaw, Poland
pavcon.org

May 24–26
HeliRussia 2018
Ministry of Industry and Trade of Russia
Moscow, Russia
www.helirussia.ru

May 29–31
2018 European Business Aviation Conference & Exhibition (EBACE2018)
NBAA and EBAA
Geneva, Switzerland
ebace.aero/2018

June 4–6
Global Connected Aircraft Summit Avionics, Via Satellite
San Diego, California, USA
gcasummit.com

June 5–6
SAE 2018 Aviation Technology Forum
SAE International
Shanghai, China
sae.org/attend/aviation-technology-forum

June 14–16
Heli UK Expo 2018
AvBuyer Events Limited
High Wycombe, England, United Kingdom
heliukexpo.com

June 19–20
8th Annual JETNET iQ Global Business Aviation Summit
JETNET
White Plains, New York, USA
jetnet.com/summit

June 24–26
Aviation Suppliers Association (ASA) Annual Conference
Aviation Suppliers Association
Scottsdale, Arizona, USA
aviationsuppliers.org/annual-conference

June 25–29
NTSB Helicopter Accident Investigation Course
National Transportation Safety Board
Ashburn, Virginia, USA
ntsb.gov/training_center/pages/2018/AS103.aspx

July 3–7
34th Annual Reunion
Vietnam Helicopter Pilots Association
Atlanta, Georgia, USA
vhpa.org/news.htm

July 9–14
APSCON 2018
Airborne Public Safety Association
Louisville, Kentucky, USA
publicsafetyaviation.org/events/apscon-2018-louisville-ky

August 13–15
31st National Training Aircraft Symposium
Embry-Riddle Aeronautical University
Daytona Beach, Florida, USA
commons.erau.edu/ntas

August 29–30
Aerial Firefighting Asia Pacific 2018
Tangent Link
Wollongong, Australia
aerial-firefighting-asia-pacific.com

September 26–27
HFI Workforce Sustainability Round Table
Helicopter Foundation International
Alexandria, VA
Email Allison.McKay@rotor.org

October 2–4
2018 CHC Safety and Quality Summit
CHC
Dallas, Texas, USA
chcsafetyqualitysummit.com

October 16–18
NBAA Business Aviation Convention & Exhibition (NBAA-BACE)
NBAA
Orlando, Florida, USA
nbaa.org/events/bace/2018

October 16–18
Helitech International
European Helicopter Association
Amsterdam, Netherlands
helitechinternational.com

October 22–24
Air Medical Transport Conference
The Association of Air Medical Services
Phoenix, Arizona, USA
aams.org/events/amtc
David McColl

**Titusville, Florida, USA**

**Current Job:** Utility pilot

**First Aviation Job:** Flying pipeline patrols in a Schweizer 300, based in Pittsburgh

**Favorite Helicopter:** MD 500 series

**Your current role?**

*I am a utility pilot specializing in power-line construction, maintenance, inspection, and emergency response. This involves flying in the low-level wire environment and performing external load operations.*

**Your most memorable helicopter ride?**

*When I ferried an R44 to Brazil from Florida. The route took us through the Caribbean and many countries. The flight was with a very experienced pilot, and I learned so much that it boosted my confidence before I started my CFI training.*

**What advice would you give to someone pursuing your career path?**

*Follow standard procedures properly, always do a good and thorough preflight inspection, practice good fuel management, and know your aircraft. Always have a backup plan, know YOUR emergency procedures, train, and maintain a good attitude. Having a good attitude is the most important.*

**Your career goals?**

*Very simple: to always look out for my crew and aircraft, and to come home safe.*

**Complete this sentence:**

*I know I picked the right career when ...* I am flying on the job. Whether it is dropping a crew off on a structure or bringing in an external load, I like the accuracy involved to maneuver the helicopter with deliberate precision.*
Your current role?

I deal with all aircraft on ground (AOG) situations regarding CHC’s worldwide fleet, and work to resolve any problems facing our engineers (or technicians). This may be working with the OEMs to develop repairs outside the scope of the Structural Repair Manual, identifying alternate sources for parts and materials, or moving large items via charter aircraft to reduce AOG penalties.

What advice would you give to someone pursuing your career path?

Be known for your word and values. Your reputation for work ethic, honesty, and as a decent human being will precede you through your career and life. The longer you are in aviation, you will see that more opportunities come to those who are honest, truthful, relatable, and hardworking, because people truly want them on the team.

Your most memorable helicopter ride?

My most memorable ride was with Omniflight, when we needed to run a full track and balance with auto, and I got to fly over my own house. My youngest child was four then, and I saw her whooping and hollering as we orbited the house.

Complete this sentence:

I know I picked the right career when …

I get up in the morning and do not dread going to work.

Robert Dodd

Rowlett, Texas, USA

Current Job: Technical support specialist for CHC Helicopters

First Helicopter Job: Structures work during large inspections and refit for Omniflight Helicopters

Favorite Helicopter: Too many to name!
Kirstie McLean stumbled into the helicopter industry by accident. She had been working in the gift shop of a helicopter tour company in her hometown of Las Vegas, but the more she learned about the industry, the more she wanted to be a part of it. She moved to the maintenance department in 2015 and decided to get her airframe and powerplant (A&P) certification and further her career in aviation maintenance.

McLean is a recipient of Helicopter Foundation International’s 2018 Maintenance Technician Certificate Scholarship. “I first applied for the scholarship to receive some assistance with my student loan,” McLean says. “But my main goal was to get my name out in the helicopter industry, an industry that I have grown to absolutely love.”

McLean is currently enrolled at the Aviation Institute of Maintenance (AIM) in Las Vegas. She will receive her A&P certification by the end of 2018 and plans to get her inspection authorization once she has met the requirements.

Currently a maintenance program specialist at Sundance Helicopters, McLean has been with the company for six years. She started in the records department and quickly transitioned to the role of maintenance planner before earning her current position.

She audits Sundance’s Maintenance Information System to ensure tasks such as service life limit, time between overhaul, operating time limits, airworthiness directives, and service bulletins are tracking correctly.

In addition, she has had the opportunity to write an Approved Aircraft Inspection Program for the AS350 B2. She has worked on all the company’s aircraft, including the AS350 B2, EC130 B4, and EC130 T2 helicopters; and the Cessna 208 Caravan fixed-wing aircraft.

Once she completes her training at AIM, McLean plans to add even more helicopter models to her repertoire. “There are so many helicopter models I have never worked on. Our parent company, Air Methods, has a wide variety of aircraft such as the Bell 206 and the Eurocopter AS365 Dauphin.”

When asked what her advice would be to those just entering the industry, McLean says, “Learn ALL aspects of this industry. Don’t just settle with gaining floor experience. Get involved in the compliance/quality-control side of things, and you will be an asset to any company who hires you. This industry has brought me further than I ever imagined. I’m very excited about where the future will take me.”

“Land and Live” is an HFI program. Visit landandlive.rotor.org for more information.
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