

THE PULSE OF THE HELICOPTER INDUSTRY

SOMETIMES DIFFICULT JOBS REQUIRE A LITTLE HELP



Known the world over for its ability to perform in the toughest and most challenging environments on the planet, the H125 is a proven helicopter designed to support the most diverse aerial work duties imaginable. From the expected to the extreme, whether it's inspecting powerlines, firefighting or air crane operations in mountainous or extremely hot conditions, the H125 has you covered.

Dependability. We make it fly.



AN MHM PUBLISHING MAGAZINE // FEBRUARY/MARCH 2020

VERTICALMAG.COM

FEATURING

THE BELL **PROVINCE**

WE VISIT BELL'S COMMERCIAL PRODUCTION HUB IN MIRABEL, QUEBEC

GETTING THE SHOT

ON THE SET OF *BAD BOYS FOR LIFE* WITH HOLLYWOOD FILM PILOT FRED NORTH

ULSE INDUSTRY OF THE HELICOPTER

HELI-EXPO 2020 ISSUE 2 VISIT US AT BOOTH 2419

COVER STORY

WITH AN H145, UH-60 & S-64, SAN DIEGO **GAS & ELECTRIC HAS POWER TO SPARE**

SOMETIMES DIFFICULT JOBS REQUIRE A LITTLE HELP



Known the world over for its ability to perform in the toughest and most challenging environments on the planet, the H125 is a proven helicopter designed to support the most diverse aerial work duties imaginable. From the expected to the extreme, whether it's inspecting powerlines, firefighting or air crane operations in mountainous or extremely hot conditions, the H125 has you covered.

Dependability. We make it fly.





MISSION TECHNOLOGY EVOLVED.

Our ongoing mission is to enhance night vision technology for your success. We listen to you, optimizing equipment for usability and effectiveness.

This is ASU.





NEW E3 ANVIS by ASU Lightweight Goggle

- 30% lighter Less than 400g
- Durable Military grade aluminum and titatium
- · Intuitive adjustment and focus
- · Collimation set for life

UNTIL EVERY LIFE IS SAVED



A rescue hoist that doesn't quit

Our Goodrich® hoists have saved countless lives across the globe. Trusted by crews aboard the major international airborne platforms, the hoists have built a legacy of unmatched reliability and safety - holding the most EASA and FAA certifications in the industry. Our rescue hoists operate non-stop until every life is saved.

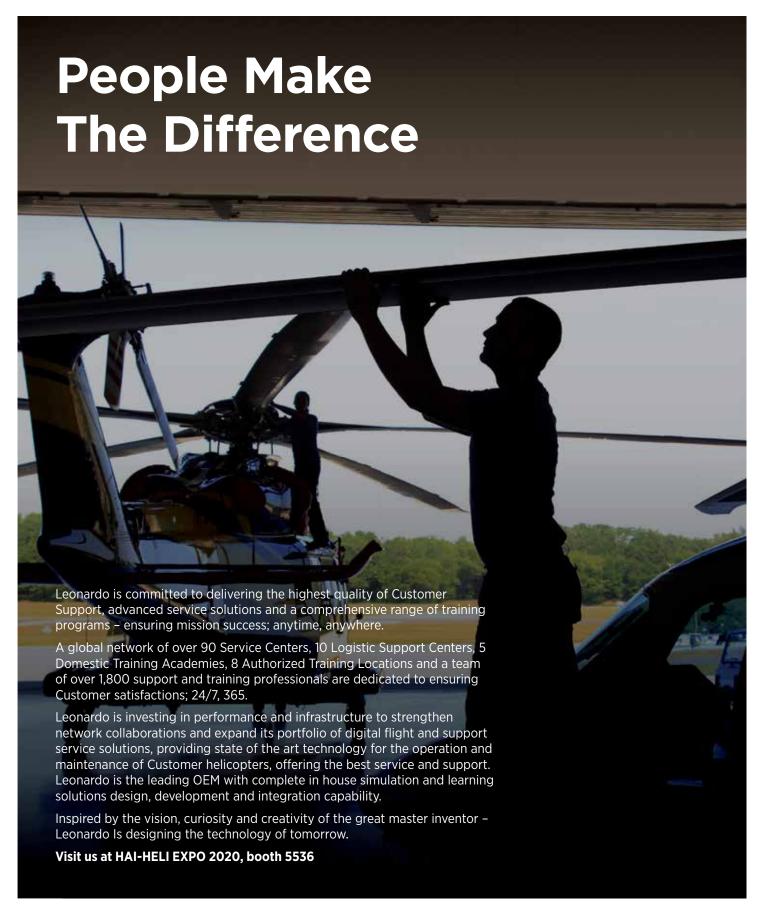
collinsaerospace.com/hoistandwinch

NON-STOP OPERATION

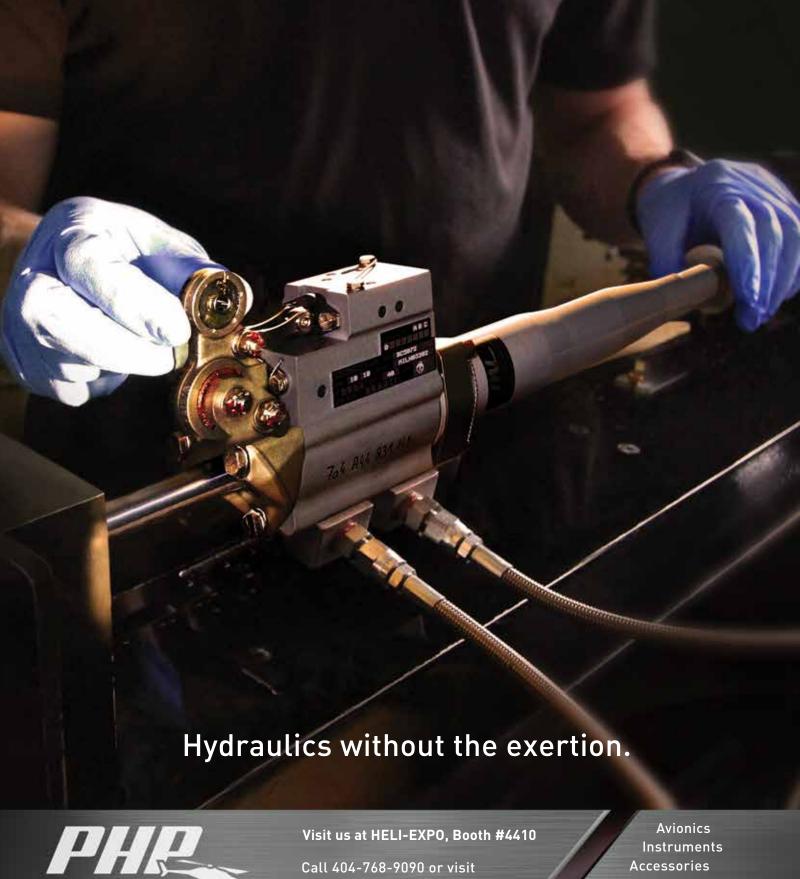
- · High efficiency motor for a continuous duty cycle
- Translating drum technology to reduce cable stress



© 2019 Collins Aerospace, a United Technologies company. All rights reserved.









www.heliparts.com.

Wheels & Brakes **Starter Generators**

Others sell parts, WE SELL SUPPORT



Inventory Supported

COVER STORY

FFATURES

POWERED UP

WITH AN H-145, S-64 AIRCRANE AND UH-60 BLACK HAWK, SAN DIEGO GAS & ELECTRIC HAS AN ENVIABLE AMOUNT OF POWER AT ITS FINGERTIPS.





56

GETTING THE SHOT

ON THE SET OF BAD BOYS FOR LIFE WITH HOLLYWOOD FILM PILOT FRED NORTH.

BY ELAN HEAD

66

THE FIFTH **ELEMENT**

WHAT IS THE NEW FIVE-BLADED AIRBUS H145 LIKE TO FLY?

BY JON DUKE

76

THE BELL **PROVINCE**

WE GO BEHIND THE SCENES AT BELL'S FACILITY IN MIRABEL, QUEBEC.

BY OLIVER JOHNSON

106

RISE OF **THE AW139**

HOW THE AW139 HAS EVOLVED OVER THE COURSE OF 15 YEARS AND 1000 DELIVERIES

BY KENNETH I. SWARTZ

120

HERE COMES THE FIRECAT

HELI AUSTRIA IS TAKING THE NEXT STEP IN THE **EVOLUTION OF** THE "FIRECAT."

BY ELAN HEAD

132

COLLECTIVE **EFFORT**

HOW THE INTERNATIONAL DEFENSE & AEROSPACE GROUP IS REVOLUTIONIZING THE HELICOPTER SERVICES INDUSTRY.

BY JON DUKE

144

≯ DIGITAL BONUS

GOING FISHING

A YEAR IN THE LIFE OF A TUNA BOAT HELICOPTER PILOT.

BY MATTHEW HAYES

ON THE COVER



DAN MEGNA PHOTO

IN EVERY ISSUE

12 **FOCUS ON SAFETY**

FOCUS ON TRAINING 14

16 **FOCUS ON MAINTENANCE** FOCUS ON LEADERSHIP

20

FOCUS ON OPERATIONS

22 FIELD OPS PHOTOS 28 ROTORBEAT

172 VERTICAL REWIND

178 MARKETPLACE

196 THERE I WAS ...



150

TECH MEETS TALENT

AUSTRALIAN COMPANY HELIMODS ON DELIVERING HIGH-TECH BESPOKE MODIFICATIONS.

BY PAUL SADLER

160

PILOT PROJECT

HOW ORBIC **HELICOPTERS** PREPARES STUDENTS FOR SAFE AND SUCCESSFUL CARFFRS

BY SKIP ROBINSON

THE TEAM

GROUP PUBLISHER

MIKE REYNO, MIKE@MHMPUB.CO

GROUP PUBLISHER

LINDA REYNO, LINDA@MHMPUB.COM

ASSOCIATE PUBLISHER

DEREK KAST, DEREK@MHMPUB.COM

EDITOR-IN-CHIEF

OLIVER JOHNSON, OLIVER@MHMPUB.CO

SPECIAL PROJECTS EDITOR

ELAN HEAD, ELAN@MHMPUB.COM

ASSOCIATE EDITOR

DAYNA FEDY, DAYNA@MHMPUB.COM

DAN PARSONS, DANP@MHMPUB.CO

EDITOR

COPY EDITOR

SALES & MARKETING DIRECTOR

MARKETPLACE SALES MANAGER CARLA MCKAY, CARLA@MHMPUB.COM

JUNIOR SALES REPRESENTATIVE

MITCHELL REYNO, MITCH@MHMPUB.COM

CIRCULATION MANAGER

LEANNE WILLIS, LEANNE@MHMPUB.COM

PRODUCTION MANAGER

JEN COLVEN, JEN@MHMPUB.COM

GRAPHIC DESIGNER

KAYTLYN WISMAYER, KAYTLYN@MHMPUB.COM

WEBMASTER

SHAWN PIETERS, SHAWNP@MHMPUB.COM

CONTRIBUTING **WRITERS**

JEN BOYER IOHN CARINHA JON DUKE GEOFF GOODYEAR LISA GORDON KIM HUTCHINGS DAN MEGNA BOB PETITE SKIP ROBINSON ANDY ROE PAUL SADI FR KENNETH I. SWARTZ COREY TAYLOR DORCEY WINGO

CONTRIBUTING **PHOTOGRAPHERS**

OSCAR BERNARDI TED CARLSON SHELDON COHEN DIRK COLLINS NED DAWSON LOUIS DEL AVENNE GREG DOYLE PETER HANDLEY LLOYD HORGAN KEN II IKEGAMA GREG JOHNSON DOMENICO MARCHI

DAN MEGNA MARK MENNIE HEATH MOFFATT BRITTANY MUMMA ANTHONY PECCHI MIKE REYNO ROB REYNO SKIP ROBINSON PAUL SADLER DANIEL SMITH MIKE TOSI

WHAT'S ONLINE

ARE YOU ON INSTAGRAM?

WE RECOMMEND YOU CHECK OUT ONE OF OUR FAVORITE ACCOUNTS, @COSTA DENIS PHOTOGRAPHIE, SPECIALIZING IN AVIATION PHOTOGRAPHY.



FACEBOOK PHOTO CONTEST

HAVE A GREAT PHOTO TO SHARE? WE WANT TO SEE IT!

IF YOU HAVE A HELICOPTER-THEMED PHOTO YOU'D LIKE TO SHARE, POST IT TO OUR FACEBOOK PAGE AT WWW.FACEBOOK.COM/ VERTICALMAG, OR SHARE IT ON INSTAGRAM USING THE HASHTAG #VERTICALMAG. OUR WEEKLY WINNERS HAVE THEIR PHOTOS FEATURED ON OUR HOME PAGE AND IN VERTICAL DAILY NEWS, OUR DAILY EMAIL NEWSLETTER.



CONGRATULATIONS. **ARI RABINOVITCH**

YOUTUBE HIGHLIGHT



SUBSCRIBE TO VERTICAL NEWS









STAY CONNECTED









OUR PUBLICATIONS











SKIESMAG COM



CANADA: 500 TRILLIUM DR., UNIT 23, KITCHENER, ON N2R 1E5 // UNITED STATES: 701 S. MAIN STREET, FALL RIVER, WI 53932 PUBLISHED AND PRODUCED BY: MHM PUBLISHING INC.

© COPYRIGHT 2020 MHM PUBLISHING INC.

SUBSCRIPTION INQUIRIES CALL TOLL-FREE: 866.834.1114
VERTICAL MAGAZINE (ISSN 1703-8812) IS PUBLISHED SIX TIMES PER YEAR (DEC/JAN, FEB/MAR, APR/MAY, JUN/JUL, AUG/SEPT, OCT/NOV)

POSTMASTER PLEASE SEND ADDRESS CHANGES TO: VERTICAL MAGAZINE PO BOX 8 FALL RIVER WI 53932 ALL MATERIAL PUBLISHED REMAINS THE COPYRIGHT OF MHM PUBLISHING, NO PART OF THIS PUBLICATION IN WHOLE OR IN PART MAY BE REPRODUCED WITHOUT WRITTEN PERMISSION FROM THE PUBLISHER. EDITORIAL PUBLISHED IN VERTICAL MAGAZINE DOES NOT NECESSARILY REFLECT THE VIEWS OF THE PUBLISHER. INFORMATION CONTAINED WITHIN VERTICAL MAGAZINE IS BELIEVED TO BE ACCURATE, BUT THE PUBLISHER ASSUMES NO RESPONSIBILITY FOR ERRORS. VERTICAL WILL CONSIDER UNSOLICITED, QUALITY STORM AND PICTURES, BUT THE PUBLISHER CANNOT ASSUME ANY RESPONSIBILITY FOR THE SAFE RETURN OF SUBMITTED MATERIAL.

CANADIAN PUBLICATION MAIL AGREEMENT NUMBER: 40741549 POSTMASTER: IF UNDELIVERABLE, RETURN MAILING LABEL ONLY











INTERNATIONAL SUPPORT, 24-7:

WORLDWIDE REACH FROM:

Leasing & Sales

Parts & Components

MRO

Airframe Upgrades

Logistics

Customization

Eagle Audio

Engineering & Certification



COME & MEET OUR TEAM AT HAI 2020 BOOTH 6341



IT'S TRAINING TIME!

For me, the first weeks of the new year always bring back memories of initial and recurrent training sessions. Initial training is always exciting and full of hope for the future. Recurrent training eventually becomes an exercise in endurance and tolerance for both you and your instructor. There are some interesting behavioral issues at play during both types of training.

One of my most vivid memories of initial training was after having completed an afternoon of full-on autorotations in a Bell 47. The session went well and I was feeling pretty darned proud. My instructor decided to end the day's activities with a final hover auto. He rolled off the throttle from a four-foot hover, and as I had done all afternoon, I bottomed the collective. Space and decorum prevent me from relating my instructor's reaction; let's just say it was a stage of my life when humility reigned supreme. In a quirk of fate worthy of a Stephen King novel, the stalwart flight instructor who resisted the urge to choke me would eventually became my Transport Canada Air Carrier inspector, and all of my skeletons were hung in his closet. I was being punished by God for having wasted my life on frivolous pursuits.

AS WE BECAME THE SENIOR CADRE IN THE INDUSTRY, WE SOON BECAME RESPONSIBLE FOR TRAINING THE NEW GENERATION. SCARY STUFF, INDEED!

> The initial flight training process was an interesting one to watch. I recall our class being filled with enthusiastic,

impressionable and somewhat demented people. Of these attributes, being impressionable was by far the strongest characteristic, and wide-eyed students would notice every action, reaction and nuance of the training process and their instructors. (Some of us paid more attention than others, which probably explains why I spent my career swatting flies in Labrador.) Just think of it... wide open minds, unfettered by such things as job pressures, customer deadlines and industry competition. The biggest operational decision at day's end was whether or not to go to the local watering hole or stay home. It's the perfect time in one's aviation career to be exposed to the psychology as well as the theory of flight.

However, we spent seemingly endless hours studying the intricacies of the air regs, how to fly the beastly thing, and what made it work. We did not - nor were we required to - spend a lot of time learning what makes us work. Not until much later in my career was I exposed to such phenomena as crew resource management or pilot decision making.

And as my career progressed, I, like a lot of experienced pilots, got the opportunity to be a training pilot. As we became the senior cadre in the industry. we soon became responsible for training the new generation. Scary stuff, indeed! And to start off on the right foot and help build that key relationship between trainer and trainee, I would start by asking junior pilots to name at least two of the characters from Gilligan's Island. When they would respond by saying they had never heard of Gilligan's Island, I would just shake my head and walk away.

Being a training pilot was a great experience, but most pilots I flew with, particularly experienced pilots, often exhibited some interesting traits. At some time or other, almost all pilots, while being assessed on their abilities to fly and

respond to emergencies, can function well below their normal capabilities. I don't mean to say they are less than stellar in their responses, but the fact that someone else is on board watching their every move usually adds that nervous pucker factor that affects their performance.

Interestingly, I found the phenomenon more pronounced in experienced pilots. I have witnessed poor souls who forgot they had pedals during the flare in an autorotation or others who responded to the throttle being rolled off with a blank stare and no movement of the collective.

I came to accept that trainees, new or veterans, will be nervous during a session - and that is perfectly normal. Given the level of stress one might encounter in a real emergency, a bit of controlled stress during a training session is not a bad idea. You learn to work through it and as confidence builds, so do your chances of surviving an actual emergency.

To those currently undergoing initial training or lurking in the shadows contemplating being a pilot, I wish I could warn you off of it, but you are about to enter an industry that's filled with great characters, neat machines and amazing experiences. Now, there was the odd day when I wished I was selling encyclopedias door to door, but mercifully those were few and far between.

So to all those coming up on training time, soak up every bit of the instructor's experience that you can and keep that same open-mindedness throughout your career. A good friend of mine with some 30 years' experience in the industry (and also a Class 1 instructor to boot) readily admits that not a day goes by that he did not learn something new. And to you salty old instructors out there, remember, for safety's sake, you are the industry's first line of defense.

Have a safe season, everybody.



Trusted MRO Expert

Complete Aviation Solutions for the CH-47 and CH-46 Platforms

- Aircraft, Engine and Component MRO Services
- Comprehensive Supply Chain Management
- Professional Engineering Services
- Dependable Logistics Support
- Experienced Training Services

COLUMBIA MODEL 234LR CHINOOK

Industry's first Standard Category Transport Firefighting helicopter

19 passenger configuration

2,800 gallon internal fire tank

5.5 hour range



colheli.com • 503.678.1222



178 SECONDS

Editor's Note: We are extremely sad to report that longstanding Vertical columnist Andy Roe passed away in December 2019. Ever the consummate, and amazingly well-organized, professional, he had already supplied columns for every issue of 2020. We'll be publishing them as planned throughout the year as a tribute to Andy.

There is an old Transport Canada safety bulletin titled "A Fatal Flight in Bad Weather: 178 Seconds to Live." A real attention-grabber, it counts down the 178 seconds it suggests that it takes, on average, after a visual flight rules (VFR) airplane pilot enters cloud until controlled flight into terrain (CFIT) terminates the flight. This safety handout points out that, despite the presence of fancy instrumentation or intense pilot willpower, the frailty of the human inner ear will send the airplane out of pilot control just three minutes, on average, after entering cloud.

IF YOU ARE A PILOT ON A VFR FLIGHT AND THE WEATHER STARTS TO DETERIORATE, YOU MUST HAVE A PLAN FOR WHAT YOU ARE GOING TO DO.

> One of the instructors at our flight school pinned that bulletin to a cork board in the classroom, struck out the "178 seconds" and wrote in, "Helicopters: 30 seconds." I thought that was appropriate because it pointed out to the students that an airplane pilot has an agonizing three minutes to wait before demise but in the extremely unstable platform we call a basic VFR helicopter, the pilot only has to wait for a half minute.

I can only imagine the agony of waiting inside the whiteness of cloud and fog, with no ability to use instrumentation to advantage or to hand fly the aircraft back

into control, while waiting for the inevitable. Simply telling pilots not to fly into cloud or not to lose sight of the ground isn't enough; they require supporting guidance in how to do so. Good instruction must be more creative.

Instrument training is just the first step toward being able to navigate through cloud. The other requirements are an instrument flight rules (IFR)-certified aircraft, an approved route structure, appropriate weather at the point of departure and the destination, increased fuel reserves and applicable crew requirements. Even though an instrument rating is required to fly in instrument meteorological conditions (IMC), it's interesting to note that the more instrument training you have, the more discipline you have in knowing to stay away from IMC the next time you are in a VFR aircraft on a VFR-only flight. In fact, an unintended benefit of an instrument rating is that it will make you a much better all-round VFR pilot. Advanced training and a healthy dose of discipline will certainly help to keep VFR pilots out of the clouds.

Much has been written about the physiology of human balance and coordination and how it allows us to remain stable as we move about the surface of the Earth. At the controls of a helicopter, the pilot relies on an array of widescreen visual cues outside the aircraft for the same stability. Replacing those outside references with sole visual reference to the instrumentation inside the cockpit, glass or not, is a risky proposition in an unstable helicopter, no matter how much training you have.

The flight instructor's job is to think of creative and attention-grabbing ways to get student helicopter pilots - and for that matter, pilots in general — to understand that playing games with outside visual reference is potentially life-limiting. Sadly, many pilots have perished over the years. having not fully appreciated the high stakes they were playing with when it came to visual reference. Student pilots should also understand that, even though IFR has some mystical allure when we are first

learning to fly, IFR does not suddenly solve all orientation problems.

Automated IFR in IMC is the norm these days, but it must be backed up by pilot proficiency with hand-flying the helicopter if things go wrong with the onboard technology in any way, or if air traffic control requests that you "go visual."

VFR pilots have been losing control in IMC for years and now, thanks to automation, we have incidents of poorly trained IFR pilots losing control because they lack VFR training and flying proficiency in VFR conditions. Training is always important, but fully understanding what you are up against from a safety standpoint, and then training to minimize the associated risks, is even more important.

If you are a pilot on a VFR flight and the weather starts to deteriorate, you must have a plan for what you are going to do. Some good options in deteriorating weather are to try going up, down, left, right, or turn back. If you are in a helicopter, you have the sixth option of landing. With all these available choices, there is no reason for pilots to get into trouble with the weather - especially in a vehicle that can fly at cruise speed, come to a complete stop and then land. When a helicopter crashes into tall trees at 100 knots, accident investigators often find that the weather was less than desirable at the time. But with good workable options available to deal with bad weather, how could this happen and why? Once again, VFR in IMC doesn't work.

Consider buying some time in a VFR simulator with good visuals and weather control and intentionally play around with bad weather to find out how these accidents happen and to confirm how important it is to always remain in sight of the ground.

If you do find yourself working your way through bad weather, make sure to keep an eye behind you from time to time to make sure the option of turning back remains. Crashing to the ground is never a good outcome, whether it takes 178 seconds or not. 24

Sharpen Your Skills to Master Level With Advanced Training





Your Proficiency

Go beyond the basics. Advanced training courses empower you to face challenging situations and make swift, accurate decisions.

Your Development

Gain deeper knowledge. Move past your foundational training to operate helicopters at the topmost level of safety.

Your Achievement

Earn the recognition. Complete our exclusive, broad-ranged Master Aviator program to obtain safety's highest standard.

Advanced Energy Management • Advanced Helicopter Crew Resource Management • Advanced Helicopter Surviving Inadvertent IMC







NAVIGATING LIFE'S CHALLENGES

I have never enjoyed change, but I can adapt and have been called a chameleon for all the different life experiences and challenges I've faced. I don't know how not to survive, adjust, move forward or carry on. But there are major changes in life that can rock your emotional, moral and ethical foundations — and there's one in particular that's unfortunately all-too common in our industry.

Divorce is a word I hate; and hate is not a word I use lightly. I find myself speaking it at a lower volume; I avoid it entirely if I can instead use the words "not together" or "separated." The transportation industry currently carries a 40.5 percent divorce rate in the U.S., and in some areas it's as high as 50 percent. Aviation is an especially taxing industry, regardless of occupation. We work in high-demand, stressful and time-constrained circumstances that often consume our attention, time, happiness and, for some, mental and physical well-being.

I had a 27-year life with a partner, starting at the tender age of 15. Together, we built an 18-year marriage filled with three children, assets, good-paying jobs and material things that would afford all sorts of fun times, activities and opportunities. Life was good but, at times, felt only good enough. We evolved from those early years to become different people who

ultimately wanted different things from one another. These are the hardest admissions to make when it seems impossible to choose between staying together or not. I know we both made decisions and choices that, in hindsight, we may have approached differently over the years. Hindsight, unfortunately, doesn't afford you a second chance.

Eighteen months ago, my then-wife and I made that choice to part ways. The time since then has been the greatest emotional strain I have ever experienced. Harnessing those emotions and working through them has taken a massive amount of focus and self-reflection.

As I type this column, I sit in a modest motel in Kauai, here for some avionicsrelated inspections. I can't help but share the path I am walking as I navigate this new existence.

When I stood in the departure airport gift shop, Shawn Mendes' song "In My Blood" came across the sound system. It was all I could do to get out of there and avoid breaking down. The music's beat, syncopation and words all resonated.

These work-related trips use to be cookie cutter: get in, get out and get paid. On the way to the airport. I would count my dollars before they were even made. My travel-day routine, too. I would kiss each kid and my wife goodbye. No matter the

trip's duration, there was always an emotional moment attached. I would board my flight and wait until we were wheels up before sending my last text message and then turn my phone off. The idea was that, if I died, I at least got the last word in which, of course, was done completely tongue-in-cheek. Each trip and each dollar earned had a purpose for fulfilling a much larger picture one day; a picture complete with two parents, three kids and the proverbial "happily ever after."

Trips now feel more like a paycheck with a rudderless purpose. I miss sending that text at the last minute. Life is all about choice and we had made ours. I'm not complaining, just sharing a new perspective. I know I'm not alone in walking this new path in life.

Before one recent trip, I stopped at my youngest son's school on the way to the airport just to observe him from afar. Just seeing him was enough of a goodbye because I know in my heart he's solid and doing well. Decisions to separate affect many people and many things. Gratefully, as parents, we share our children equally, a week on and a week off. They, more than anyone, are the true chameleons as their resiliency, tenacity and understanding have enabled them to live happy lives shared between two loving households.

Ultimately, we all want peace and happiness in our lives. As I stand now with what a good friend calls "recycled people," I know my desire for peace and happiness is unequivocally unchanged. The challenge is that sometimes things have to get harder before they get better.

So much has changed yet so much remains the same.

THE TRANSPORTATION INDUSTRY CURRENTLY CARRIES A 40.5 PERCENT DIVORCE RATE IN THE U.S., AND IN SOME AREAS IT'S AS HIGH AS 50 PERCENT. AVIATION IS AN ESPECIALLY TAXING INDUSTRY, REGARDLESS OF OCCUPATION.



Safran is the world's leading manufacturer of helicopter engines. It offers the widest range and supports 2,500 operators in 155 countries with one constant aim: to stay focused on their missions and to keep their helicopters flying every day, everywhere.

safran-helicopter-engines.com

Y: @SafranHCEngines





ARE YOU ATTRACTING THE RIGHT PEOPLE?

It seems it doesn't matter what the industry or profession, there is one common refrain that can be found in them all: "It's hard to find good people." I hear this time and again when I am speaking with managers or company owners.

Hiring new employees can be a timeconsuming and expensive process, so of course we want to be able to hire the "good ones." However, as we know, times have changed. Most employers are dumbfounded as to why they can't find anyone good to hire, but we also have to stop and ask ourselves: What are we doing to attract the right people?

OFTENTIMES. INDUSTRIES THAT **RELY HEAVILY ON** TECHNICAL SKILLS WILL SEND EMPLOYEES FOR TRAINING ON ADDITIONAL TECHNICAL SKILLS, BUT OVERLOOK SENDING A NEWLY PROMOTED MANAGER TO TRAINING FOR LEADERSHIP DEVELOPMENT.

> It's easier to place blame on others than it is to shoulder the responsibility ourselves. It's their fault, they are the reason I can't find any good people to work for me.

> In their book It's the Manager, authors Jim Clifton and Jim Harter explain that people who feel they have great jobs have different life outcomes. In addition to "helping your business, they inspire teams, solve problems instead of create them, volunteer in their community, have far better health and wellbeing, and have fewer workplace

accidents and little to no mistakes and defects."

The problem is, the authors argue, just 15 percent of the world's workers are engaged at work — or appear to have great jobs. They explain that 70 percent of the variance in team engagement comes down to solely one thing: the manager.

At this point, you may be wondering how you can get more engagement out of employees and create a place where they feel they have a great job.

Start with transforming your culture. Old management practices are no longer working.

I was talking with a business owner in the medical device industry the other day who believed he was a great leader and his company had the best culture. He was excited because the person he was interviewing the next day had told him that he heard about the job opening through a

The business owner said, "I'm going to be the company that everyone wants to work for!"

I said, "Great, now how will you know when you have achieved that status? How many resumes are you getting currently?" He gave me a blank look when he real-

ized there was a gap between his perception of people wanting to work at his company, and the number of resumes he was actually getting.

These days, company culture can be the first indicator of why you are not attracting the right employees. In the past, the company doing the hiring had the advantage. They had the luxury of picking and choosing whom they wanted to hire, and the employee was "fortunate" to be hired. Now, the potential employee is deciding long before they send in a resume if they actually want to work for the company.

Clifton and Harter explain, "Millennials are highly networked. When searching for jobs, they seek out referrals from current employees of potential organizations and suggestions from family and friends."

It doesn't matter what industry you are

in, word gets out about who are the good companies to work for, and who are the

What does your company culture and employment brand look like? There may be a reason you are not getting the top tier level of applicant or employee. Great employees will seek out great companies, and one of the things that makes great companies is great leadership!

According to Clifton and Harter, "Gallup asked thousands of managers how they became managers, [and] the top two reasons they gave were: success in a prior non-management role, and tenure." I would like to add a third reason I have heard when working with managers and companies: "There was no one else." I doubt this is a surprise to the majority of people reading this article.

Promoting for these reasons can be problematic, because an employee that does well in a non-leadership or technical role does not automatically translate to a great leader or manager, let alone a good one.

One thing that can help, before promoting an employee into a leadership position, is to spend time with him or her outside the workplace. For example, take that person to lunch with a group of other employees to see how he or she behaves with his peers. Is he or she loud and do they need to be the center of attention? Are they the opposite - hardly saying a word at all?

Oftentimes, industries that rely heavily on technical skills will send employees for training on additional technical skills, but overlook sending a newly promoted manager to training for leadership development. As a manager, your job generally relies heavily on leadership skills and not much on technical skill, yet I don't see many people getting leadership training to advance their leadership skills.

Lastly, remember that poor leadership leads back to company culture, which then leads back to your employment brand and attracting the right employees for the company. >



Total Mission Connectivity with Honeywell and MASCO

The Sky Connect Tracker 3A enables total situational awareness over the Iridium satellite network. It's the single best way to maximize safety, reduce response times and maintain accuracy for any mission. When connectivity is critical, count on Sky Connect Tracker Systems.







CHALLENGES **ACROSS BORDERS**

The Ancient Greeks observed that change is the only constant, and based on all that has happened in the 2,500 years since, not much has changed (pun intended). While the pace of progress sometimes takes our breath away, the helicopter industry has only seen modest change until recently.

Helicopters have been around for almost 80 years, and from what I can see, operating a helicopter in 1950 wasn't much different than operating one in 2000. In fact, some sectors (think agriculture) are operating the same helicopters today that were operating in 1950, something very few industries could replicate. There are recent signs that '60sera aircraft, hitherto the backbone of key industry sectors, are finally being replaced by aircraft from the '90s in fields such as firefighting. However one of the more significant recent trends, which has developed over the last couple of decades, is one that seems to be driving evolution no technological improvements have been able to duplicate: namely, the refusal of new pilots and mechanics to accept the same conditions as their forebears.

THE NEXT COUPLE OF YEARS ARE GOING TO BE CRITICAL FOR ALL OF US IN THIS FIELD. AND WITH THE RAPIDLY APPROACHING RETIREMENT OF THE AFOREMENTIONED BABY BOOMERS, COULD BE UNMANAGEABLE.

> For over 50 years, the length of a rotational tour, the experience required to fly new and larger aircraft, the pace of wage growth, the ability to live in one place and work in another were more or less unchanged. Now, with profound impacts on the ability of many operators to even stay in business,

millennials are refusing to accept what came before. Since there are few alternatives, such as simply bringing in foreign workers, we may finally see consolidation in industry with the resulting upwards charter rate pressure that has been predicted, by some, for so many years. If not, precious few operators will be able to find, and afford, the people they need.

In the mainstream media, baby boomers and their descendants are being blamed for everything wrong in the world, however unfair that may be. A Swedish teenager sails across the ocean without the use of fossil fuels, and then holds us all to account for everything from hurricanes to monsoons. Thankfully she hasn't opened up on helicopters yet.

I've always believed that helicopters are "green," since we often eliminate the need for road construction and the permanent damage associated with progress in general. Without us, there would be no way to carry out exploration in the far reaches of the globe, complete studies of endangered animals, or deliver aid after natural disasters. Who will fight the fires, now more common due to climate change, if not helicopters? Concern for the environment of the planet is something we should all share, and I am thankful that some of our efforts are very much in line with those lofty goals.

While it's nice to think about how all of us can make an impact on the world, when you talk to the average day visual flight rules operator in North America, still home to the largest helicopter fleet, the goals are much simpler — and often revolve around filling empty seats rather than reducing greenhouse gases. We all have heard the stories of how our forefathers left home in the spring and came home in the autumn after the "season" was over. This, of course, led to many divorces and other family stresses, but our get-it-done culture flourished for over half a century. As recently as the last couple of decades, it was still common to be sent to the field, often in camps with no communication, for many weeks at a time. Hot showers and (hopefully) TV were the

creature comforts most in demand.

Seemingly overnight, the vast majority of pilots and maintenance staff are simply unwilling to even consider such deployments, unless the money is exceptional, or the experience is something that will look good on Instagram. Hot showers are now essential, not desirable, and TV has given way to high speed Internet service, no matter where in the world one may be.

How did it come to pass that expectations are so much higher today than in years past? Is it the sense of entitlement imprinted in the DNA of millennials? Or did people just wake up and realize they aren't indentured servants and can get more from their employer than what they see as barely a living wage? When did helicopters lose the cool factor that made less-than-desirable conditions acceptable?

Cross the border, and international contracts make things even more complex for the operators barely scraping by. The average rotational tour length in Canada is still close to four weeks during the summer, with perhaps 14 days off. But with 80 percent of revenue generated in those four months, the pressure to maximize crew availability during that time is palpable.

The same crew working in the U.S. would be unlikely to even reach three weeks, while still requiring that same two weeks off, and is more likely to be on an "equal time off for time worked" shift. International work often involves longer deployments, but usually comes with Instagrammable picture ops, and income better than available at home. Just reviewing a crew schedule during the busy season can bring on spontaneous ulcer conditions, with no apparent cure in sight.

The next couple of years are going to be critical for all of us in this field, and with the rapidly approaching retirement of the aforementioned boomers, could be unmanageable. Thank goodness I am told that the last pilots are already born, and soon helicopters will fly and fix themselves. Now that would be some radical change.



AIRCRAFT STRUCTURES
WILDFIRE SUPPRESSION TANKS
BALLISTIC TOLERANT AUX FUEL TANKS



RECOIL AEROSPACE, LLC

SUPPRESSION SYSTEMS, LLC LOGISTIC SYSTEMS, LLC AEPO-STRUCTURES, LLC





HELIEXPO BOOTH #3624

THE CONNECTED COCKPIT

It pays for itself



Real-time alerts



ATU READY

324 gal.

33.8007° N -117.9209° W

One box, endless possibilities



Guardian *Mobility*

When lives are at stake, there's no time to wait. Visit us at HELI-EXPO #1419

Industry regulations have a stronger stance on Crash-Resistant Fuel Systems. Robertson and StandardAero are proud to bring the only retrofit Crash-Resistant Fuel Tank (CRFT) for virtually all AS350/EC130 aircraft that is ready to fly now and exceeds requirements for CRFS, delivering the most durable tank proven to withstand potential damage from threats.

FLY SAFE NOW.













OFIELD OPS PHOTOS

WE HIGHLIGHT PHOTOS SUBMITTED THROUGH VERTICALMAG.COM, FACEBOOK.COM/VERTICALMAG & INSTAGRAM @VERTICALMAG









Vertical DAILY TOP

Here's a recap of our 10 most popular online stories since our last print edition was published.

SURVIVAL FLIGHT PILOTS & CREW PRESSURED TO TAKE RISKY FLIGHTS

An NTSB report details the corner-cutting safety culture at Survival Flight before a crash that killed three.



FATAL FLYNYON FLIGHT WAS EXPLOITING 'LOOPHOLE' IN REGS

According to the NTSB, the doors-off helicopter tour company built its business on a regulatory loophole.

AW609 IN FINAL PRODUCTION CONFIGURATION MAKES FIRST FLIGHT

The tiltrotor performed its first flight at Leonardo's Philadelphia plant on Dec. 23.

GIVING OTHERS A FIGHTING CHANCE

How Air Evac Lifeteam is helping crews prepare for a pilot incapacitation event.

RISING TO THE CHALLENGE: THE NH90 IN GERMANY

The NH90 in German service is finally coming of age.

SIKORSKY DEEMS CH-53K ENGINE EXHAUST ISSUE FIXED

The OEM has found a solution to the CH-53K engines re-ingesting their own exhaust.

KAREM PITCHES TRANSFORMING DESIGN FOR **FARA PROGRAM**

Karem Aircraft's FARA design transforms from a helicopter at hover to an airplane in forward flight.

BELL TESTS AUTONOMY SOFTWARE IN V-280 VALOR

The tests, which prove compatibility with the aircraft's systems, began in early December.

BELL WON'T COMMIT TO 2020 CERTIFICATION FOR 525

Bell will not commit to a certification timeline for the 525 Relentless, as flight tests continue.

WHAT MAKES AN IDEAL TRAINER? FLYING THE TH-119

Pilot Rob Erdos had the opportunity to get behind the controls of the Leonardo TH-119 helicopter.



VIEW OUR **TOP 10 NEWS STORIES ONLINE** OR IN DAILY NEWS!

WANT DAILY UPDATES? → VERTICALMAG.COM/SUBSCRIBE

Get your FREE Vertical Daily News subscription to get the most up-to-date industry news and press releases, every weekday, delivered straight to your inbox or smartphone.



BELL FOCUSES ON COMMERCIAL PRODUCT UPGRADES IN 2020

> BY OLIVER JOHNSON

A strong fourth quarter is likely to have seen Bell finish 2019 with a similar number of commercial deliveries as it had the previous year, with ramped up production of the 407 and 429 helping to balance out a lower rate of 505 Jet Ranger X deliveries. Expecting further stability in 2020, the manufacturer's commercial division is focusing its attention on upgrades for its current product line.

After having delivered 192 commercial aircraft in 2018, the first nine months of 2019 saw the manufacturer deliver 125 aircraft to commercial customers. Ahead of the release of the fourth quarter results from Textron, Bell's parent company, Susan Griffin, Bell's executive vice

president of commercial business, said she expected the year's final tally to be roughly equal to 2018. "I can tell you it's been an exciting December," said Griffin, speaking to reporters during a December media briefing at the manufacturer's Fort Worth, Texas, headquarters.

The 2018 figure included 116 505s, two 206L/LTs, 43 407s, 20 429s, and 11 412s. The first nine months of 2019 saw 65 505s, two 206L/LTs, 36 407s, 17 429s, and five 412s delivered.

Griffin attributed the drop in 505 deliveries to a stabilization of the market following the aircraft's launch. "We're still having a positive response to the 505 - we're still over 50 percent of the [short light single-engine] market," she said.

The manufacturer has been ramping up production of the 407 and 429, which helped balance out 2019's delivery numbers. "Since the market came back in 2016, we've seen a really strong demand for 407s; if you tried to buy one today, it's going to be a while before you can get one," said Griffin. "On the 429, we've had really strong support, especially [in terms] of the parapublic demand, and a lot of corporate demand. . . . We've got a pretty strong backlog on that one as well."

Highlights for Bell's commercial lines in 2019 included the announcement of its sole source selection for the Canadian CH-146 Griffon life extension (the aircraft is based on the Bell 412), instrument flight the beginning of customer flights and

reaching several certification milestones for the Bell 525 Relentless, and the launch of a new Customer Experience Portal.

The year also saw the delivery of the first of 12 505s to Horizon International Flight Academy — a landmark order for the 505 in its flight training configuration.

Development of the 505 over the year has included high altitude certification (for operations up to 22,500 feet density altitude), continuing work on autopilot systems from Genesys Aerosystems and Garmin (with certification of both expected in the first quarter of 2020), and the upcoming certification of United Rotorcraft's medical interior for the type (also expected in the first quarter of 2020).

In terms of the 407, the Garmin NXi (the avionics system in the 407GXi) has now been certified for retrofit, and is available as an upgrade for the roughly 1,000 analog 407s flying around the globe today. While the IFR certification for the 407GXi was gained for the Navy trainer competition, the IFR-configured GXi will be available to commercial customers, too. "We have had a lot of interest on the commercial side [for the upgrade]," said Griffin.

Bell also certified a health and usage monitoring system for the type, and will make the Pulselite lighting system standard equipment for all Bell 407GXi aircraft, starting in 2020.

On the 429, Bell has been looking at what operators need to support their work, said Griffin. This has resulted in the envelope expansion of the aircraft's center of gravity to support search-and-rescue and parapublic operators, and deep snow shoe certification. Bell will also be launching a new executive interior for the 429 at HAI Heli-Expo 2020 in January.

Bell has begun marketing the latest variant of the Bell 412, the EPX (produced in partnership with Subaru), in North America, with demo flights starting in the U.S. and Canada. The variant was validated by the Japan Civil Aviation Bureau in January 2019, and Bell delivered the first EPX kit for Subaru to start its production on the type in Japan.

The 525 is moving through flight tests, with customer demonstration flights beginning in 2019. "[The] next year is just getting through the FAA [Federal Aviation Administration] TIA [type inspection authorization] testing and continuing to work with the future customers [to] get the aircraft out," said Griffin.

Bell has also been working on a prototype flight data monitoring system and completed testing with it. "It's a fairly cheap box that we'll install on all the [commercial Bell] aircraft," said Griffin. "It will allow us to be able to get all the data off the aircraft to not only better support our information on wanting to understand what all the [fleet] flight hours are, but also be able to provide that information to customers."

In terms of regional success, Griffin highlighted Bell's continuing focus on China, with its partnerships with Reignwood on the 505 and Shaanxi Helicopter on the 407 illustrating the potential in the country. "We feel like China is a very important growth market for us," she said. "[In 2019], we really tried to focus on making sure that we have a service network in the country."

To that end, Bell announced two new authorized maintenance centers in China, as well as opening up its own supply center in Shanghai.

Griffin said the manufacturer was "working on" an acquisition that would provide it with a part 145 certification so it could perform its own maintenance, repair, and overhaul (MRO) service in China. Bell is also looking for a site to create a hub in the country. "We have put a lot of activity into finding the right location and I think we're getting close on that," she said.

Griffin pointed to the range of modifications and programs Bell is working on as evidence that it hasn't forgotten about its existing product lines, despite the company's well-publicized work in attempting to develop the vertical lift fleets of the future. "I have seen in some of the surveys . . . the attitude that maybe we're not investing in our current production programs as we focus on innovation, and I want to make sure [customers] understand that we are focused on upgrading our existing products," she said.

The company has launched a new Customer Experience Portal to update how customers interact with it, too. The new portal allows customers to perform their own administration of the system, as well as purchase tech publications. In the first guarter of 2020, Bell will launch a replacement for its VISTA system that will allow it to sell parts directly to all Bell owners and operators. The new system will also offer a new spares e-commerce experience.

Finally, Griffin said "2020 is looking good" for Bell from an order book perspective, thanks to strong demand from the market.

ROTORBITS >



SAFRAN ANETO-1K **CERTIFIED IN AW189K**

Safran Helicopter Engines has received European Union Aviation Safety Agency (EASA) type certification for its Aneto-1K engine, which powers the Leonardo AW189K. Intended for super medium and heavy helicopters, the Aneto family produces between 2,500 and 3,000 horsepower (hp). The 1K is rated at 2,500 hp, and completed its first flight in the AW189K in March 2017.

"Certification represents a major milestone for the Aneto program," said Christian Caneilles, vice president of Safran's heavy helicopter engines program. "After an intensive and rigorous test campaign of more than 5,000 hours, on the ground and in-flight, the Aneto-1K is now ready to support AW189K entry-into-service."

According to Safran, the Aneto family delivers 25 percent more thermal power (over existing similarly-rated engines), resulting in increased mission capabilities.

POWER AVIATION ACQUIRES **AVITRONICS INTERNATIONAL**

Power Aviation, a helicopter support company, is acquiring Avitronics International, a company specialized in aviation electronics and special mission equipment.

"The combination of the two companies will provide our clients with a greater selection of products and support in the SAR [search-andrescue] and special mission segment," said Mikael Sahlberg, CEO of Power Aviation.

The acquisition also puts Power Aviation into new geographical markets.

Both companies will be using their existing infrastructures, and said all customers will continue to receive the same quality of products and support as before.

Avitronics International, which will continue to operate under that name, is now a wholly owned subsidiary of Power Aviation.

POWERLINE SYMPOSIUM **FOCUSES ON SAFETY**

BY JEN BOYER

More than 90 operators, brokers, and utility companies came together for the sixth annual International Powerline Symposium in Boise, Idaho, on Nov. 21. Sponsored by Airbus, the gathering is designed to foster conversations, ideas, and understanding that lead to stronger, safer operations.

"Our overall purpose for this symposium has always been to raise awareness and understanding of increasing safety," said Mark Conroe, senior director of government and specialty sales at Airbus, who moderated the symposium. "When operators, power companies, and even regulators can come together in the same room to share their needs, perspectives, and the economics of the powerline business, they can work together to make operations safer."

A number of valuable conversations and presentations ensued between operators and power companies.

Keynote speaker Hank Miller, director of aviation for Entergy, a power company serving the Southern U.S., set the tone for the symposium.

"I want to challenge everyone here to recreate how you look at safety," he said. "Rather than ask, 'is it safe?' instead ask, 'how can we manage our risk? What is our risk appetite?' "

Sharing an understanding that often the customer wants the work as cheaply as possible, and wants it done yesterday, Miller encouraged operators and power companies to work together early on in project planning to become partners in risk management. "Accident rates decrease when utilities, end users, construction companies, and operators work together on taking responsibility for their individual parts of the project to reduce risk and increase safety."

He encouraged all stakeholders to lead by example with integrity. This, he said, is achieved through quality, innovation, best practices, a customer-centric approach, and hiring not only for technical skill, but also positive cultural attributes - integrity, honesty, and customer service.

"Don't be OK with just OK," Miller emphasized. "As an industry, we're good at putting out fires, but we're not so good at figuring out how the fire started. Look at processes and outcomes, how we're causing it and what we're doing to prevent it, to fully understand why we do what we do. Only then can we really innovate and change for the better."

Airbus vice president of oil and gas Régis Magnac followed Miller, taking a closer look at the cost of safety. He began with a sobering statistic: one out of three helicopter accidents around the world is fatal. However, for the powerline patrol, repair, and construction industry when working around cables, that statistic is one out of

Magnac argued despite these statistics, helicopters make powerline work safer and more efficient. More work is done faster with less people than a ground-based operation, reducing overall risk exposure when done properly with the right people.

"It's not just about the technology; it's about investment in the crew: pilot and lineman," Magnac said. "I don't believe it's about a pilot flying a lineman. It's about being a crew, crew resource management, and joining the two worlds."

He encouraged operators and end users to work together to talk through and plan operations with all those working on a project, pilots included. This helps every worker achieve a complete understanding of the job and contribute to identifying the best way to do it safely, he said.

Helicopter industry safety and training expert Terry Palmer, president of Pilot Landing LLC, gave two separate presentations. In her first, she focused on the importance of regular training to maintain a safe operation.

"It's very simple. You're going to be safer operating equipment if you're comfortable using it," she told attendees. "That's more than competency. It's about proficiency. Proficiency maintains safety."

Palmer highlighted the increased number of simulators, simulator locations, and flight training devices on the market that further reduce the cost of pilot training. She

encouraged operators to look into utilizing them, even dry leasing, to not only go over emergency procedures, but for new technology.

"The aircraft we fly today are not anything like the aircraft we were flying 20 years ago," she said. "Today's aircraft are mostly drone, there is so much automation and technology. We spend a lot of time on the basics — emergency procedures, company procedures, and the like. We're not so good at maintaining proficiency on the technology. When you're comfortable using that technology, you'll use it, and be safer as a result. Simulators are a very good and economical way to become comfortable, confident, and proficient in technology and practice perishable skills IFR [instrument flight rules], NVG [night vision goggles], inadvertent IMC [instrument meteorological conditions]."

Later, Palmer gave a punchy presentation on human factors, emphasizing "there are no new cause of accidents, just new people making the same mistakes." She underscored the importance of building human factors awareness into every day, not just annual and semi-annual training. This is easily achieved, she said, through focusing on the five keys to safety throughout daily operations - communication, teamwork, situational awareness, judgment, and decision-making.

Marc Schoenrank, vice president of safety and quality at Universal Helicopters, shared the value of competency-based training to develop internal training programs. "We've lost the concept of mastery of skills," he told attendees. "Competencybased training can bring us back to that."

Schoenrank recommended training that begins with observation and determination of a student's skill level, then through working individually with the student to help build on the skills through realistic scenario-based training. "Teach the whole job or operation, throwing in curveballs and emergency procedures," he said. "Track progress toward mastery of skills rather than checking a box 'pass' or 'fail.' "

A very lively discussion took place during the joint operator and utility panel on twin-engine human external cargo (HEC).

Universal Helicopters' Schoenrank, Firehawk Helicopters chief pilot and safety officer Timothy Hansen, Entergy's Hank Miller, and Hydro One director of helicopter services Walter Heneghan offered thoughts and arguments on whether or not twinengine aircraft should be required for HEC operations. They then opened the floor to comments.

Participants were passionately divided on the topic, with those in favor of twinengine requirements citing increased safety, reduced risk, and the value of redundancy. Overall, those in favor cautioned against a "we've done it safely with a single engine this long" mentality and putting too much weight on engine failure data, since these numbers do not include fuel system and other failures that lead to a flame out.

Those in opposition to twin-engine requirements for HEC cited job cost, economics of operating a twin-engine year-round to keep it in the fleet, increased complexity, increased pilot workload, and increased risk for error.

Harry Nuttal, director of aviation for energy provider Southern Company, closed out the discussion with a final comment: "What we see here is a fear of change. Operators, you need to listen to the end user. You're not in the driver's seat on this. We have to go there. It's the right thing to do. We need to work together to get comfortable with change."

Other symposium presenters included director of international affairs Delphine Depestele at Airtelis, a wholly owned subsidiary of RTE (France's electrical power utility), and Airbus senior manager of accident investigation Seth Buttner. Depestele shared the company's experience of developing a hiring and training program for ground crews to increase safety. Buttner highlighted a number of fatal accident scenarios and lessons learned, underscoring the importance of many themes shared during the day - training, human factors, and partnership with customers on risk mitigation.

The day-long symposium was peppered with long breaks, allowing attendees to network and continue the conversations beyond the presentations. "We bring the community together expressly to have these conversations," Conroe said at the end of the event. "When we come together and talk, our businesses benefit."

USFS OFFERS APPRENTICE MECHANIC OPTIONS



> BY JEN BOYER

Starting in the next firefighting contract season, the U.S. Forest Service (USFS) is offering an additional option for helicopter operators to meet maintenance experience requirements for airframe and powerplant (A&P) mechanics, the USFS announced in November at the HAI Aerial Firefighting Safety Conference.

Prior to this change, mechanics were required to have their A&P for two years before being eligible to maintain a helicopter under field conditions during the awarded contract period.

Under the new option, an apprentice mechanic who has held an A&P license for one year and received factory field maintenance school training for the aircraft can perform routine maintenance on that aircraft in the field. The apprentice is limited to routine maintenance including preflight/ daily inspections, recurring airworthiness directives, non-flight critical component changes, and aircraft inspections up to (but excluding) 100-hour inspections.

This work does not need to be supervised by a fully carded mechanic. A fully carded mechanic, with two years as an A&P and meeting the additional requirements of the contract, must perform or supervise flight critical component changes and all inspections from 100 hours and above.

This change is effective for both future and current existing contracts. A modification

will be issued by a contracting officer for current contracts.

The USFS initiated this change in direct response to industry concerns over the current and future anticipated shortage of A&P mechanics. The additional maintenance option is the USFS's effort to assist the helicopter industry in efficiently executing contract work in addition to developing field mechanics for USFS/Department of Interior (DOI) helicopter contracts, said USFS spokesperson Stanton Florea.

Additional changes operators will see in the new season include some restructuring of the contract language. In order to help clarify the solicitation process and expectations from the USFS, and to assist the helicopter program in managing costs, the USFS's helicopter contract sections were reorganized to reflect Federal Acquisition Regulations (FAR) part 12. This was to develop consistency between the USFS and the DOI. Additionally, the "Schedule of Items" were restructured to meet FAR part 4 requirements, Florea said.

"HAI applauds the USFS for their proactive stance," said HAI vice president of operations Chris Martino. "By offering flexible options such as this to helicopter service providers, the USFS is providing alternative means for operators to get the job done safely as well as train their future mechanics/engineers. This will go a long way toward helping the helicopter industry support the USFS."

ROTORBITS



SIKORSKY DONATES S-76 AIRFRAME TO AMERICAN HELICOPTER MUSEUM

Sikorsky has donated an S-76 airframe to the American Helicopter Museum and Education Center. The airframe was delivered in December by employees from the Sikorsky Coatesville, Pennsylvania, facility, where it received a makeover into its original VIP customer configuration in preparation for its forever home.

The airframe was created to be a realistic fullscale static display helicopter to showcase the S-76D model before its release. During its lifespan, the airframe has traveled across the globe on tradeshow assignments and had also been displayed at educational STEM events. Most recently, this S-76 wore a different outer skin and was shown as Sikorsky's Autonomy Research Aircraft, nicknamed SARA.

STANDARDAERO OPENS **NEW HELICOPTER MRO FACILITY IN CANADA**

On Nov. 14, in a celebratory ceremony attended by a number of helicopter operators, industry OEMs and local government officials, StandardAero announced the opening of its newest helicopter maintenance, repair and overhaul (MRO) facility in Richmond, British Columbia.

The opening of the new StandardAero Vancouver facility is the culmination of StandardAero's efforts in establishing dedicated centers of excellence to streamline helicopter support operations across its varied engine and airframe MRO businesses.

The new 24,000-square-foot facility brings together similar work previously completed at separate locations and now houses all support shops including machining, cleaning, painting and non-destructive testing (NDT) for GE T700/CT7 engines, Rolls-Royce M250 engines and Airbus Helicopters dynamic components.

ADA BUYS 5 LEONARDO HELICOPTERS

> BY DAN PARSONS

Leonardo Helicopters has signed contracts with Abu Dhabi Aviation (ADA) for five new helicopters, including three AW139s and two AW169s, the companies announced Nov. 17 at the Dubai Air Show.

The deal is the first purchase by ADA of the twin-engine AW169, which will be added to a fleet of 16 AW139s the firm already has in service, mainly in the oil-and-gas sector. It is part of a larger deal for 15 139, 169 and 189 models announced in late 2015.

ADA is a national shareholding company and the largest commercial helicopter operator in the Middle East and North African region, established in 1976. The company owns a fleet of 55 aircraft, including 51 helicopters and four fixed-wing aircraft.

Deliveries of the new Leonardo helicopters are scheduled to begin in 2020.

Operation and maintenance of both

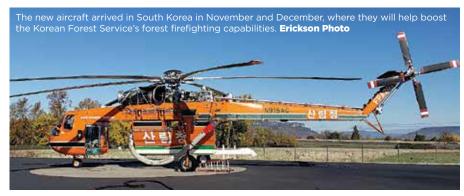
models will be done locally by AgustaWestland Aviation Services, a joint venture between the two entities.

"We're honored our long established leading partner Abu Dhabi Aviation has now decided to add the AW169 to their fleet, confirming their trust in our technology to provide a major contribution to their future success," Leonardo chief executive Alessandro Profumo said in a prepared statement.

More than 200 AW169s have now been sold worldwide.

"This agreement has come to support the oil-and-gas industry inside and outside the UAE and to satisfy the transport, airambulance and other needs," said H.E. Nader Ahmed Al Hammadi, chairman of Abu Dhabi Aviation, in a press release. "It is in line with the company's strategy to expand its fleet of new generation aircraft in order to meet its customers' needs, in light of the expected high demand in 2020."

TWO S-64 AIRCRANES HEADED TO SOUTH KOREA



Erickson Inc. has delivered two S-64 Aircranes to the Korea Forest Service (KFS), bringing KFS's operational fleet up to six S-64s.

KFS and Erickson share nearly a 20-year relationship, through developing a model firefighting and emergency response program, along with by-the-hour maintenance services, pilot training, and delivery of remanufactured aircraft.

In 2001, KFS was the first foreign government to purchase S-64 helicopters from Erickson.

Due to its success with the aircraft, KFS continues to modify and upgrade its fleet with the addition of K7 and K8, incorporating the latest modifications, including composite main rotor blades and a glass cockpit.

"KFS put the S-64 Aircrane in service to save property and lives, and everyone here on the Erickson team is very proud of that," said Hayden Olsen, vice president of aerosystems at Erickson.



- Foster open and honest relationships built on trust and integrity,
- Deliver high-quality and efficient aviation solutions, and
- Help our customers achieve their business objectives safely and ontime.

Our relationships with our customers mean the world to us and our global teams are working hard every day to proudly serve you.



Confidence in flight, Worldwide.

www.bristowgroup.com

TSB: COLLABORATION WILL IMPROVE AIR TAXI SAFETY



BY OLIVER JOHNSON

A collaborative effort will be required from all industry stakeholders to address the air taxi sector's accident and fatality rate, Transportation Safety Board of Canada (TSB) chair Kathy Fox told attendees at the Helicopter Association of Canada's annual convention.

Speaking during a presentation at the event, which was held Nov. 14 to 16 in Vancouver, British Columbia, Fox gave more detail on the TSB's recently released report "Raising the bar on safety: Reducing the risks associated with air taxi operations in Canada."

While commercial aviation has an improving safety record in Canada, aircraft operating in the air taxi segment still represent more than half of all the accidents and fatalities in Canadian commercial aviation.

Among a raft of issues the report identified and recommendations it makes, Fox highlighted the need for industry and the regulator to "raise the bar" for safety to level what she called an "uneven playing field" faced by operators.

During the TSB's investigation, she said it encountered operators who were going above and beyond regulations in terms of adopting safety-enhancing operating

practices and measures, or installing new technology, and operators who were doing the bare minimum required.

"When it comes to competing against somebody who hasn't taken those extra steps, who's just doing the bare minimum to get by, they're at an uneven playing field, because they can't offer [a service] at the same price," said Fox.

"Part of the education with clients may be to indicate that the lowest cost doesn't necessarily mean that it's the best or safest option. I think there's a general perception among clients that, 'Well, it's regulated by Transport Canada, therefore one operator is as good as another.' But when it comes to safety investments, there's a clear difference. So we think that by raising the bar for everyone, that will help to level that playing field."

The TSB's investigation looked at the data from 2000 to 2014, during which there were 240 helicopter accidents in the air-taxi sector, and 35 of these were fatal. Unlike with fixed-wing aircraft in the segment, the TSB said there had been no clear decrease in the number of helicopter accidents over time.

From this data, the TSB identified 23 different accident types, nine of which were related to helicopters.

One of these — visual flight rules flight into instrument meteorological conditions resulting in loss of control or controlled flight into terrain - represented 12 percent of all helicopter-related air taxi accidents, but resulted in the highest proportion of fatalities. Fox noted that, of all the accident types, it involved the most experienced pilots, with an average of 6,800 hours.



The TSB then conducted 125 interviews with operators to find out what they perceived to be their most significant risks, what they were doing to lessen them, and what more they believed needs to be done.

From this information, the organization identified 19 safety themes, from infrastructure, to fatigue, training, and regulatory oversight. The TSB talked to operators about how they were managing these safety issues, and identified best practices — which Fox encouraged operators to take a look at.

"What we learned really is that there are two key underlying factors. . . in all accidents that have happened during the study period," said Fox. "One is the acceptance of unsafe operating practices, and the second is inadequate management of operational hazards."

Unsafe practices, she said, included things like pushing the weather, taking off overweight, or not recording defects during a flight in a log.

Operational hazards included the level of operational control, crew pairing, the training an operator provides, or support the management provides personnel.

"We know that operators, by and large, are striving to operate safely," said Fox. "But any operator can get caught with these two factors over time, unwittingly endorsing unsafe practices or not adequately managing operational risk. . . . What we're really talking about here is a slow incremental drift."

As a result of the investigation, the TSB has added four new recommendations to its 22 existing recommendations that apply to the air taxi sector.

The first is for the Department of Transport to collaborate with industry associations to develop strategies, education products and tools to help air taxi operators and clients eliminate the acceptance of unsafe practices.

"That's going to mean changing a lot of attitudes about what's acceptable," said Fox.

The TSB also recommended that industry associations work to actively promote safety management systems and safety cultures among their members, and encourage operators to share data.

"We believe a lot can be done by operators themselves and by industry without waiting for Transport Canada," said Fox. "You can exert peer pressure or other forms of

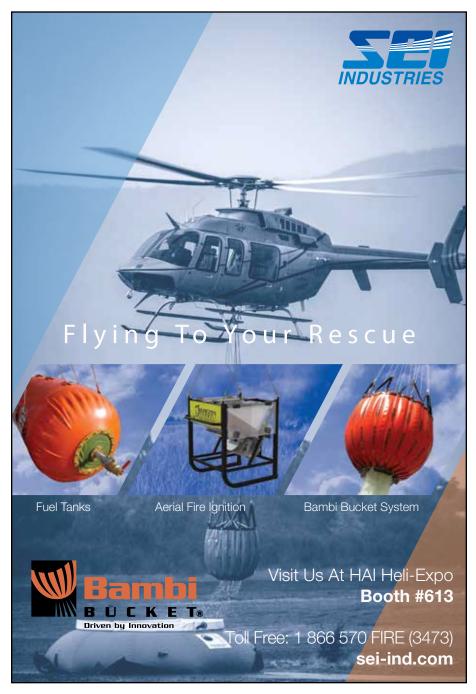
incentives to help operators raise the bar."

Third, the TSB recommended that the Department of Transport review gaps it found during its investigation, and update regulations and standards. For example, Fox said, there is no specialized training required by the regulator for pilots to operate in mountains, and the process that operators must go through in order to update technology in aircraft is arduous.

"Operators want to update their technology, but the process they have to go through to do so is extremely costly and burdensome," said Fox.

The final recommendation calls for the Department of Transport to require operators to collect and report hours flown and movement data by Canadian Aviation Regulation subpart and aircraft type.

Fox said it would take a collaborative effort from clients, passengers, crews, operators, Transport Canada and industry associations to address the underlying factors behind the air taxi sector's accident rate. "Everybody has to work together in order to improve the safety of air taxis," she said.





BELL WON'T COMMIT TO 2020 CERT FOR 525

> BY OLIVER JOHNSON

Bell has said it will not commit to a certification timeline for its upcoming super medium 525 Relentless, as certification flight tests continue across the fleet of four aircraft.

When the 525 was unveiled in 2012, Bell was targeting certification around 2015, but that timeline has gradually slipped to the right as flight testing progressed. However, during a December media briefing at Bell's headquarters in Fort Worth, Texas, Josh O'Neil, manager, technology and evaluation, talked enthusiastically about the strides the 525 program team has made over the last year, and his firm belief that the cutting-edge technology employed throughout the clean-sheet design will mean the aircraft will prove successful once it does get certified.

"It's a matter of having a look at where we are, looking ahead and trying to be accurate about setting expectations," he said,

when asked if the aircraft will be certified in 2020. "We can't set that kind of an accurate expectation right now. I think we will be there soon . . . but we're still going through that and understanding the ramifications of everything we've seen this year."

When it does happen, the 20,500-pound (9,300-kilogram) max gross weight 525 will become the first civilian fly-by-wire helicopter.

Powered by two General Electric GE CT7-2F1 engines, the aircraft has a fully articulated five-blade main rotor, a four-blade canted tail rotor, and a Garmin G5000H glass cockpit.

It has a range of 500 nautical miles for offshore transport, and a 250-nm radius for search-and-rescue operations (allowing for 20 minutes on the scene, and 30 minutes of fuel reserves).

The aircraft has a long-range cruise speed of 145 knots, a maximum cruise of 160

knots and a hover out of ground effect ceiling of 8,100 feet (2,470 meters).

"It is a very fast aircraft and especially at high speed, a very smooth aircraft," said O'Neil. The 525 has flown beyond 200 knots in flight testing, and O'Neil said he believed it could potentially have gone even faster.

"Your main rotor is what you're watching when you go that fast," he said. "It'll talk to you - an instrumented rotor will tell you when it starts to feel it. And we flew until we said, 'Well, we're done,' but the rotor wasn't done. They could've gone appreciably faster."

The aircraft will be certified in its oil-andgas configuration first, despite this primary target market for the aircraft continuing to suffer from an ongoing downturn. VIP and search-and-rescue configurations will follow.

"When you talk about the market for an

aircraft of this category, [oil-and-gas] is still really the sweet spot," said O'Neil. "Yes, it may have declined, but it's still a pretty active market . . . with opportunities."

Now over four years into flight tests, there are four aircraft flying on the program: Ship 2, Ship 3, Ship 14 and Ship 15 (the numbers for the latter two are slightly misleading - they are the fourth and fifth 525s produced). Together, they have amassed more than 1.500 flight hours.

Ship 1 was destroyed in a fatal accident during flight testing in July 2016, in which two Bell test pilots lost their lives. That accident resulted in a 12-month grounding of the flight test program.

The most recently-constructed is Ship 15, which has a production configuration with a 16-passenger, oil-and-gas interior. In this configuration, there are four rows of four seats, each 20 inches wide. This configuration allows every passenger to be no more than one seat away from an emergency exit at any time.

The test program spent 2.5 months in Yellowknife, Northwest Territories, at the start of 2019, working on cold weather certification tests. Two aircraft (Ships 2 and 3) were there for much of the time, recording over 100 flights and seven cold soaks (leaving the aircraft outside in -40 C/-40 F, then turning it on). The ferry flight took two days, spanning 2,200 miles (4,100 kilometers) each way.

Ship 14 flew to Rome, New York, to experience flight in full blowing snow conditions, and has completed engine/APU compatibility testing. The year also saw Ship 15 complete high intensity radiated field testing, as well as low level lightning tests. It has now begun customer evaluations, with some potential buyers allowed to pilot the aircraft.

The team is also working on certifying the 525's autorotation entry assist capability, in which the aircraft's fly-by-wire system steps in instantaneously to input suitable responses to an engine failure.

"In an autorotation situation, the most important time is that first second in terms of maintaining your rotor speed and your controllability of the aircraft," said O'Neil. "To certify aircraft, you have to show that for a second that pilot might not do anything and then you're allowed to be on the controls. . . . But that second you lost; the most important time to control that maneuver is usually put aside. With a fly-by-wire flight control system, you can actually have

computers get in immediately when you have an engine failure, and they can begin to put inputs to the controls to put you in a better state."

O'Neil stressed that it's not a completely autonomous autorotation capability, and that as soon as a pilot starts manipulating the controls, they have complete control of the aircraft. "It's just if you do have a pilot who takes a second for whatever reason to get on the controls, he's in a better spot than you would be if you don't do anything."

The GE CT7 engine was certified in March 2019, and O'Neil said Garmin was keeping pace with the program's certification needs, and was on track for qualification of the G5000H in the second quarter of 2020.

Icing certification will be offered as a kit following type certification (TC). The blades are heated by an electric thermal system, with the heated windshield being the other major component of the kit. "We will launch the effort to certify that capability after TC," said O'Neil. "It's one of a list of many kits

that are actually already designed. They are part of the aircraft already and the only thing to do is to go certify those kits."

Looking ahead at the remaining work to do on the flight test program, Ship 2 will work on handling qualities and noise testing, before being used as the ground endurance test vehicle. After that, it will be retired and modified to become a maintenance trainer.

Ship 3 will be used for one engine inoperative, flight control failure modes, and handling qualities tests, as well as the searchand-rescue load level survey.

Ship 14 is set for inlet distortion, propulsion/avionics cooling, flight director, and float testing; while Ship 15 will work on fuel system calibration, fire extinguishing, emergency egress, electrical and avionics, and functional and reliability testing. It will then serve as a demonstrator aircraft.

Five of eight drive system certification tests have now been completed, with the remainder set to finish by the second quarter of 2020.



PHI CEO STEPS DOWN

> BY DAN PARSONS



PHI chief executive officer Lance Bospflug, who led the company through its recent Chapter 11 bankruptcy reorganization, has stepped down from his position and from the board of directors, the company announced to customers in a Nov. 18 letter.

"Lance was instrumental in our formal restructuring process that resulted in a resilient company with PHI emerging as the strongest among its competitors," the letter said. It was signed by PHI Americas president David F. Stepanek. "We are in a unique position to capitalize upon future growth prospects and opportunities while

remaining committed to delivering our core values: safe, efficient, quality, service."

Not only is Bospflug stepping down, his position as CEO is being restructured into the "Office of the CEO," which will be co-chaired by Scott McCarty and Bob Tamburino. The two men have "been closely integrated with our business since the early stages of the restructuring process and are committed to driving our core organizational values," Stepanek wrote.

Bospflug became president of Petroleum Helicopters Inc. in September 2000. He added the title of CEO the following year. He remained an executive through the renaming of the company as PHI Inc and became its chief operating officer in 2009. He added the title of president the following year and then ascended to CEO in September 2019.

PHI filed for Chapter 11 bankruptcy in March and successfully emerged in September.

"Through Lance's tenure, he has created a strong operational organization enabling three independent but collaborative business units formed under PHI Group Inc. to better support our employees, customers, and stakeholders," Stepanek wrote in his letter to customers.

Those units include PHI Americas, PHI International and PHI Health, and support the energy and mining industries, searchand-rescue, helicopter emergency medical services and healthcare.

"Lance's leadership has been paramount to our success as demonstrated by a solid financial foundation to operate well into the future, a safety culture that will endure, and the fostering of a leadership team that will continue this great work," Stepanek added. "These values have earned Lance the utmost respect in each of these industries around the globe."

Under the new leadership structure, the three business unit presidents will report directly to the Office of the CEO. The business units are led by David Stepanek, president of PHI Americas based in Lafavette. Louisiana; Keith Mullett, president of PHI International based in Nelson, New Zealand; and David Motzkin, president of PHI Health based in Phoenix, Arizona.

CARBON COMPOSITE FUEL PROBES

GAUGING THE FUTURE

Developing primary and auxiliary fuel gauging systems for rotary and fixed wing aircraft.

FUEL PROBES / CONDITIONERS / FUEL INDICATORS NO FIELD CALIBRATION REQUIRED SUPPORTS CRASH RESISTANT FUEL SYSTEMS



LIQUID MEASUREMENT SYSTEMS

FUEL PROBES • CONDITIONERS • FUEL INDICATORS www.liquidmeasurement.com

TECHNISONIC COMMUNICATIONS



THE FUTURE OF COMMUNICATION IS

ALREADY BUILT IN.

The easy-to-use TDFM-9100 is up for the task, even when paired with the most demanding EMS Operators. Plus, its fully scalable and modular design allows you to only buy what you need today, and still be ready for whatever the mission throws at you tomorrow.

Visit us at HELI-EXPO, Booth #4500





Call today to speak with a knowledgeable sales representative, or visit us online.

240 Traders Blvd. Mississauga • www.til.ca • Sales: (612) 231-9020 • General: (905) 890-2113

ROTORBITS >

KOPTER TO PRESENT SH09 FINAL DESIGN AT HELI-**EXPO 2020**

The final lines and features of Kopter's upcoming SH09 will be revealed at HAI Heli-Expo through a series of 3D animations.

Kopter's Heli-Expo display will consist of a full-scale mockup of the helicopter in its seven-seat transport configuration featuring a modular layout, which has been designed and manufactured in cooperation with Metro Aviation, based in Shreveport, Louisiana. Metro Aviation and Kopter have collaborated on various interior designs over the past two years.

Kopter continues to expand the performance and flight envelope of the SH09 Prototype 3 (P3), while simultaneously increasing flight test activities at the flight test center located in Pozzallo, Sicily. P3 has now completed a full year of flight tests covering a wide range of adaptations and improvements, all focused on delivering performance and enhancing safety.

The result of this progressive flight test campaign with P3 has allowed Kopter to freeze the design of the SH09, which will flow into the Pre-Series 4 (PS4) aircraft scheduled for assembly by mid-2020.

SOUTHWEST FUEL SYSTEMS HAS NEW M250 MRO **CAPABILITY**

M International's subsidiary company Southwest Fuel Systems (SWF) has announced its approval to provide full-service maintenance, repair, overhaul (MRO) and exchange services for original Triumph-manufactured hydromechanical units (HMU) certified for use on the Rolls-Royce M250-C40/C47 series of gas turbine engines.

"As a Triumph authorized engine and control maintenance center for HMUs. our goal is to provide faster turnaround for overhaul and exchange HMUs along with a better price," said Ralph Bishop, president of Southwest Fuels.

CARSON HELICOPTERS ENHANCES S-61 PERFORMANCE

> BY LISA GORDON

Since 1958, Carson Helicopters of Perkasie, Pennsylvania, has been delivering a suite of products and services to support the helicopter industry, primarily focusing on the Sikorsky S-61 and SH-3 Sea King.

In 2003, the company received approval for its composite S-61 main rotor blade, which gives the helicopter about 1,750 pounds (793 kilograms) of additional lift capability under hot and high conditions.

Then, in April of 2018, Carson Helicopters received its initial supplemental type certificate (STC) for its composite S-61 tail rotor blades.

"Typically, as part of a composite blade STC project, we break it up into segments. Our first STC is just to install the new blade," explained company vice president, Clayton Carson. "We don't go after performance improvements initially; instead, we look at matching performance to the existing [metal] blades. Once that is successful, we go for performance improvements, which simplifies the initial project and helps make it go more smoothly."

Since receiving the S-61 composite tail rotor STC, Carson Helicopters has made further improvements, recently gaining U.S. Federal Aviation Administration (FAA) certification for an additional 150 lb. (68 kg) of lift at an altitude of 7,000 feet (2,133 meters) and temperatures of 68 F (20 C). The new composite tail rotor blades also increase the max gross weight altitude by approximately 1,000 feet (304 meters).

The company says composite blades deliver a number of operational advantages.

"Compared to the metal blades, they offer better damage tolerance, better performance, and reduced maintenance," explained Carson.

"Composite blades give us a lot more freedom of design compared to a metal extrusion spar, and that lets us use different types of airfoils. We can really cater the airfoil and twist along the span of the blade, and that's really where you get improved performance. Or, you can make it slightly quieter with an optimized tip design, for example."

The Carson Helicopters S-61 composite tail

rotor blade features cambered airfoils with an eight-degree twist. These airfoils, which are the same as those used in the company's main rotor blades, provide greater performance while maintaining the unique advantages of composites, including improved damage tolerance.

Carson said that if a crack develops in a metal blade, it can spread quickly and could cause a failure if not detected. Composites, on the other hand, are by design more robust and more tolerant of small damage or cracks. Additionally, they are resistant to corrosion.

"You usually get a longer life for the blade we currently certify the composite main rotor blade for 10,000 hours, but we're looking at extending to 20,000 hours," he continued. "For the tail rotor, likewise, we are qualifying it for 10,000 hours and we're looking to extend that in the future as well."

Once the composite main rotor blade life is extended it will have roughly double the lifetime of its metal counterpart.

Carson Helicopters' S-61 composite tail rotor blades are a simple replacement and fit into the original tail rotor hub in a process that takes approximately four hours. The company is now manufacturing tail rotor sets on spec and will work toward building its inventory over the next few months.

Sikorsky built more than 1,100 S-61s and SH-3s, with foreign licensees producing an additional number. Today, Carson estimates the global fleet to number approximately 250 helicopters.

"Not necessarily all of them are flying; some of them might be used for parts," he said. "I know a lot of the foreign militaries are finding new uses for the helicopter; some have been converted for troop transport. On the commercial side, it seems most operators are still logging, firefighting and doing construction work. Quite a few are working with the U.S. government transporting passengers overseas. The types of usage on the commercial side have been pretty consistent over the vears."

As Carson Helicopters continues to explore markets for the S-61, it is also branching out into its next big program, which will include a suite of avionics and airframe upgrades for the Sikorsky UH-60 Black Hawk helicopter.



SERVICES REQUIRED FOR ROTARY AIRCRAFT.

TEMPEST IS YOUR GO-TO SOURCE FOR AIRBUS, MD, BELL, AND SIKORSKY HELICOPTER PARTS.



OUR CAPABILITIES RANGE FROM:

 AVIONICS • INSTRUMENTS • ELECTRICAL COMPONENTS • HYDRAULICS • STRUCTURES: COMPOSITES & SHEET METAL • FUEL/OIL/ PNEUMATIC • DYNAMICS • FLIGHT CONTROLS • MECHANICAL



AVIATION GROUP INC.

1-778-699-2058 • TEMPEST.AERO • SALES@TEMPEST.AERO



ROTORBITS >



BABCOCK OFFSHORE SECURES NORTH SEA SUPPORT CONTRACT

Babcock Offshore has confirmed a new three-year contract to provide the expanding U.K.-based oil-and-gas company Serica Energy with offshore helicopter crew transport services.

The contract will see Babcock transport Serica Energy passengers to and from the company's Bruce complex in the North Sea, 210 miles (340 kilometers) northeast of Aberdeen.

The flights will use a mix of Sikorsky S-92 and Airbus H175 helicopters, beginning in December 2019 out of Babcock's main helicopter terminal at Aberdeen International Airport.

"We have flown for Serica Energy several times previously so we are very pleased to have now been selected as their aviation partner of choice for this long-term contract," said Simon Meakins, director of offshore for Babcock.

GARMIN GTX 335D & 345D DIVERSITY TRANSPONDERS CERTIFIED

Garmin has received Federal Aviation Administration (FAA) supplemental type certificate (STC) approval for the GTX 335D and GTX 345D. These diversity transponders provide optimal ADS-B Out coverage and visibility, while operating throughout the global airspace system.

GTX 335D offers ADS-B Out, while the GTX 345D provides ADS-B Out as well as duallink ADS-B In traffic and weather for display on compatible avionics and mobile devices.

The FAA approval is in conjunction with European Aviation Safety Agency (EASA) and Transport Canada Civil Aviation (TCCA) validation.

O'REILLY & SITNAM RECEIVE LIFETIME CONTRIBUTION AWARDS

Mel O'Reilly, founder and owner of Eagle Copters Ltd., and Daniel Sitnam, president and CEO of Helijet International Inc., were each presented with the prestigious Carl Agar & Alf Stringer Award for their lifetime contributions to the helicopter industry at the Helicopter Association of Canada's annual convention in November.

"Too often, dedicated individuals in the industry go unrecognized. Our objective with the Agar-Stringer Award is to honor those who have a made a significant contribution over the course of their career," said HAC president Fred Jones.

O'Reilly has a history of over 40 years with Eagle Copters, headquartered in Calgary, Alberta, Historically specializing in Bell medium utility helicopters, Eagle has been providing complete fleet management support to operators since 1975. Since then, Eagle has cultivated an international network of affiliates within North America, South America, and Australia.

"Congratulations to Mel and thanks for starting this work family we all belong to," Eagle said in a statement following the ceremony.

HAC president Fred Jones said Sitnam has been a pioneer in the Canadian helicopter industry in many way. "Under his leadership, Helijet has become a highly versatile company, succeeding as both a scheduled





Heath Moffatt Photo

helicopter airline and an air ambulance provider," he said.

"What's more, Helijet is an industry leader in managing noise, promoting women in aviation, and doing charitable works in the communities they serve, among other things."

Sitnam embarked on his aviation career in 1977, flying light and medium utility helicopters in the Yukon, Alberta and Northern B.C. in the years that followed. By the mid-1980s he latched onto the idea that a scheduled helicopter service between Vancouver and Victoria operating multiengine, multi-crew IFR-certified helicopters could better serve the market. Helijet's inaugural flight lifted off on Nov. 27, 1986, and over the past 33 years, has grown to become the largest helicopter airline in the world. It has also branched into a variety of fixed- and rotary-wing markets, including air ambulance, film, tourism, corporate, and natural resources.

"I feel humbled and privileged to receive the Agar-Stringer Award," said Sitnam. "But I don't see this award as being about me. It's about the 170 professionals who go to work at Helijet every day, driving the company forward and making a difference to the people and communities we serve."

"It's also about family. My wife, Laura, and my children, Owen and Corra-Rose, have been my backbone and supported me all along," he added.

Visit us at HELI-EXPO 2020

COULSON AVIATION USA

ALWAYSREADY

4.7110° N, 74.0721° W

8.8067° N, 89.3985

WILDFIRE WARFARE

Our comprehensive fleet of fixed and rotary wing resources ensure we can reliably support your needs anywhere in the world, 24/7/365.

COULSON · UNICAL

AUSTRALIA BURNS IN PRE-SUMMER FIRES



BY PAUL SADLER **PHOTOS BY NED DAWSON**

Tinder-dry conditions, record temperatures and strong winds led to an early start to Australia's wildfire season, which quickly reached unprecedented levels in December.

The country's 2019-20 bushfire season intensified in September — the beginning of spring in the southern hemisphere when around 130 bushfires began ripping through the vegetation of southern Queensland and northern New South Wales (NSW). By mid-November, more than 70 bushfires had already triggered evacuations from Bundaberg down to the Gold Coast, with some fire attack operations occurring as far north as Cairns, in tropical Far North Queensland.

By mid-December, 160 helicopter and fixed-wing aircraft were either currently working on or were on standby to provide firefighting support on Australia's east coast. At that point, bushfires had already burnt through 2.7 million hectares with a perimeter of 11,952 miles (19,235 kilometers) in NSW alone — an area almost twice the size of greater Sydney. Around 1,000 homes and other infrastructure had been destroyed and, tragically, eight lives had been lost. However, despite these losses,

air and ground fire crews had contributed to saving at least 5,000 properties.

The NSW Bureau of Meteorology said the largest fires simply cannot be extinguished by aerial attack aircraft or firefighting crews on the ground. "The massive NSW fires are in some cases just too big to put out at the moment," a bureau spokesperson said in mid-December. "They're pumping out vast amounts of smoke which is filling the air, turning the sky orange and even appearing like significant rain on our

The majority of the aircraft working on these fires are contracted by the National Aerial Firefighting Centre on behalf of Australia's state and territory governments. They are supplemented by additional state owned and state contracted aircraft, which are called when needed to meet peak demand. In total, more than 500 aircraft, provided by over 150 operators, are available for firefighting across the country.

Making up the international support coming in from the U.S. and Canada this season are nine Type 1 helicopters, consisting of six Erickson S-64E Air Cranes and three of Coulson's Sikorsky S-61s. Plus, a number of Type 2 machines, including a pair of Timberline Helicopters' UH-60A+ Black Hawks, and a number of Bell 205s, 212s and 412s from Wildcat Helicopters and Valhalla Helicopters.



On the ground, 21 firefighters from Canada arrived in Sydney in early December to help relieve exhausted local crews across NSW. The Canadians have since been joined by another 21 firefighters from the U.S. This is the first time Canadian firefighters have been deployed to Australia under the Exchange of Wildland Fire Management Resources Agreement.

However, as the North American fire season extends later into its winter, it's beginning to overlap the start of the Australian fire season, impacting the availability of helicopter and other fixed-wing firefighting assets that seasonally migrate Down Under. This is becoming a concern for fire services and operators who manage the sharing of these vital firefighting resources, with the realization that in future seasons some may not be available as scheduled.

Australia is beginning to follow suit of other countries with retired Australian Defence Force (ADF) machines now being sold or gifted to private operators for conversion into aerial attack and support assets. To bolster the regular supply of Type 2 firefighting helicopters year round, in June 2018 the Department of Defence announced it would gift the NSW Rural Fire Service (RFS) two ex-Australian Army S-70A-9 Black Hawks for aerial firefighting and remote area access support - and the aircraft would also be capable of conducting night time operations.

It was hoped these Black Hawks would have been converted into their new roles and available for this fire season. However, it is now expected that Defence will not release these helicopters to the RFS until 2022, due to a delay in the helicopters being withdrawn from active service. The transfer of ownership from the Australian Defence Force to the RFS is subject to country of origin export endorsement, and other necessary approvals.

Skyline Aviation Group, at Lake Macquarie Airport, on the NSW Central Coast, has procured 11 former Royal Australian Navy S-70B-2 Seahawks to be used for firefighting operations. Having retired from service in 2017, one of Skyline Aviation's Seahawks has recently appeared on the civil register as VH-XHJ (formerly N24-002), and is reportedly nearing completion of its fit-out. It's believed this will be the first Seahawk in the world to be converted into a helitack machine.





airwork

DYNAMIC COMPONENT

INSPECTION • REPAIR • OVERHAUL

AS350 | AS355 | EC130 | BK117



Our factory trained engineers and manufacturer approved workshops will get your aircraft back in the air sooner

E sales@airworkgroup.com | **P** +64 9 295 2111

487 Airfield Road, Ardmore, Auckland, New Zealand www.airworkgroup.com In February 2019, Skyline Aviation displayed a Seahawk representative in a fire attack configuration at the Australian International Airshow at Avalon Airport, near Melbourne, equipped with the Australian-designed and -built Helitak Fire Fighting Equipment's FT4500 Fire Tank.

Current serving ADF helicopters have been active above the Queensland and NSW fires, supporting firefighter movements, air observers and civilian rescuers as requested.

The bushfires along the east coast could have benefited from nightcapable aerial attack helicopters if more were deployed. Following on from their first operational season the previous year, night attack capable helicopters are again deployed to work after dark, when the conditions are usually calmer. After an extensive practical trial early 2018, Australia's Civil Aviation Safety Authority approved local company Kestrel Aviation and Coulson Aviation to undertake aerial fire suppression operations using NVIS to attack bushfires at night. Emergency Management Victoria currently remains the only state fire agency to use the night attack capability this season.

Australian Helicopter Industry Association president, Ray Cronin, said that the Queensland and NSW fires could have been tackled sooner by night-capable helicopters, and called for a national strategy for the use of night-capable helicopters.

"Fires don't respect borders." Cronin told The Australian newspaper in September. "There's a lot of capability that's out there and available to the agencies that is not being engaged for whatever reasons. There's a need for planning and for pre-funding this."

A Queensland Fire and Emergency Services (QFES) spokesman also told The Australian that night-time aerial attack would not have added value to current operations. "Night-time waterbombing is a complicated activity. Current QFES policy does not support night-time waterbombing, however, it will assess the value of this activity in the future."

The NSW RSFS also does not have regulatory authority to use helicopters for aerial attack at night.



HEMS • FIREFIGHTING • MILITARY MEDEVAC
AIRBORNE LAW ENFORCEMENT • SEARCH & RESCUE







ROTORBITS >



AIRBUS DELIVERS H145 TO AIRLIFT

Airlift has taken delivery of its first Airbus H145, becoming the first operator of this model in Greece. The twin-engine helicopter will be mainly dedicated to VIP transfers, but will also be used for emergency medical transport and firefighting.

The new H145 will be the fifth helicopter to join Airlift's Airbus fleet, which is currently composed of H125, H130 and H135 family models.

"Having led helicopter operations in Greece for almost 20 years, we are very happy to be the first to introduce the H145 in the country," said Alexandros Papadospyridakis, CEO of Airlift. "We appreciate the H145's versatility to perform various types of missions, along with its spacious, comfortable cabin, which should be welcomed by our customers."

S.A.F.E. STRUCTURE **DESIGNS AWARDED GSA** CONTRACT

S.A.F.E. Structure Designs has been awarded a five-year Government Services Administration (GSA) contract with three five-year extensions. This long-term contract status approves S.A.F.E. to sell its custom ergonomic products and services directly to U.S. government entities including military and transportation departments.

S.A.F.E designs and engineers innovative safety equipment including aviation maintenance stands, access platforms, fall protection, hangar equipment, ground support equipment (GSE), aerospace ground equipment (AGE), and portable field use equipment. S.A.F.E said the equipment not only provides a safe environment for maintenance staff; it also provides an ergonomic design that improves efficiency.

ENSTROM HELICOPTER CELEBRATES 60 YEARS



Enstrom Helicopter Corporation has celebrated its 60th anniversary, growing from humble beginnings in the woods of northern Michigan to become a major manufacturer, having produced more than 1,300 aircraft operated in over 50 countries.

Rudy Enstrom was a mining engineer in Crystal Falls, Michigan, who dreamed of building his own helicopter - despite having never actually seen one in person. Throughout the '40s and '50s, he constructed a number of prototypes in his garage, hovering them in a local quarry. Jack Christensen, a tool salesman from Menominee, Michigan, called on Enstrom's mine often. In the late '50s, Rudy Enstrom decided to put Enstrom aircraft into production, raising funds from local businessmen to start a company. The R.J. Enstrom Corporation was founded in December 1959 with Christensen as CEO, and a 60-year legacy was born.

Rudy Enstrom soon left the company, but not before an engineer named Alb Balaur was brought in to refine the design. Along with Paul Shultz and a handful of other talented engineers, the dedicated team labored through the early '60s developing the F28. The aircraft was certified in 1965, and won Michigan Product of the Year no small feat considering that was the same year the Ford Mustang was introduced.

The fully-cowled F28 became a quick success, and the '70s brought additional

refinements to the design, including a turbocharger for excellent hot and high performance, as well as the restyled 280 variant. By the late '70s, Enstrom was building more than 100 aircraft each year out of its tiny Menominee factory.

Enstrom went on to develop the 480 series of turbine helicopters in the '90s, leading to a renewed prosperity in the 2000s. Today, the company continues to produce its popular turbocharged piston F28F and 280FX siblings, and the turbine 480B.

The Enstrom factory has grown over the years, and is now a state-of-the-art 160,000-square-foot production facility. The company has never moved home, and continues to manufacture and support aircraft out of Menominee.

"It's really an incredible story," said Enstrom's CEO Matt Francour. "While the aircraft have changed dramatically, we have the same type certificate and production certificate we've had since 1965. It's really a testament to the people we have here, our workforce and our local community. Their dedication has led to an incredible international legacy.

"I just want to thank all of our past and present customers for supporting us all these years. We hear so many great stories of things people did in their Enstroms, how the helicopters affected their lives. We are really proud to be a part of that."



The Bose A20 Aviation Headset offers the right combination of noise reduction, clear communication and comfort. Available with a coil cord down cable ideal for helicopters, the A20 features *Bluetooth** streaming for audio and communication, auto-on,* auto-off, side swappable mic and FAA TSO and EASA E/TSO-C139 certification, making it the choice of pilots the world over. Hear the A20 difference today.

Visit us at Bose.com/A20.



See and order yours at Bose.com/A20.

Select coil cord model at checkout.



WHITE SADDLE BUYS LANDMARK 407GXi



> BY DAN PARSONS

Canada's first commercial Bell 407GXi should be ready for backup duty during the 2020 firefighting season as its new owners at White Saddle Air Services in British Columbia learn to fly and maintain their customized aircraft.

Before picking up the new GXi in Mirabel, Quebec, White Saddle owner Mike King and his son Patrick flew to Fort Worth, Texas, in

October, where Mike underwent training on the new aircraft. King has about 20,000 total flight hours; he was impressed not only with the machine but also with the comprehensive training Bell offers to new owners, he told Vertical.

From there, the pair flew to Montreal where they met engineer Ian MacDougall and their new aircraft. The three flew it from Montreal. Quebec, to Calgary, Alberta. Then it was on to Kamloops, British Columbia.

"Flying that thing home, it's unbelievable," King, who has operated a 206L4 and a 407 for years, said. "Power-wise, it's hard to tell with just the three of us, but I don't think we got it above 75 percent torque. There are also a bunch of things in it that make flying a lot easier. Plus, the extra horsepower is nice, too,"

The Bell 407GXi features the Garmin G1000H NXi integrated flight deck and a new Rolls-Royce M250-C47E/4 engine with dual channel FADEC, which delivers better high and hot performance, full automatic relight, and the ability to cruise at 133 knots.

Flying at high mountain altitudes to aid firefighters, provide photographers a lofty perch and sometimes deliver skiers and mountaineers to rocky peaks, there are several features and options on the GXi that suited White Saddle, King said.

"The wind direction and speed are really important to us," he said. "You have to know where the wind is and it does that automatically. It's right there. Power check is there, nonstop. There's a whole bunch of different functions that we will find useful."

Situated to the northeast of 13,000-foot Mount Waddington, British Columbia's highest peak, about 80 percent of White Saddle's business is helping out during the fire season, King said.

When the GXi enters regular service after February, it will serve as backup for the two Bell 212 twin-engine firefighting helicopters in the area. When customized, the new GXi will be about 80 pounds lighter than King's current 407, owing mostly to the composite materials used in construction of the newer aircraft, he said. It is fitted with a cargo hook for firefighting equipment and to perform high-altitude rescues.

In terms of the customization of the aircraft. King settled on a seven-place all-leather interior, AFS filter for firefighting, a cargo hook and interior heaters.

"[Bell] did this thing up really nice - except a couple radios we're going to do at our local shop because Bell was a little expensive on that," King said.

King's 407GXi is the first commercial GXi in Canada, but not the country's first. Earlier in November, Bell delivered the first GXi to Municipal Enterprises of Nova Scotia, which will use the helicopter in its construction materials production business.







CERTIFIED

5th-GenerationLithium-ion Aircraft Batteries

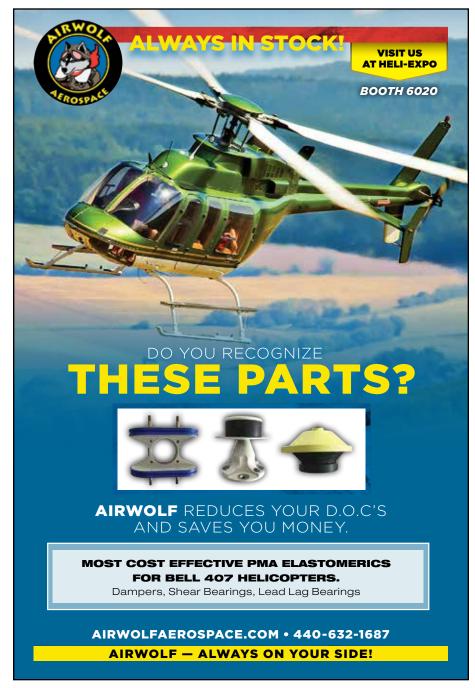
Not only do our newest ultra-lightweight batteries give you more range, speed, payload and power, these intelligent battery systems deliver more accurate and more reliable state-of-health and state-of-charge data than ever before.

Even better, say goodbye to expensive battery maintenance. Forget about ground power units and operational delays. That's right, **True Blue Power® Gen5** batteries are on-condition, maintenance free.

truebluepowerusa.com

LEARN MORE Heli-Expo #5729





FOURTH AW609 PERFORMS FIRST FI IGHT

The fourth AW609 tiltrotor — the first to be fully representative of the type's final production configuration - has completed its first flight. The landmark event took place at Leonardo's manufacturing facility in Philadelphia, Pennsylvania, on Dec. 23. The aircraft has now entered the flight testing program.

"The aircraft performed beautifully, thanks to all the rig and ground testing and the work done by our amazing engineering and production teams," said Leonardo test pilot Dan Wells. "The new touchscreen cockpit layout really proved its value and the aircraft exceeded all of our expectations."

Leonardo said the flight was a major milestone for the world's first multirole commercial tiltrotor on its path towards type certification. The AW609 will be certified under the Federal Aviation Administration's (FAA's) new Powered Lift category, the first new category of aircraft certified by the FAA in decades.

The AW609 carries up to nine passengers in a pressurized cabin, has a maximum cruise speed of 275 knots (35 mph/510 km/h), and can travel up to 700 nautical miles (1,300 kilometers). It can climb to 25,000 feet (7,620 meters) and fly in known icing conditions. The AW609 features flyby-wire flight controls, Collins Aerospace Pro Line Fusion avionics and two Pratt & Whitney PT6C-67A engines.

The first two production AW609s are currently being assembled in Philadelphia, with Era the launch customer for the type. Leonardo has reported "great interest from around the world" in the tiltrotor, from operators in a range of mission sectors, including emergency medical services, search-and-rescue, VIP, and offshore oiland-gas transport.

Customer support and training packages will be primarily headquartered at the company's new training academy in Philadelphia. An advanced flight training device and the world's first AW609 full flight simulator will be available for training this year, Leonardo said. 🏞

IF YOU WOULD LIKE TO SUBMIT A PRESS RELEASE OR IF YOU HAVE A NEW PRODUCT OR SERVICE THAT YOU BELIEVE IS NEWSWORTHY, PLEASE EMAIL OUR NEWS EDITOR AT NEWS@VERTICALMAG.COM.



> CONTROL12 Transceivers > CONNECT 3D Audio and Bluetooth Capable > SELECT Hot Mic, VOX or PTT > ISOLATE 4 ISO Rings



> HELI-EXPO BOOTH #1227







COME AND DISCOVER

BLACK HAWK

FIRE ATTACK SYSTEM

воотн #5908



Jan. 27-30 • Anaheim, CA Exhibits Open Jan. 28-30



STOP BY OUR BOOTH #1808 AND OUR STATIC DISPLAY 1 AT HELI-EXPO IN ANAHEIM

FIELD TESTED. MISSION READY.

ENGINE INLET BARRIER FILTER

Designed to not only protect the engine but also extend the time between maintenance cycles, this next generation EIBF stands ready to increase your OPERATIONAL READINESS rate today!

Contact us to learn more.

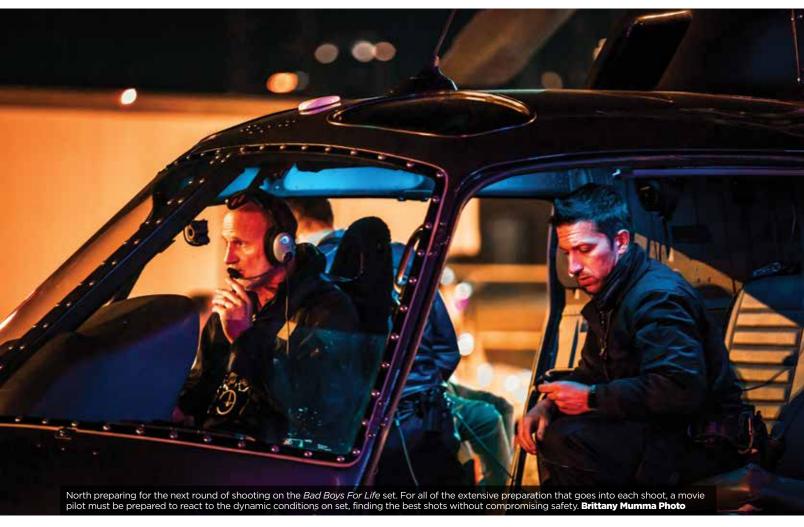
AEROMETALS, AERO / 916.939.6888





North at the controls of the on-camera "picture" ship on the set of Bad Boys For Life. "You're talking about explosions at night, so things are hard to see," recalled second unit director Spiro Razatos. "Stunt people, their lives are in [North's] hands because they're hanging from the bottom of ladders, while there's explosions and cars crashing around them. [Any] one of those elements alone is huge in most filmmaking, but what Fred has to deal with is multiply that by five times or more." Mike Tosi Photo





On a cold, sparkling clear night in Atlanta, Georgia, pilot Fred North lifted off from a vacant lot. Suspended beneath the open door of his Airbus AS350 AStar helicopter was a rope ladder, and on it a stuntman wearing jeans and a black jacket, plus an inconspicuous safety tether.

Smoothly, North flew the aircraft to a nearby bridge, where he hovered next to a flatbed semi truck loaded with dummy propane bottles. North's colleague Ben Skorstad, piloting an AStar camera ship, lifted at the same time and assumed a position overhead. Up and down the bridge, ordinary stunt cars with Florida plates waited for their signal.

When the signal came, the cars began rolling, simulating a Miami street scene. On the flatbed, another stuntman started running toward the helicopter, explosions triggering behind him. Just as he leapt from the truck, North deftly swung the ladder with its other stuntman away from him, as Skorstad circled around the scene to capture the action.

Eventually, this would become the pulse-pounding sequence in Bad Boys for Life in which Detective Mike Lowrey — the character played by Will Smith — narrowly grabs the ladder with one hand. But not yet. Instead, the stuntman wearing Lowrey's distinctive motorcycle jacket tumbled according to plan into a stack of empty cardboard boxes. North landed delicately with his human external cargo, and the scene was reset to shoot again - and again, and

This is what an action movie looks like behind the scenes, with each dynamic, fast-moving sequence painstakingly assembled piece by explosive piece. And shooting is only part of it. Creating this fleeting sequence for the third Bad Boys installment took months of planning and prep work, with North involved at every step of the way.

"For a big stunt flying like [this], it's about two months' prep," North explained. In densely populated downtown areas, he noted, the additional work needed to line up city and Federal Aviation Administration (FAA) permits can double that timeline.

North may be the most sought-after pilot in Hollywood today. recognized both in the industry and, increasingly, on Instagram for his work in bringing blockbuster movies to life. "The thing about Fred, it's amazing how he dances with the helicopter," filmmaker Michael Bay told Vertical. "He's so safe, and he knows where to put the camera, and we just have such a great working relationship — he knows what I'm looking for."

But while North is commonly admired for his ability as a pilot - routinely maneuvering his helicopter between buildings, underneath bridges, and through narrow mountain passes — his fans don't always understand the meticulous planning and risk reduction that goes into every shot. Neither do his fellow helicopter pilots always appreciate the artistry of his work, which requires not just skillful flying, but also a trained eye and underlying passion for cinema.

North may have a cool job — the coolest, some would say but top-tier Hollywood filmmaking involves more than just glamour. "Most of the pilots that want to do that 'risky business,' they don't necessarily see the foundation that you need to be that person," North said. "It's a long process."



THE PATH TO HOLLYWOOD

For North — a native of France who now lives in the Los Angeles area — that process started as a grunt in the French Army, when, like many would-be pilots, he realized that aviators had the better end of the deal. "When I was walking and in snow and it was pretty horrible, I'd see those guys up there and I said that's what I want to do," he recalled.

Upon leaving the Army, North trained as a civilian helicopter pilot in Paris on the Bell 47, which he then flew for more than 1,000 hours giving tours. From there, he moved into utility and rescue work in the French Alps, flying Aérospatiale SA 315B Lamas and AStars (or Écureuils, as they are known in their native country).

That challenging, technical, high-altitude work honed skills that would later become critical to his success as a film pilot, he







explained. To do what he does today, "you need to be one with the aircraft," he said. "So whatever they want you to do, you can physically, mechanically do it with the aircraft."

Flying in the utility environment also prepared him for the dynamic, unpredictable nature of film work, which often takes place in the farthest-flung corners of the world. To thrive on chaotic movie sets, a pilot must have the mentality of a bush pilot, not an airline captain, according to North. "You fly with your guts, your instincts, you make decisions on the spot. It's not too much about numbers . . . 'Can I make it?' You have to know."

From there, North moved into his first camera flying work, covering offroad races like the Paris-Dakar Rally for television. "That was eight, nine months out of the year on an AStar, with the cameraman in the back of the AStar, the sliding door open, and the cameraman with a camera on his shoulder — and then you're just [flying] sideways from France to South Africa," he said. Especially in the days before cell phones and GPS, "the

logistics were a nightmare," he recalled.

North loved the challenge and energy of flying mere feet from the race cars, but eventually the job became creatively stifling. The producers he was working with weren't particularly interested in how North and his camera operators captured their footage, "they just [needed] the event," he said. When he learned that movie pilots played a more integral role in the creative process, he decided to make the switch.

The problem was that movie flying was as hard to break into then as it is today. So North, who was still based in France at that point, found a workaround. Rather than peddle his skills as a pilot, he invested in aerial camera equipment — something that Hollywood productions shooting overseas frequently needed. "Then I was renting my camera equipment with the pilot," he explained. "So if they wanted my camera system, then they needed John Doe here, and that's kind of how I started in the business."



MORE THAN JUST FLYING

Spiro Razatos is a former stuntman who today is one of Hollywood's best-known stunt coordinators and second unit directors. He has worked with North on a number of blockbusters, including the *Fast and Furious* series, *Captain America: The Winter Soldier, Kong: Skull Island*, and recently *Bad Boys For Life*, where he oversaw the complex helicopter and rope ladder sequence that was shot in Atlanta.

"The thing is, it's one thing to have a great pilot, but if the pilot doesn't understand filmmaking, it's all the difference in the world," Razatos told *Vertical*. "You can have a great pilot who can go low [or] go fast, but if he doesn't understand how to get the shot, that doesn't mean anything."

For North, his instinct for getting the shot is grounded in his longstanding interest in cinema. "I've always been in love with movies in general," he acknowledged. However, becoming really skillful at the work took years of study, practice, and trial-and-error.

"YOU CAN HAVE A GREAT
PILOT WHO CAN GO LOW [OR]
GO FAST, BUT IF HE DOESN'T
UNDERSTAND HOW TO GET THE
SHOT, THAT DOESN'T MEAN

"It took me a few years to understand the concept of the energy, the awareness of space," he said. "You need to occupy the space with energy [and] the story has to be shown in three or four seconds, so how [do] you do that? The director is not going to tell you how to do that — you have to come up with the solution. He's just going to tell you what he wants."

Moreover, he added, the learning process never ends. "Even [now] when I need to do a complicated air-to-air sequence, I watch my competition's work. I try to learn from it, I see how they did it, what can I do better?" he said. "I do my homework."

He also does the legwork. His preparation for a complex stunt sequence begins with a ground scout of the location to evaluate obstacles and other hazards. For the shoot in Atlanta, for example, he identified several streetlights that needed to be removed to allow him safe access to the bridge.

Once the production and the host city mutually confirm which areas will be closed for shooting, North and his team prepare elaborate maps to guide the aerial work. "I put on the maps all the flight paths, the altitudes, and what I need from production," he said, noting that these maps are part of the package he submits to the FAA or other regulatory authority. A representative from the regulator will usually perform another ground scout with North before approving his operations, which are generally of the sort forbidden to civil helicopter pilots.

Producer lan Bryce, whose films include the *Transformers* series





and the recent big-budget Netflix film 6 Underground, noted that North's experience and reputation are as valuable to a production behind the scenes as they are on camera.

"You're not just asking a pilot to go and make the shots, you're asking the pilot to make all the necessary arrangements in terms of the helicopter and the bookings and the permits and the flight plans and all of that stuff," he told Vertical. "So the more experienced that someone is, the more likely I think they are to instill confidence in the permitting process."

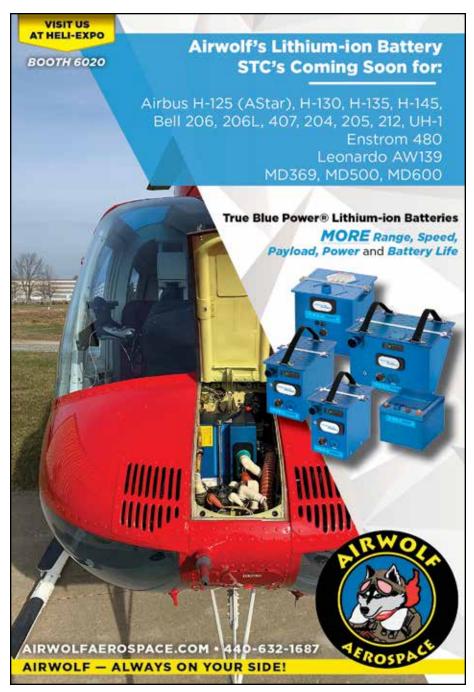
ALWAYS DOING BETTER

Movie flying is inherently risky work even more so than helicopter flying in general — and there may be no way to fully mitigate its many hazards. North and his colleagues try their best, however.

"For each shot basically we're going to do a risk assessment," North explained. "So we're going to come this way, what's the risk? And then if we have an engine failure there, what do we do? If we do a hover, where is the public going to be, where is the crew going to be? . . . There's no room for error."

North rarely comes solo to a movie set, instead bringing with him a trusted team organized through the aerial production company he co-owns, Team 5 Aerial Systems. He often flies his own AStar on the job, although he leases local helicopters when and where it makes sense. Team 5 also supplies its own cameras which include five Shotover K1 and two F1 models — and a variety of ancillary equipment, such as searchlights for special visual effects.

"I like to bring a package to a production," North said. "We spend a lot of money to keep our equipment state-of-the-art." Here, too, North is constantly innovating, as







More from the set of Bad Boys For Life. Having worked with North extensively, second unit director Spiro Razatos has respect for his judgment. "We have to get the shots we want, make it exciting, but at the same time we don't want to push too hard, because we're dealing with a machine that we have to respect to the utmost," Razatos said. Brittany Mumma Photos



ACCESS.

Serve communities with our TEAM.

QUALITY.

Air Evac Life TEAM!

SAFETY.

Pilots & Aviation Maintenance Technicians:

ADVANCE YOUR CAREER!

Air Evac Lifeteam has a FAA-Recognized Safety Management System and our entire fleet is equipped with Genesys HeliSAS, Autopilot, Glass Cockpit with SVT, ANVS 9 NVGs, HTAWS, ADS-B In/Out, and FDMS. In addition, Air Evac Lifeteam has a comprehensive, competitive compensation package, base housing for pilots, a positive culture and career advancement options.

Learn more at lifeteam.net/career-center

⊯camts

through the development of a custom rig that allows him to fly a Shotover at the end of a long line.

"We're trying to find new ways to get the shot — we don't just cruise," he said. "I'm always thinking, how do I do this to put it on my demo reel?"

One question that North hears frequently is whether drones will eventually replace him. He's not too worried about it. While drones have become a fixture on movie sets - including Bad Boys For Life, where a drone was flying alongside the camera and "picture" ships — it becomes obvious in that context that drones serve a radically different purpose.

Drones are good for simple storytelling shots, which used to be filmed from helicopters because no cost-effective alternative existed. But camera drones have limited endurance and depth of field, and drone operators on the ground don't have the comprehensive situational awareness that is required for the most dynamic action shots, North explained. The real magic of the helicopter is in its ability to put a cinematic artist in the air, right in the middle of the scene. If drones had come first, helicopters would have had to be invented for iust that purpose.

"A lot of people are using drones, but they cannot replace a helicopter," said Razatos. "A helicopter has the speed; has someone like Fred who knows filmmaking. If you have someone on the joystick down below, he's not up there, he's not seeing it, he's not feeling it directly. The camera can do so much more in the helicopter." 🧲



Elan Head | An award-winning journalist, Elan is also an FAA Gold Seal flight instructor with helicopter and instrument helicopter ratings, and has held commer-

cial helicopter licenses in Canada and Australia as well as the U.S. She is on Twitter @elanhead and can be reached at elan@mhmpub.com.





PARTNER WITH ERA. Partner with Excellence.

Full Service Operating Support. Premium Partnerships.

Era offers a full spectrum of customizable leasing solutions ranging from a dry-lease to complete operational support including any combination of training, maintenance and flight crews.

Leasing Solutions for any mission, anywhere in the world:

- Oil & Gas
- Search & Rescue
- Emergency Medical Services
- Utility
- Firefighting
- VIP/Corporate

+1 713.369.4700 www.erahelicopters.com





The walls of the Airbus Helicopters customer center at Donauwörth are adorned with images celebrating the achievements of Messerschmitt, Bölkow and Blohm (MBB); legendary aircraft designers whose eponymous company produced the Bo.105 light twin helicopter in the late 1960s.

That iconic design pioneered a hingeless titanium monoblock rotor head that was truly ahead of its time, providing direct control and excellent maneuverability. It was so successful that when MBB collaborated with Kawasaki Heavy Industries in 1977 to design the BK-117 to replace it, they used the 105's head as a basis for the new rotor system.

Four decades later MBB has, through various acquisitions, become Airbus Helicopters. So too has their helicopter of the late '70s subtly but perceptibly changed. More powerful engines progressively increased its 6,283-pound (2,850-kilogram) gross weight, and the integration of technology from the (then Eurocopter) EC135 further expanded its utility. In the new millennium, it got a facelift that gave marketers an opportunity to change the name on the sales literature, if not the type certificate, as it became the EC145.

By 2014, the wholesale replacement of the tail with a Fenestron and the integration of Airbus Helicopters' proprietary Helionix avionics brought the aircraft right up to date, retitled as the H145, now tipping the scales at a maximum takeoff weight of 8,157 lb. (3,700 kg). Despite the name changes, you don't have to look far to find its heritage. BK-117 still features in its type certificate and, throughout its life and in all its guises, the heart of the H145 has always been the MBB rotor head. Until now.

In early 2019, Airbus Helicopters announced the development of an entirely new rotor system for the H145, based on work that had been done on their Bluecopter prototype. The venerated MBB rotor is entirely gone on the new aircraft, with the new head featuring a bearingless design similar to that of the company's smaller H135.

Axel Humpert, Airbus's head of program for the H145, explained its inception: "The five-bladed H145 came up after research activity where we flew this type of rotor on a prototype based on the [H]135," he said.

"We were receiving requests from the market all over the world asking for even more payload," explained Humpert. "We took the chance of installing the new rotor on the H145 and the results were so promising . . . that we decided to go into serialization."

I had the opportunity to fly one of the five-bladed H145 prototypes in late October. Demonstrating the aircraft was Volker Bau, chief test pilot at Donauwörth since 2010. He joined Airbus Helicopters in 2006 after a 20-year career flying in the German military.

In the cabin was Antoine Van Gent, Airbus Helicopters head of flight test since 2009. Having started as an F-16 maintenance officer, he flew almost every aircraft in the Royal Netherlands Air Force inventory during a 17-year career that included test pilot training, before joining Airbus Helicopters Germany in 2005. Van Gent walked me around the machine prior to start and, understandably, the focus was on the rotor head.

TRICKS UP THE SLEEVE

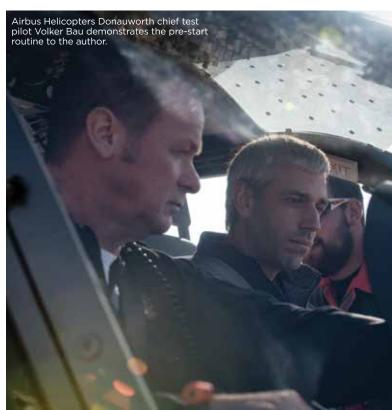
Unlike the previous four-blade system, the roots of the five new blades are attached directly onto the rotor mast. A composite flex beam buried inside the blade absorbs all the feathering and dragging loads, while the construction of the blade itself allows it to flap. Although the original design catered for flapping loads in the same way, the elimination of blade forks that attached the



blades to the titanium star has moved the effective flapping hinge offset inboard, from 12 percent to seven percent of the blade span. In theory, this should grant more direct control and reduce any cross-coupling.

The whole arrangement certainly reduces maintenance, as the sleeve and spindle feathering hinge of the original is completely absent, and with it goes the necessity for lubrication and maintenance inspections. But that much technology literally baked into the blade comes at a cost. As any H135 owner who has dinged one on a hangar door will tell you, the place you'll feel it the most is in your wallet. This system gets around that by separating the blade cuff, which contains the really expensive flex-beam, from the outboard blade with an attachment joint. This adds the facility to easily fold all the blades by removing one of the two bolts at each attachment joint. The new blades are already shorter than those that they replace, but this system dramatically reduces the aircraft footprint still further. Folded, it will fit inside a medium-sized transport aircraft, small hangar or large yacht, and can be prepared to fly again within about half an hour.

The sleek rotor hub has also significantly reduced rotor drag, providing more effective power that not only delivered an increase in gross weight to 8,377 lb. (3,800 kg), but also allowed Alex Neuhaus (Airbus Helicopters' experimental test pilot) and Van Gent to land the unmodified prototype (including flight test equipment) on the summit of Aconcagua in Argentina; the highest mountain in the Southern Hemisphere at over 22,000 feet (6,705 meters).







Van Gent explained that from that 220-lb. (100-kg) increase in gross weight, the new aircraft was able to get an extra 330 lb. (150 kg) useful load. This was a result of the rotor head design and removal of the active vibration control systems, saving 116 lb. (53 kg). Impressive when you consider that they've added 25 percent more blades.

The new rotor system will also be available as a retrofit to its immediate forebear, the H145. While it will take around 250 hours of work to complete, it will be possible for any EASA (European Aviation Safety Agency) part 145 approved maintenance organization to carry out the procedure, so larger operators should be able to do this in-house.

I wanted to focus the flight test on the handling and performance of the aircraft, as the complex arrangement of opposing forces that keep a helicopter airborne mean that even minor tinkering with the rotor system is likely to have repercussions throughout the flight envelope, as Van Gent explained. "Normally you can have some surprises because of changes in rotor downwash, especially in the hover or at low speed, but here we didn't need any aerodynamic fixes, it was very stable from the beginning."

This trend continued throughout the flight test regime, Bau told me: "Normally you find a corner [of the flight envelope that means] the aircraft needs some modification, and you have to adjust the airframe, which is expensive. Here there was almost nothing."

Being a prototype, our machine had some idiosyncrasies that included an elongated pitot probe/airflow vane attached to the nose and 130 kg (285 lb.) of flight test equipment in the cabin, from which flowed the associated orange cabling (this will, of course, be absent in production aircraft and their exposed conduits covered by aircraft interior trim).

With Bau in the right-hand pilot seat and me in the left, Van Gent was joined by Vertical photographer Lloyd Horgan in the cabin, bringing our takeoff weight to around 7,937 lb. (3,600 kg) with around 75 percent fuel. Outside it was a chilly, but not unpleasant, 6 C (43 F) at Donauwörth's airfield, at an elevation of 1,315 feet above mean sea level. We had about 10 knots of wind.

With power on in the aircraft, the Airbus proprietary Helionix avionics system was brought to life and we were ready to fly in just over five minutes using the normal start procedure, even with a delay to carry out built-in-tests of the flight test equipment. In an operational scenario, Airbus said the aircraft can go from cold and dark to ready to fly within two minutes.

SMOOTH OPERATOR

Lifting into the hover, the reason for the removal of the active vibration control was immediately apparent — there wouldn't be anything for it to do. The hover and hover-taxi were startlingly smooth and, although not entirely eliminated, the vibration was very subtle. Whether as a result of a reduction in magnitude, or an increase in frequency, felt vibration levels in the front-left seat were so low that I had to consciously focus on it to discern it. Horgan – who has certainly flown in more helicopter cabins than I have – was equally impressed in the cabin. With the H145's popularity as a helicopter emergency medical services (HEMS) platform, medical professionals may benefit from the smooth ride and their patients even more so.

"I was project pilot and did all three first flights," Bau told me, referring to the three developmental stages of the rotor. "We expected there would be a reduction in vibration with this rotor, but we were still surprised by how much." He later clarified that the rotor on the production aircraft is "99 percent" the same as the original test blade.







Positioning over the "H" at Donauwörth. Bau demonstrated the GTCH (Ground Trajectory Command Hover) mode, in which the aircraft is held in a GPS-derived position or can maintain a vector as demanded by the pilot. "I call it the 'follow the boat' mode," he told me. With a bit of time flying search-and-rescue in my past, my winchmen doubtless would have appreciated that function.

The new H145 will be certified up to its maximum gross weight in Performance Class 1 (PC1), and the profile has already been approved by EASA. "Alex Neuhaus developed it," Bau explained. "He's very creative and it's a bit different."

With the aircraft held in a GTCH hover, a slight increase in power was all that was necessary to start the aircraft climbing vertically, with a blue line on the first limit indicator providing a cue to assess engine power in case of a failure. At around 200 feet, pressing the "train" button simulated an engine failure, complete with transient main rotor speed (Nr) droop and a slight kick of yaw. A subtle check down on the collective was all that was necessary to reject the takeoff and begin a descent. With the "H" now invisible directly beneath me, my references had all but disappeared. But that didn't matter to the autopilot, as it guided us vertically straight back down to a low hover precisely where we started, from which a single-engine landing would have been easily performed.

As luck would have it, the weather was beautiful for our flight, with clear blue skies as we left Donauwörth behind us. However, Bau demonstrated that should a pilot inadvertently enter cloud, with one push of a button on the cyclic the aircraft would right itself and recover to straight and level flight. From there, the HTAWS (helicopter terrain avoidance and warning system) and the synthetic vision system would help a disoriented pilot regain situational awareness, using a representation of the terrain in front and providing audio warnings.



ROTORCRAFT SALES

AVIONICS

CUSTOM COMPLETIONS

U.S.A.

CANADA CANADA

• JAPAN

www.eurotecvfs.com

Even up to 140 knots, the aircraft itself was still unnervingly smooth and as expected, the four-axis autopilot integrated into the Helionix system provided a very stable cruise. But I wasn't here to let the computer have all the fun, so Bau sequentially disengaged the automation, initially retaining the attitude hold mode. Flying the aircraft on the trim switch is recommended in this mode, with the aircraft responding promptly and without the lag present in some similar systems. As expected, disengaging the stability augmentation entirely resulted in the nose moving around a little more, but the aircraft remained remarkably stable and this improved further once I'd figured out where exactly the speed stable attitude was. The direct control feel was evident in this regime and subtle movements of the cyclic were required, but the control forces were enough that it never felt at all twitchy.

With the attitude hold mode back on, we repositioned for an approach into an unfamiliar (for me, at least) off-field landing site; a local gliding field surrounded by woods. The vast areas of transparency in the cockpit made it easy to keep the landing site in view throughout the circuit and approach, even though I made the approach slightly steeper than I had intended. As we decelerated to the hover, the vibration increased but only just enough to be noticeable. The aircraft was as stable as expected in the hover and the position was easily maintained without any skittishness in the ground cushion. The site that we were in wasn't particularly confined, especially in comparison to the places that HEMS operators will expect to take this aircraft, but they will doubtless appreciate the extra flexibility and margin that the reduced rotor diameter offers.

Reentering GTCH mode, I carried out a vertical climb and departed back in the direction of Donauwörth, with the aircraft

flying through translational lift with less of a rumble than it had on the way in.

With our time in the air coming to an end, I handed the controls back to Bau so that he could demonstrate some more advanced maneuvering back at Donauwörth. There followed a series of wingovers, tight turns and rapid entries to the hover in various relative wind directions, which were smoothly flown and smoothly absorbed by the aircraft. Naturally, these kinds of profiles increased the vibration to a level that might have raised the eyebrows of VIP passengers, but operators required to perform such vigorous maneuvers are typically transporting passengers of a slightly more robust — and possibly less discerning — nature.

On the topic of para-public and military roles, the increased gross weight is likely to be a higher priority than the improved ride quality; however, given that the crew on such operations might well be required to spend lengthy periods in the aircraft, the cumulative effect of vibration on crew fatigue shouldn't be trivialized.

GOOD VIBES

Left alone on the ramp with the aircraft as Bau completed the post-flight paperwork, I had a chance to reflect on the experience.

The basic design of the aircraft's principal components is not new. The rotor system is a direct descendent from that of an H135 — albeit with an additional blade — and the fuselage is effectively the same as the H145 it will replace. While it is undoubtedly an improvement, some might suggest that the new rotor system is simply an opportunity for Airbus Helicopters to recoup some of the R&D euros that were spent bolstering its





Capabilities. Facility. Technology.

Able's investment in state-of-the-art digital tooling and a recent facility expansion enables us to reduce repair turn times.

This allows us to service the latest fleet platforms while still maintaining our proud tradition of legacy aircraft aftermarket support.

So no matter what you fly, Able can help keep your aircraft airborne.

Ready for a new generation of service? Contact us today!

"WE TOOK THE CHANCE OF INSTALLING THE NEW ROTOR ON THE H145 AND THE RESULTS WERE SO PROMISING . . . THAT WE DECIDED TO GO INTO SERIALIZATION."

— AXEL HUMPERT, AIRBUS'S HEAD OF PROGRAM — H145

eco-credentials. I think this is an overly cynical view. Market desire for an aircraft with more usable weight undoubtedly existed, and Airbus Helicopters' previous offering to meet this demand was a stripped-down version of the legacy airframe, compromising its instrument flight rules (IFR) capability and at odds with the company's own drive towards consolidation of the type.

With weight-saving from a well-understood and highly integrated platform seemingly not an option, Airbus Helicopters was left needing more power. Bigger engines wouldn't be an easy fix, and would also likely mean upgrading the transmission, which is a Kawasaki responsibility. With such a seemingly intractable problem, the trial results from the over-scale Bluecopter rotor must have seemed like serendipity, but in the moment, it's not always easy to match the solution with the problem. Over lunch, Van Gent explained to me that alongside the technical challenge was the necessity to convince colleagues that the new blades would even work. Axel Humpert had joked, "All we needed from the engineers was more lift and less drag — easy!"

So no, the new five-bladed H145 doesn't represent a leap in capability and it hasn't turned the aircraft into a new helicopter, but it wasn't designed to. It provides a tried and trusted workhorse with a truly innovative rotor system worthy of taking the place of its ground-breaking MBB forerunner. The new aircraft is expected to receive EASA certification in 2020, with the last of the original H145s likely to roll off the production line in 2021. The increased performance and reduced maintenance overheads offered by the new version might coax EC- and even BK- legacy operators to upgrade, particularly as the new aircraft will be available in the same price bracket as its precursor. Likewise, with an expected availability date shortly after aircraft certification, the retrofit is likely to be popular with existing H145 users that need the additional usable load. Larger operations with their own part 145 facility stand to benefit the most. Finally, of course, there will always be the few for whom comfort in the cruise has no price; they will certainly feel the benefit.



Jon Duke & Lloyd Horgan | Vortex Aeromedia provides specialist media services for the aviation, defense, and aerospace sector. Formed in 2015 by photographer Lloyd Horgan and helicopter pilot Jonathan Duke, Vortex Aeromedia draws on their unique blend of military aviation and media experience to deliver high-impact film, photography, and writing specifically to the defense and aerospace industry. They have flown with, photographed, and filmed for a variety of international military and civilian clients. For more information visit



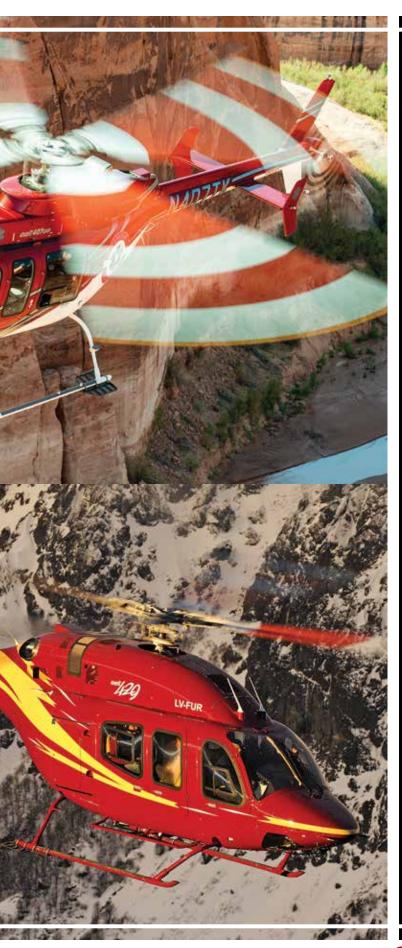


With 18 years of customizing aircraft experience, AeroBrigham thrives on completing projects that are rejected by other shops — no challenge is too big.

Specializing in Airborne LAW, EMS, SAR, utility, and corporate aircraft, we pride ourselves on timing, budget, and no surprise deliveries!







THE BELL PROVINCE

VERTICAL VISITS BELL'S FACILITY IN MIRABEL, QUEBEC - THE SOLE PRODUCTION SITE OF THE MANUFACTURER'S CURRENT COMMERCIAL PRODUCT LINE - TO SEE HOW THE COMPANY IS PREPARING FOR FUTURE GROWTH AFTER MORE THAN 30 YEARS IN LA BELLE PROVINCE.

BY OLIVER JOHNSON

At first glance, Quebec and Texas might not seem like the most natural partners. La Belle Province and the Lone Star State don't appear, on the surface, to have much in common, other than a uniquely distinctive culture and outlook, one that often sets them apart from their near neighbors, let alone those from another country. But the two do share a proud aviation history, and each is, today, home to a flourishing aerospace hub: in the Montreal and Dallas-Fort Worth regions, respectively.

There are several companies with a foot in each one, but perhaps none have done so quite as successfully as Bell. Established by Larry Bell in the border city of Buffalo, New York, in 1935, the company made the move to Texas in 1951.

After decades of success as one of the industry's original airframe manufacturers, Bell established its presence in Mirabel on Sept. 29, 1986, following an agreement with the Quebec and Canadian governments for financial support. It was a manufacturing facility at the time, spanning 436,000 square feet (40,500 square meters) on 151 acres of land.

The facility has gradually expanded over the years to now cover over 650,000 square feet alongside Mirabel airport, about 25 miles (40 kilometers) northwest of downtown Montreal. Such is the flow of helicopter traffic at the facility that it has its own control tower that looks out over its flight line of 17 helipads and two runways.

Over the past 34 years, more than 5,000 helicopters have rolled off its production lines, and today, it contains the final assembly lines (FALs) for the light single 505 Jet Ranger X, intermediate 407, light twin 429, and medium 412. This represents the entirety of Bell's current in-production commercial product line. The facility also performs customization, engineering, type certification flights, support and services, and composite manufacturing.

"It's the only site where almost everything is vertically integrated," said Steeve Lavoie, who has been CEO and president of the Mirabel facility since May 2019. "From design, to manufacture, production, customization, painting, and delivery, everything can be done here. It's the only [Bell] site that can do all this. We have a broad spectrum of capabilities."



The facility was initially slated to produce variants of the Model 400 TwinRanger (a twin-engine version of the 206L LongRanger), but benefitted from Bell's decision to split its helicopter business in 1986. Production of all its commercial lines was to be moved to Mirabel, while the manufacture of its military products would remain in Texas.

The first helicopter assembled at Mirabel was a 206B JetRanger, which was the best-selling light single-engine helicopter in the world at the time. Other notable first builds over the following years included the 206L-3 LongRanger (1987), 212 (1988), and 412 (1989).

Annual production grew above 200 for the first time in 1991, and the following year, Bell secured a huge contract from the Canadian government for 100 CH-146 Griffon helicopters (based on the 412EP) for the Canadian Armed Forces.

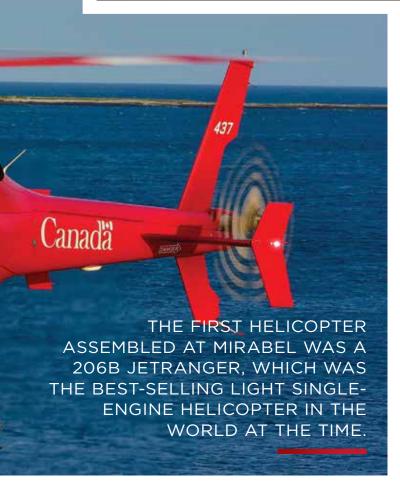
In March 1992, the facility recorded its first type certificate

approval, with Transport Canada certifying the 230 - a light twin-engine aircraft developed from the Bell 222.

The 1,000th Canadian-built Bell helicopter rolled off the Mirabel production line in 1994, and by this point, the facility was producing about one-third of the commercial turbine helicopters being sold worldwide. The year also saw the launch of two new types: the 407 and the 430.

The 407 is a derivative of the 206L-4 LongRanger, bringing that airframe together with the four-bladed soft-in-plane main rotor developed for the U.S. Army's OH-58D Kiowa Warrior. The aircraft was designed, developed, tested and certified in Mirabel; it recorded its first flight at the plant in June 1995, gained certification from Transport Canada in February 1996 (Federal Aviation Administration approval followed later that month); and the first of the type was delivered later in the year. The 407 has proven to be a huge success for Bell, with over 1,500 delivered since 1996.





The 430, a four-bladed evolution of the 230, also went through the various stages of its development in Mirabel, receiving certification from Transport Canada shortly after the 407 in February 1996.

Another notable aircraft developed at the facility was the 427 (a twin-engine aircraft based on the 407), which would later give way to the 429 GlobalRanger. The latter, originally envisioned as a stretched version of the 427, ultimately employed a clean-sheet approach, with a modular airframe concept, extensive use of composites, a large cabin with clamshell doors, advanced rotor blade design, a glass cockpit, and was certified for single pilot instrument flight rules (IFR) operation.

The 429 first flew at Mirabel in February 2007, and received certification from Transport Canada and the Federal Aviation Administration (FAA) in July 2009. The first delivery took place almost immediately following certification, with Air Methods (for Mercy One) taking receipt of the landmark aircraft.



Steeve Lavoie, president and CEO of Bell's Mirabel facility. Lavoie has been in the role since May 2019, replacing Cynthia Garneau. Bell Photo

COMMERCIAL PRODUCTION

Today, the 429 is one of four types produced at the Mirabel facility, along with the 407GXi and 412EPI (the latest versions of the storied types), and Bell's new light single 505 Jet Ranger X. Bell first revealed the 412EPI at Heli-Expo 2013 in Las Vegas, Nevada. The aircraft features enhanced performance with Pratt & Whitney PT6-9 Twin Pac engines, and has upgraded avionics in the form of the integrated Bell BasiX Pro, which provides single-pilot IFR capabilities and incorporates the Garmin GTN 750 touchscreen navigators with four 10.4-inch (26.4-centimeter) LCD displays. Deliveries of the new variant began in 2013.

Another evolution of the 412 — the 412EPX — has been launched in partnership with Subaru, and will be the platform for the new utility helicopter for the Japanese Ministry of Defence. The aircraft features a more robust main rotor gearbox dry run capability, an increased internal maximum gross weight, and increased mast torque output below 60 knots.

The 407GXi was announced in 2018, with first deliveries beginning later that year. An evolution of the 407GXP, which provided enhanced "hot and high" performance, the GXi has upgraded Rolls-Royce M250-C47E/4 engines with dual channel FADEC, providing enhanced redundancy and improved range and fuel consumption. It also features Garmin's G1000H NXi integrated flight deck for cutting-edge avionics.

The newest entrant to the Bell production fleet is the 505, which was announced in low-key fashion during the Paris Airshow in June 2013. Powered by a single Safran Helicopter Engines Arrius 2R engine, the 505 fills the void in Bell's product line that was created when the Bell 206B JetRanger ceased production in 2010. The 505 has a useful load of 1,500 pounds (680 kilograms), a range of 340 nautical miles (630 kilometers), and has been certified at a maximum cruise speed of 126 knots.

It features the Garmin G1000H integrated avionics suite with dual 10.4-inch displays, and uses the same rotor system as the 206L-4 LongRanger — retaining that type's autorotational characteristics.

The five-seat aircraft, which aims to build off the legacy of success established by the Bell 206B JetRanger in the light single-engine market segment, was originally to be producted in a brand new 82,000-square-foot facility in Lafayette, Louisiana. However, in May 2016, less than a year after it opened, Bell decided to bring production of the short light single up to Mirabel.

The move came at a time when the general industry downturn had forced Bell to make sweeping cuts to its workforce around



The Mirabel facility has brought a lot of formerly outsourced composite work in-house, and now makes more than 600 composite parts. Bell Photo

the world. There were around 2,200 people working at the facility in Mirabel in 2010, but by 2016, just 900 remained.

"I saw people crying [when the 505 production move was announced] because they were so happy to have good news about something," said Francis Tessier, senior manager of manufacturing. "But it came with a lot of challenges, because they decided they would transfer the line right away."

The facility was already intimately familiar with the type, having been the base for its development and testing; the 505 had completed its first flight in Mirabel in November 2014, and the aircraft received type certification from Transport Canada in December 2016. This was followed by production certification in February 2017, with the first customer delivery — to private operator Scott Urschel, based in Chandler, Arizona — in March at HAI Heli-Expo 2017 in Dallas. FAA approval followed in June 2017.

"The challenge we were having with the 505 was the [required] pace of production," said Tessier, noting the over 300 letters of intent the aircraft had received before it was certified. "We were still in the industrialization phase, in the learning curve, and we had to ramp up pretty fast. Last year we were able to produce an aircraft every 1.5 days. It was amazing to see how we did that in less than two years."

The global 505 fleet passed 20,000 flight hours in August 2019, with more than 215 deliveries completed to customers around the globe. While all Bell's current production helicopters are built in Mirabel, that will change once its upcoming 525 Relentless super medium is certified. Unveiled at Heli-Expo 2012 in Dallas, the 20,500-lb. (9,300-kg) gross weight 525 Relentless will become the first commercial fly-by-wire helicopter when it is certified, competing against the likes of the Airbus H175 and Leonardo AW189 in the super medium category. The engine powering the aircraft — the General Electric CT7-2F1 — was certified by the FAA in March 2019, but Bell has not released a date for anticipated regulatory approval of the aircraft itself (see p.32).

The Mirabel facility has been involved in the aircraft's development, with the structure designed by its engineers, as well as providing composite parts for the first prototype aircraft and hosting flight tests.



One of five paint booths at the facility. The company can provide any type of design, from a basic one-color livery, to heavily stylized graphics. Bell Photo









COST-SAVING solutions. CUSTOMER-FIRST approach.

COMPREHENSIVE maintenance services.

Sharing 30 YEARS

of technical expertise and in house capabilities to provide efficient and innovative solutions for operators worldwide.

> HEAVY MAINTENANCE + PART SALES + STRUCTURES + AVIONICS PAINT SERVICES + MANUFACTURING + DESIGN + ENGINEERING + CERTIFICATION 40+ STCs + SPECIALIZED REPAIR + AIRCRAFT SALES & LEASING

> > 50 countries. 6 continents.

Our services and products support industry-leading helicopter makes and models around the world.

VISIT US AT HELI-EXPO воотн #4639

> 855.500.2376 (toll free for North America) // 250.769.6344 Kelowna & Abbotsford, B.C., Canada sales@alpineaerotech.com







Practical reasons lay behind the decision to locate the 525's production line in Amarillo, Texas, explained Tessier. "The 525 doesn't fit in this facility — we would have to expand our building to be able to produce it. In Amarillo they have the room for it."

ON THE ASSEMBLY FLOOR

The manufacturing work in Mirabel is split into three divisions: final assembly and flight tests; customization work; and composite creation.

The FALs sit either side of a wide central aisle, with the workflow bringing the aircraft towards the center as they are completed. They are then taken down the aisle to the completions section of the facility next door.

"All the different products have different strategies in terms of how they are manufactured," Luc Bachant, director of manufacturing in Mirabel, told Vertical during a recent visit to the facility. The 412, for example, is the only product that still has its structural assembly completed in Mirabel. The aircraft's various components are first spliced together in a large fixture, and then other elements, such as the wiring harness, are installed at each subsequent station. It requires about 4,000 hours of work to bring a basic 412 through the FAL and to complete flight operations at Mirabel, he said — a workload that could be doubled with particularly complex completions, such as that required for the Canadian Coast Guard's new fleet of seven 412EPIs.

The 505, on the other hand, arrives at the plant in the form of a complete cabin structure from an external supplier. It follows a U-shaped production line, and Bell has the ability to install some kits into the aircraft as it is assembled, making its progress to delivery that much more efficient. Each aircraft typically spends a month on the FAL, said Bachant, with one aircraft finished every 1.5 days.

In terms of manufacturing, Bachant said the biggest challenge was the flow of components from suppliers. "The flow of parts sometimes can be an issue because some suppliers have some capacity constraints, especially as the industry is picking up," he said. "We have a base of close to 800 different suppliers. When you are creating an aircraft with so many different components, a delay with just one can stop everything."

Customers have the option of having their aircraft completed in Mirabel, which has similar capabilities to Bell's completion center in Piney Flats, Tennessee. The company offers kits produced by Textron sister company Able Aerospace, as well those produced by third parties, such as DART Aerospace. These can range from air conditioning, to high skids, float installation, and mission-specific offerings like medical interiors, hoists, and cameras. Mirabel's engineers can also create a customized solution to meet a customer's requirements.

The facility has extensive paint capabilities, allowing it to provide liveries ranging from the basic one-color finish to intricate designs, completed in one of its five paint booths.

About 40 percent of Bell's commercial deliveries are performed in Mirabel, with most of the rest in Piney Flats.

The plant's composite work has increased dramatically over the last couple of years, said Bachant, driven by a desire to bring previously outsourced work in-house, and a general growth in the market.

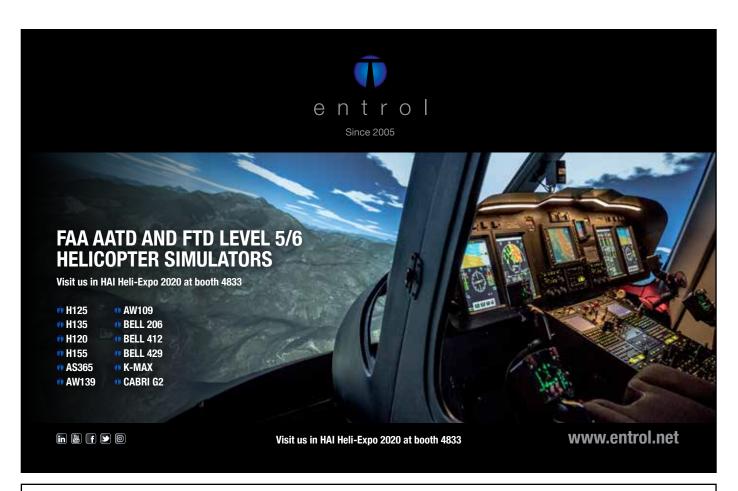
"Typically people know the site here for the assembly of the commercial products, but they might not know that the composite center is close to half the operations we do here internally," he said.











EXPERIENCE BELL 505 LUXURY.

Let your Light Single Engine Helicopter feel MAGnificent



Stop by the Mecaer Aviation Group booth 4929 at Heli-Expo 2020 to talk about our innovative VVIP interiors, including this design for the Bell 505. We call it the MAGnificent. You'll call it a whole new way to fly.

www.mecaer.com

The team now makes over 600 composite parts, ranging from vertical fins, to the 429's cabin, to the 525's "beany" — the disc that sits on the center of the main rotor head.

MILITARY SUPPORT

While the vast majority of Bell's military work is completed in Texas, Canadian programs are managed in Mirabel.

In 2019, Bell began work on a major new project to upgrade and extend the operating life of the Canadian Armed Forces' 85 CH-146 Griffons, known as the Griffon Limited Life Extension (GLLE) program. The Griffons, which entered service with the Royal Canadian Air Force (RCAF) between 1995 and 1997, provide a number of functions as a multi-purpose utility helicopter, providing tactical troop transport, reconnaissance, escort and

surveillance, casualty evacuation, disaster relief, special operations aviation support, and search-and-rescue. In terms of aircraft numbers, the Griffons represent about 60 percent of the Canadian Department of National Defence's rotary-winged fleet.

Under the GLLE program, the aircraft will receive upgraded avionics, engines, and sensor systems, with the aim of keeping the aircraft operating until at least 2031. Bell is currently in the definition phase of the program, which could ultimately be worth about \$800 million. According to Francis LeBlanc, director for global fleet services at Bell, the company is working in conjunction with the Canadian government to develop a solution, with three prototypes expected within three years.

"It'll be a new Bell 412 heavily based on the EPI/EPX model," said LeBLanc. "It'll be an EPI base with some of the EPX fea-

> tures and added military equipment, such as a defense suite, satcoms and other

The company already supports the CH-146 fleet, which is spread over 10 bases, as part of a \$100 million-a-year contract. This support spans program management, engineering, parts, and maintenance.

A high-profile military acquisition south of the border could also provide a huge boost to production in Mirabel; Bell's submission for the U.S. Navy's new helicopter trainer is the 407GXi, which received FAA certification for IFR flight (a Navy requirement) in August 2019. The Navy is expected to soon announce the award of the contract for 130 aircraft, with the entire fleet to be delivered by 2023. As commercially-based aircraft, they would be initially produced in Mirabel, before being shipped for final completion in Ozark, Alabama.

At the time of Vertical's visit at the end of November, Bell was clearing space in its production line to accommodate the anticipated contract award - first deliveries by the end of 2020 necessitated the advance planning, said Bachant.

"We have contingency plans to make sure when we win it, we are going to be ready to deliver," he said.

The draft request for proposals for another military rotary-wing training program — the Canadian Future Aircrew Training (FAcT) program — is due later in 2020, and Bell plans to submit the Bell 429 for this. While currently undefined, the program is likely to require more than 20 aircraft.

A FOCUS ON INNOVATION

When Mitch Snyder unveiled the FCX-001 concept aircraft at Heli-Expo 2017 in Dallas, it wasn't to reveal an aircraft that would be rolling off Bell's production line



R8100 System Analyzer

Expandable & Upgradable: All Firmware User/Field Updatable!

Features

- 45 sec boot-up time
- 150 W maximum RF power meter input
- FM, AM, P25 Phase I & II, DMR, NXDN, dPMR, TETRA (DMO & TMO), PTC
- 1 MHz to 3 GHz
- Full Span Spectrum Analyzer to 3GHz

HAI #5505

ISO 9001:2015 / AS9100 Rev D 800-527-2581/214-320-9770

• P25 AutoTune, Automated Radio Test & Alignment

dallasavionics.com

Dallas Avionics. Inc.



YOUR CHOPPER'S ENGINE EXPERTS ARE READY TO SUPPORT

HELI-EXPO IN ANAHEIM, CA | JAN. 28-30 | BOOTH #400



Visit us in Anaheim at Heli-Expo Booth #400 to learn more about our OEM-approved engine maintenance, repair and overhaul services and AOG support. Let's discuss your next engine solution including field support, rental options, quick-turn around packages, flat rate overhaul specials and much more.

We have your engine covered in the shop and in the field.



DON'T MISS OUR HAPPY HOUR!

Tuesday, 1/28 @ 5 PM

RSVP at Booth #400 for more details



US: +1 214 956 3001

Learn More at DallasAirmotive.com/Heli-Expo2020



any time soon — it was to give an idea of the company's roadmap for technological development. It was also a clear announcement of Bell's renewed focus on innovation.

The mockup at the show included a fan-driven anti-torque system, hybridized propulsion, morphing main rotor blade tips, an extensive use of glass in the fuselage, gull-wing doors, and the use of augmented reality in the cockpit to control the aircraft.

The announcement of the FCX accompanied the launch of parallel innovation teams in Mirabel and Fort Worth. The two largely work on the same projects, with the division of responsibilities driven by which location has the best match in terms of skills, capability and external funding.

The team in Mirabel has quickly grown from four to 30 people over the last three years. Based in a large open-plan mezzanine that overlooks the final assembly lines on the production floor, the team also works across two secretive labs surrounded by frosted panels (a third lab is being completed). Vertical was allowed entry to one of them during our visit. Two large islands were in the center of room; each one was topped by an unmanned technology demonstrator, with a group of workers gathered around one — Bell's Autonomous Pod Transport (APT) multicopter - making adjustments. At the far end of the room, two 3D printing machines were busily working away; one making plastic parts, the other composites.

"They run seven days a week, 24 hours a day," said Michel Dion, manager of innovation at Mirabel. "Here, there's people working every day on unmanned vehicles."

But developing unmanned aircraft is just one aspect of the extremely broad mandate for the innovation team, which takes on projects as varied as air taxis, new propulsion systems, advanced flight controls and "energy harvesting."





"When Mitch unveiled the FCX at HAI, he talked about six things: energy management, advanced anti-torque, advanced fly by wire, autonomous flight and situational awareness, alternate propulsion system, and morphing rotor blades," said Dion. "So FCX basically drove the scope of the work that we do. And now we're taking those work packages and making sure that also they can support the Nexus and APT programs."

The development of the Nexus, Bell's futuristic hybrid-powered air taxi, has been led by the team in Fort Worth, but the team in Mirabel has also been involved. Last year, they built a full-scale version of one of the aircraft's six ducted fans to evaluate its aerodynamic and acoustic performance in a customized wind tunnel at the National Research Council's aerospace facility in Ottawa, Ontario.

"If we want to have air taxis in the future being part of our transportation system, social acceptance will be key, and external noise will obviously be a part of that," said Dion, adding that the results of the tests are still being evaluated.

The Mirabel team is also working with Nexus partner Thales on flight controls as part of a five-year government-supported technology demonstration program (TDP).

The TDP is funding various threads of research that see Bell working with 17 partners, from suppliers such as Pratt & Whitney Canada and CMC to universities and research centers. One of these threads is energy management — more specifically, Bell is looking into energy harvesting.

"When we have an aircraft that is vibrating and we're trying to kill the vibration with [vibration control systems], we're just basically dissipating free energy in the air," explained Dion. "So can we go and harvest that energy back into the batteries?"

Exploration of advanced anti-torque and alternative propulsion systems is also being performed under the TDP.

In addition to the various technology elements for larger aircraft, the Mirabel innovation team has been working on smaller unmanned programs: APT and HYDRA (Hybrid Drive Train Research Aircraft).

It has led Bell's efforts with the latter — an electric 12-motor 55-lb. (25-kg) ring-wing aircraft designed to test and develop electric and distributed propulsion systems. Like APT, HYDRA has the ability to takeoff and land vertically, and transition to "airplane mode" for forward flight.

"We've been flying in high-wind conditions, just to push the aircraft to its maximum in terms of controllability, and it performed really well," said Dion. "The testing will never be complete. It's a research aircraft — we'll always make updates and upgrades to it, for new technologies or to try new configurations of motors and blades."

With such a focus on new and exciting forms of future flight, how does the team balance developing technology for conventional rotorcraft versus newer forms of vertical lift?

"We're trying as much as possible to develop technologies in such a way that we could retrofit [them] back into a helicopter program," said Dion. "We will continue to make helicopters into the future — there will always be missions for which the helicopter is the best solution. I think Nexus or APT are not replacing the helicopter, they're just an addition to what exists today. They are basically two new transportation systems that we are developing."

SUPPORTING A GLOBAL FLEET

For years, Bell has prided itself on the level of its customer support and services. Its product support team sits on the second





GFC™ 600H FLIGHT CONTROL SYSTEM WITH THREE-AXIS STABILIZATION

HOVER ASSIST DETECTS
AND HOVERS THE AIRCRAFT

ELECTRONIC STABILITY AND PROTECTION (H-ESP)

RETURN-TO-LEVEL (LVL) MODE Automatically Levels the Aircraft AUTOPILOT MODE AND TARGET FLIGHT REFERENCES DISPLAY ON PFD

FOR MORE DETAILS, VISIT GARMIN.COM/GFC600H



floor of its facility in Mirabel, and these rooms are staffed 24/7. "You're not getting a voicemail and someone calls you back two days later, you should be getting somebody on the phone right away," said Jason Moir, regional sales manager, Canada. "It's very much a family mentality — so when customers call, they know who they are getting, [and] they're on a first-name basis. . . . When you have that familiarity with someone, when you're looking for information, it makes the problem that much easier to solve." In addition to the centrally-located expertise for customers to contact at the end of the phone, Bell has customer service engineers (CSEs) located regionally around the world.

"Support and services has always been our strength," said Moir. "The bar has been set by Bell for years in terms of industry standards. We continue to keep that mentality and focus."

The vast experience of the customer support team is reflected throughout the facility. Although Bachant has been with Bell for almost 10 years, he said he is "considered new" in terms of longevity at Mirabel. "People tend to stay a long time - which is a good sign!" The average seniority in the plant is 21 years, he said, with many people having been there since it opened its doors in 1986. This number is trending down, however, as the staff numbers begin to grow with new hires.

Today, there are about 1,200 employees at the plant, following a hiring surge in 2019. Lavoie said he expects that to continue into 2020, at a rate of about 15 to 20 percent.

A growth in demand is fueling the need for this, he added. "The demand is picking up on many models," he said, highlighting the 407 and 429 in particular, with Asia and the U.S. driving this trend. With that in mind, Bell has accelerated the 407 and 429 production lines, and plans to build 70 407s and 40 429s in 2020.

In an aerospace hub like the Montreal region, Bell is somewhat spoiled in terms of the resources at its fingertips, with nearby schools and universities producing aerospace specialists, and a huge pool of existing aviation specialists working at neighboring

companies such as Bombardier, Pratt & Whitney Canada, CAE, Rolls-Royce and Thales. But it also means Bell has serious competition for talent.

Over the coming years, Lavoie hopes to increase Bell's brand awareness within the region and across Canada to highlight the capabilities and achievements of the Mirabel facility.

"We are in the process of launching a marketing plan to rebrand and reintroduce Bell to the Canadian and Quebec market," said Lavoie. "The history of Bell Mirabel is not well known by the average population, and this is something we are working on."

As well as potentially opening up new business opportunities, he said it would also be useful in helping to attract new talent. The facility's appeal will be enhanced with the potential addition of new products that will guarantee its success into the future.

In a speech at the Canadian Aerospace Summit in Ottawa, Ontario, in November 2016 — just over a year after he became Bell's president, Snyder said Mirabel would be the base for flight test, certification and final assembly for Bell's "next new commercial helicopter program."

Lavoie said the strong working relationship the company had built with Transport Canada, having now certified several aircraft with the agency over the years, is part of the appeal for attracting future work from its parent company. And the facility's broad range of capabilities and expertise make him confident of future growth at the company.

"We are very capable and we have a wide range of skillsets here that makes it attractive for Bell to bring new products to Mirabel," he said. "We are rethinking the future of vertical lift, and the role of Mirabel is very present in this."



Oliver Johnson | Editor-in-Chief of Vertical Magazine, Oliver has been covering the helicopter industry since joining MHM Publishing in 2012. He can be reached at oliver@mhmpub.com. Follow him on Twitter @oriohnson

BIGGER. BETTER. BOLDER.

INNOVATIVE

Thrusting the industry forward with leading-edge technologies

WE DELIVER on what you value most. For over a century, the helicopter industry has relied on StandardAero to provide best-in-class rotary wing support with excellent operational efficiency and custom MRO solutions. Through our innovative, safety driven approach, comprehensive helicopter support capabilities and reliable service provided by our expert technicians, it's no wonder why we are the trusted service partner.

Engines

- GE T700/CT7
- Pratt & Whitney Canada PT6T
- Rolls-Royce M250 and RR300
- Safran Arriel 1 & 2

Airframes

- Airbus H125/AS350, H130/EC130, H135 and H225/AS332
- Bell 204/205, 206, 212/412, 222, 230, 407, 427 and 430
- Sikorsky S-76, S-92 and S-61

Dynamic Components

Fuel Systems

Avionics

STCs

www.standardaero.com helicopters@standardaero.com

+1.204.318.7544





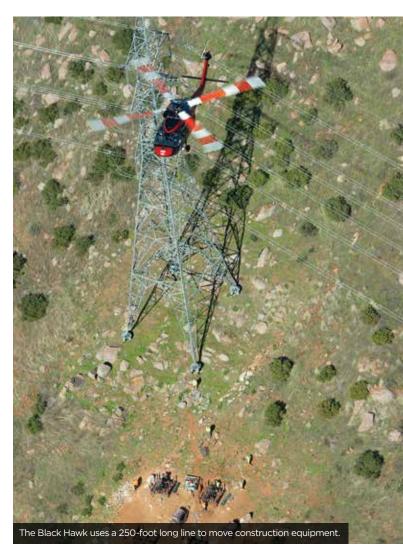


Not many utility providers have a fleet of aircraft on year-round contract — let alone a fleet that includes two Type I (heavy lift) aircraft. But in terms of its aviation capability, San Diego Gas & Electric (SDG&E) has history of being far from ordinary. Its 117mile (190-kilometer) Sunrise Powerlink (SRPL) high voltage powerline, created between December 2010 and June 2012, was the result of one of the largest helicopter construction projects ever undertaken, requiring over 30,000 flight hours of work. While that project was notably unique, SDG&E has maintained an impressive rotary-wing capability over the years to allow it to construct and maintain its lines, and provide its region with a powerful firefighting capability. Today, its fleet includes an Erickson S-64 Aircrane, a Sikorsky UH-60 Black Hawk, and an Airbus H145.

As the electric and natural gas utility provider servicing San Diego County and portions of neighboring Orange County, SDG&E has an estimated 3.6 million customers across an area of over 4,100 square miles (10,620 square kilometers). Extending east from densely populated coastal and interior valley communities, its service area spans rural foothills and mountains before descending into the expansive Colorado/Sonoran Desert.

The nearly \$2 billion SRPL was an ambitious and highly controversial project to construct a transmission line to bring much-needed renewable energy to meet the needs of the





growing San Diego region. The line originates from a substation in the Imperial County desert, and runs west across mountains and foothills, terminating at a substation in Metro San Diego.

The rugged terrain and harsh environment along the construction route wasn't necessarily the steepest hurdle for SDG&E. Stiff, inflexible conditions were imposed by the California Public Utilities Commission (CPUC) and other regulatory agencies to mitigate the line's impact on the environment, wildlife, local communities and sacred Indian lands. To help address these concerns, SDG&E used a large fleet of contracted helicopters — on any given day, 30 or more (mostly light single-engine aircraft) worked from a number of remote fly-yards along the construction route. There, pilots received the latest regulatory information and daily mission assignments; work crew and biologist shuttles, equipment movement and external load operations.

SDG&E closely monitored flight activity using TracPlus, an aircraft satellite tracking service. With flight safety of paramount importance, the company also wanted to ensure compliance with the many restrictions established for the small, constricted flight corridors.

Four Erickson S-64 Aircranes worked on the project, primarily moving and placing the heavy steel-lattice tower sections. SDG&E had purchased one of these (an S-64F) specifically









to work on the program. Dubbed "Sun Bird," the Aircrane was managed by SDG&E with operation, maintenance and support contracted to Erickson.

When work finished on SRPL, SDG&E released all but a handful of air assets and Sun Bird was eventually sold back to Erickson.

In California and all throughout the western states, wildfires have always been a clear and present danger. In 2003 and again in 2007, San Diego County experienced two horrific fires that underscored the potential of wind driven wildfires. The two firestorms charred over 500,000 acres, destroyed more than 3,400 homes and took the lives of 17 people.

At the time, the county's aerial firefighting resources were seasonal and often sparse. The state fire agency (at the time, the California Department of Forestry) positioned a number of contract firefighting aircraft locally, but they were typically not assigned year-round, and would sometimes need to respond to calls outside the county. SDG&E was the first entity, public or private, to provide a Type 1 helicopter as a dedicated county firefighting asset.

In 2009, SDG&E partnered with the County of San Diego on an exclusive-use contract with Erickson for fire suppression throughout the county. The contract provided an Aircrane during the











Straube's Aircraft Services, is pleased to announce their 35th Anniversary in delivering high quality aircraft painting services.

With 4 locations plus a mobile crew stretching from coast to coast, Straube's is proud to offer you The Complete Solution. Straube's offers custom interiors, maintenance and avionic solutions to further compliment our world class painting services.

WHAT SOLUTION ARE YOU SEARCHING FOR?

Upholstery solution by **Pacific Crown Aviation**pacificcrown.com



Visit us at Heli-Expo 2020! **BOOTH 7741**

COME OVER AND SEE TEMSCO HELICOPTERS NEWEST VIP A STAR

ARIZONA OFFICE 928.757.2727

GEORGIA OFFICE 678.604.6927

HAWAII OFFICE \$808.682.2903

MOBILE CREW **\$ 808.682.2903**

PHILADELPHIA OFFICE \$\&\square\$ 928.530.2626

AIRSTRAUBE.COM





four-month peak of fire season, and was the first time the county had ever had a Type 1 helicopter as a dedicated firefighting

Sun Bird was made available as a firefighting asset on a year-round basis during its tenure in the SDG&E fleet, but when it returned to Erickson following completion of SRPL, SDG&E restored the annual fourmonth contract.

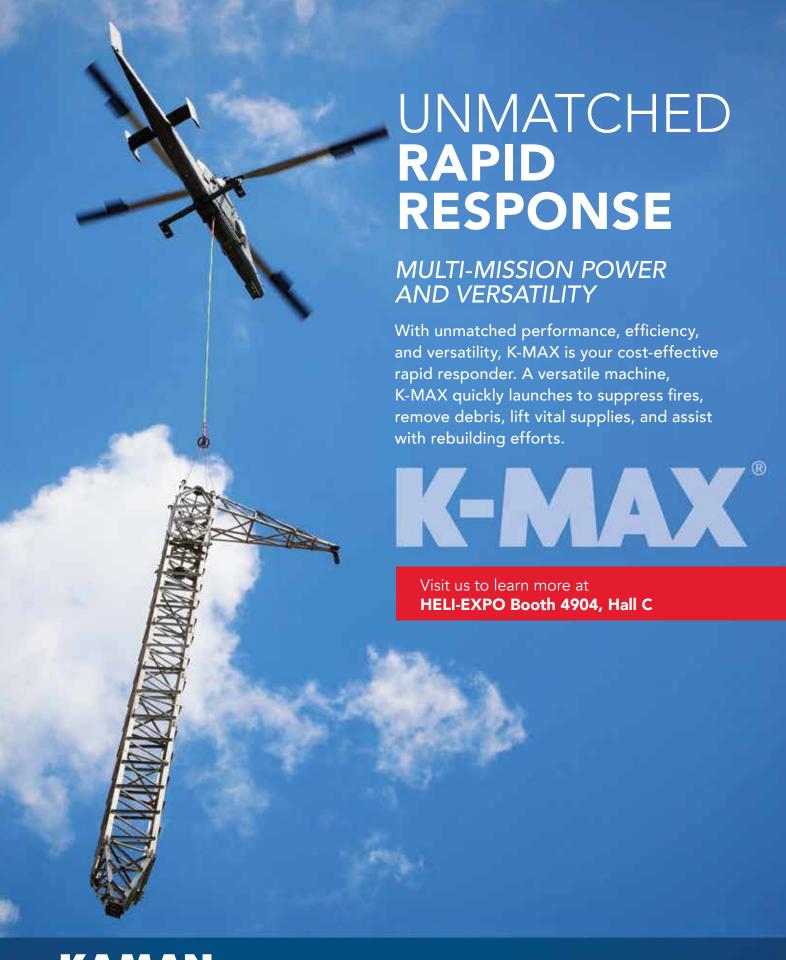
A TWIN REQUIREMENT

Prior to Sun Bird and the fire contracts. SDG&E had long utilized local operators as a source for light and medium singleengine helicopters for call-when-needed (CWN) missions, powerline patrol, and light construction projects. However, shortly after SRPL was completed, an accident involving a CWN machine on an inspection flight would be the catalyst for change.

The utility provider opted to bring all flight operations under an "in-house" control authority, creating an Aviation Services department. It then began the process of selecting the aircraft it needed to fly the day-to-day work of powerline inspections and light construction support.

"We identified a need for twin-engine helicopters, mostly for our patrolling," said Jesse Thrush, SDG&E aviation advisor. "Eventually we wanted to get into human external cargo, rescue hoist operations and other missions, and we made the decision at the company level that we weren't going to do that with a single-engine helicopter. We started evaluating aircraft in the twin-engine market, something that would give us [category A] performance at our highest elevations and hottest temperatures."

After a thorough evaluation process, the Airbus H145 was found to be the best match for the company's existing needs, as well as providing for mission growth in the



"WE WANTED TO FEEL COMPLETELY COMFORTABLE FLYING IN ANY CONDITIONS AT ANY TIME. [THE H145] IS A TOOL THAT WILL GREATLY ENHANCE OUR SAFETY AND EFFICIENCY WITH EVERY JOB THAT WE DO."

- JESSE THRUSH, SDG&E AVIATION ADVISOR

future. The aircraft was delivered in the spring of 2018, becoming the first H145 in the U.S. utility service sector and one of only a few working in the sector worldwide. While the aircraft is owned by SDG&E, HeliStream, Inc. (based in Costa Mesa, California) is contracted for operation, maintenance and support.

"From the company's perspective, safety was the over-riding consideration," Thrush said. "We wanted to feel completely comfortable flying in any conditions at any time. [The H145] is a tool that will greatly enhance our safety and efficiency with every job that we do. And since its delivery almost two years ago, it has been operating flawlessly."

The H145 is equipped with a FLIR Systems Corona 350 II, a multi-sensor gimbal developed specifically for airborne survey and

inspection of electric utility infrastructure. It's capable of highresolution color video, infrared and ultraviolet imaging, as well as still photography. Its technology can also be used by fire and emergency management officials for mapping fire lines, assessing rate of spread and identifying heat sources.

Mesh-network downlink technology from Silvus Technologies enables the H145 to transmit real-time imagery up to 20 miles (32 kilometers) via an internet feed. To further enhance these capabilities, SDG&E has taken delivery of the first of what will be three high-tech mobile command vehicles, which will serve as mobile signal receivers for the downlinked signals (adding to the six mountaintop antenna sites the company already uses).

The vehicles, completed in Montana by Nomad Global Communications Solutions, are equipped with a large tabletop touchscreen, and allow advanced voice and data communication between the aircraft and managers on the ground. SDG&E will make the command vehicles and aircraft available to public safety agencies in support of a disaster response.

While the technology on SDG&E's H145 may be of keen interest for fire managers, the aircraft can also be employed to perform a number of other missions. Current operations include human external cargo tower rescue missions, and firefighting utilizing a 180-US gallon (680-liter) Bambi Bucket. SDG&E also has an external rescue hoist for the H145, but this program is still in development.

"The H145 is our everyday workhorse," said Thrush. "We use it for all of our patrols, whether visual, infrared, or corona inspections; vegetation management; pole sets; construction; external loads. It's doing all of our missions for us."





THE NEW STANDARD FOR AIRCREW SAR/TACTICAL MISSION TRAINING

Commercial helicopter operators, para-public safety agencies, and defense forces need proven, cost effective, and innovative training capabilities that are specifically relevant to performing their mission mandates. Priority 1 Air Rescue meets the demands of our customers by offering the most comprehensive courseware and blended or live flight mission training solutions in the industry.

Our Search & Rescue and Tactical Training Academy (SART/TAC) is setting a new standard for mission training performance, emergency procedures practice, and safety. Training is provided at a more graduated, comprehensive, and systematic pace by employing synthetic hoist/aerial gunnery virtual simulators, hoist procedural training towers, eLearning, and modern classrooms that utilize cutting edge technology to provide our universally adaptable and standardized multi-mission training and operational SAR programs.

Whether you are looking for Civil Aviation Authority (CAA) compliant and certified basic to advanced hoist mission training or complete turn-key Air Ambulance/HEMS and SAR/LIMSAR program implementation and operational staffing support with flight paramedics and rescue specialist aircrews, we deliver proven solutions. Priority 1 Air Rescue is dedicated to providing unparalleled capability, safety, and service to perform lifesaving missions.

Priority 1 Air Rescue - Celebrating 20 Years as Your One Stop SAR Shop



SART/TAC Europe:

+33 (0)4 66 26 01 68

Email: Info@priority1airrescue.fr

SART/TAC North America:

(480) 621-6023

Email: Info@priority1airrescue.com

PRIORITY1AIRRESCUE.COM

Follow us: **I f** (©)







HEAVY LIFTING

In the fall of 2018, SDG&E announced its Aircrane contract with Erickson would be modified to provide year-round coverage. SDG&E provides the aircraft for initial wildfire attack for up to two hours at company expense; beyond that, the responsible agency (whether Cal Fire, US Forest Service, or a city entity) is billed at a discounted hourly rate.

In the aftermath of several devastating wildfires in Northern California where utility operators were deemed to be at least partly responsible, the CPUC required utility providers develop comprehensive wildfire mitigation plans. SDG&E's plan included the addition of a further Type 1 helicopter.

In June 2019, the company reached an agreement with San Diego County to provide a UH-60 Black Hawk. The aircraft, on lease from and operated by HeliStream, is another dedicated fire-fighting asset for San Diego County, under a similar arrangement as the Aircrane. Initially, the UH-60 utilized a Bambi Bucket for fire operations, but a Simplex 850-US gallon (3,220-liter) internal tank is now installed to dramatically enhance the aircraft's firefighting capabilities.

When the need arises and in periods of low fire danger, the UH-60 and the Aircrane can be reconfigured for SDG&E construction projects.

"Having year-round access to two Type 1 helicopters that are

readily available to the county for firefighting is huge," said Nick Brown, battalion chief for air operations for Cal Fire San Diego. "They provide additional equipment that is very much needed on an initial attack as well as fires that are going extended."

On any given day, in addition to the three SDG&E aircraft, aviation managers may also be coordinating anywhere from three to eight CWN aircraft working on various projects throughout the county. Typically, SDG&E make initial requests for assets through HeliStream. Depending on aircraft availability and special projects, other CWN operators may be sourced as well. Regardless, all aircraft and work crews assigned to SDG&E projects are monitored via TracPlus by SDG&E's flight operations base.

Beyond its helicopter assets, SDG&E's aviation department also manages 17 drones or unmanned aerial systems (UAS). The company began evaluating a variety of drone systems about six years ago, understanding how they could best be integrated into field utility work. Initially, 26 "use cases" were identified where drones could be used to improve efficiency, reduce costs, and reduce the physical impact of the company's operations on the environment. In addition to its internal drone work, an extensive tower and pole inspection program is underway, with up to 60 contracted drone teams flying in the service territory daily.

"We have so many environmentally sensitive areas here in San Diego," said Christine Asaro, SDG&E's UAS operations advisor.





One of the many ways **AEM** is Leading by Design.

AEM's extensive history gives us the experience and expertise to develop the industry's best avionics and specialty audio products - solutions that our customers trust to get the job done under demanding circumstances. We understand the needs of our industry and take pride in our legacy of providing world-class products and service to our customers.

Learn more at aem-corp.com/LeadingByDesign



LOUDSPEAKER SYSTEMS

Up to 1760W of peak audio output power, optional NVIS-compliant lighting. D0-160G and D0-214 qualified.

CAUTION WARNING PANELS

SPECIALTY AUDIO PRODUCTS

ILLUMINATED PANELS & KEYBOARDS

CUSTOM DESIGN & BUILD

VISIT US AT HAI HELI-EXPO BOOTH 231 **aem-corp.com** LEADING BY DESIGN





serve as mobile signal receivers for the downlinked video/infrared/ ultraviolet signals from the FLIR Corona 350 II. They can also be sourced at no cost for appropriate public safety missions



Aviation programs advisor Jesse Thrush (middle) instructs aviation specialists Chris Yergens and Larry Fiducioso on the use and features of the FLIR camera sensors and mapping features.



The flight operations base is the hub for all SDG&E flight operations, overseeing dispatch, aircraft tracking and weather monitoring across the company's network.

"In the beginning, we were using [drones] for planning aspects in those areas that had a lot of sensitive vegetation. You take that aerial photo, and now in your planning, you can show the crews: you can park your trucks here, here's your helicopter loading zone and if there's no sensitive vegetation, here's your foot path. . . . It just really gives them a good aerial perspective of what they're going into. So now, we stay on the road or the right of way and we're not tromping through those sensitive areas."

The drones have greatly reduced costs and improved efficiency in the field. Instead of driving heavy wheeled vehicles into the field and workers climbing poles or using bucket trucks to access infrastructure, managers now can use drones to minimize environmental impact and better assess construction or repair needs.

The drones are all consumer, professional and enterprise models from DJI, with one model even capable of flying a Corona and Infrared imaging system. Fourteen SDG&E employees have undergone extensive training to operate the drones in support of projects in the field. The company also outsources some specialized projects, such as LiDAR (light detection and ranging) missions, which are used to create precise, three-dimensional mapping products of terrain.

In a rather short period of time, SDG&E has ramped up a very robust and progressive aviation operation. Company executives looked beyond a narrow focus of supporting only their utility interests, recognizing instead how the capabilities of their aircraft and technology can provide an invaluable extra measure to greatly enhance public safety, further protecting the communities they serve.

"We have very good support from all throughout the company, especially with our executives," said Thrush. "They understand the level of safety and the level of efficiency we've achieved out here. Safety is our priority in every single job. You can see it in the aircraft we're flying, and you can see it in the quality of work our folks are doing out there."



Dan Megna | Dan served nearly 20 years of a 30-year law enforcement career as a helicopter tactical officer, pilot, and flight instructor with a large Southern Californian sheriff's department. He has been a regular contributor to Vertical since 2004.

new power pole.



For missions accomplished

Whatever the missions, whatever the times, wherever the places, we'll get you where you're going.





















WITH OVER 1,000 AW139s NOW DELIVERED, THE MULTI-MISSION WORKHORSE HAS PROVEN AN OUTSTANDING SUCCESS FOR LEONARDO. WE TAKE A LOOK BACK AT THE TYPE'S ORIGINS AND HOW IT HAS EVOLVED SINCE ITS FIRST DELIVERY JUST OVER 15 YEARS AGO.

STORY BY KENNETH I. SWARTZ // PHOTOS COURTESY OF LEONARDO







Leonardo has been building rotorcraft since 1952, but the development of the twin-engine AW139 was a transformational event for the Italian aerospace company.

On Sept. 20, 2019, Leonardo delivered the 1,000th AW139 to the Italian Customs and Border Protection Service agency (Guardia di Finanza) at its factory at Vergiate Airport, 35 miles (56 kilometers) northwest of Milan.

A true multi-mission aircraft, the AW139 has secured customers in almost every helicopter market segment around the world, with 1,150 aircraft ordered by more than 280 customers in over 70 countries on all continents.

Some AW139 customers are nearby, like Babcock Mission Critical Services Italia, which flies its "Horus 3" for air ambulance and mountain rescue missions on behalf of AREU Lombardia from a heliport just 12 miles east of Vergiate.

Other customers further afield fly offshore workers to remote oil and gas platforms; carry executives to business centers like New York and London; transport VVIPs like the Pope; ferry scheduled passengers in Hong Kong, Norway and the Faroe Islands; as well as police cities and borders, battle wildfires; and fly daily search-and-rescue (SAR) and emergency medical services (EMS) missions.

Along the way, the global AW139 fleet has logged a total of 2.6 million flight hours, with the high-time AW139 recently reaching 14,500 hours.

For most of its history, Leonardo (previously known as Agusta and AgustaWestland in the rotorcraft field) made helicopters under licence from Bell (Agusta-Bell 47, 204, 205, 206, 212 and 412), Sikorsky (Agusta-Sikorsky S-61 and S-61R), Boeing (CH-47C and CH-47F Chinook) and McDonnell Douglas (Breda Nardi made the NH500D/500E before merging with Agusta in 1989).

In 1991, Amedeo Caporaletti was appointed the president with a strong mandate to revitalize the company, which at that point was saddled with \$1.2 billion in debt, too many factories and employees, and declining post-Cold War military orders.

A medium-sized type was first conceived in the mid-1980s as a transport helicopter utilizing the five-blade rotor system of the Agusta A129 Mangusta attack helicopter, but it never moved past the concept stage. However, in 1997, work began on a new medium twin helicopter that could replace the Agusta-Bell UH-1 family, and fill a capability gap between four- and eighttonne helicopters.

The aircraft caught the interest of long-time partner Bell Helicopter, resulting in the creation of the Bell/Agusta Aerospace Company. At the 1998 Farnborough Air Show, the company revealed plans to develop both the Agusta Bell AB139 and the Bell Agusta BA609 tiltrotor.

The prototype AB139 flew on Feb. 3, 2001, at Vergiate, Italy; received European Aviation Safety Agency (EASA) certification in June 2003, and U.S. Federal Aviation Administration (FAA) certification in December 2004. The first production AB139 was delivered in 2004 to Italian air ambulance operator Elilario.

Following the merger of Agusta with Westland in 2000, the company became AgustaWestland. When Bell relinquished its 25 percent interest in the AB139 in 2005, the aircraft was renamed the AW139, and a single customer-facing organization was established for all sales, market, training and support activities.

CATEGORY KILLER

Leonardo designed the AB139 as a "category killer," offering a higher cruise speed, larger cabin, and a significantly greater payload/range capability than its main competitors.

The task wasn't easy, because Leonardo had not designed most of the helicopters it had built since 1952. Added to that, it was not familiar with many of the civil market segments it was now targeting with the AB139 — such as offshore oil-and-gas transportation, or the military and civil helicopter operators outside its traditional geographic markets, recalled Roberto Garavaglia, Leonardo Helicopters' senior vice president, strategy and innovation.

One way Leonardo overcame the challenge was by borrowing heavily from the civil aircraft product development and marketing experience of regional aircraft manufacturer ATR, which was jointly owned by Alenia (now Leonardo Aircraft Division) and Airbus.

The AW139 has a five-blade fully-articulated main rotor, four-blade tail rotor (tilted at 15 degrees), a roof-mounted gearbox, retractable tricycle undercarriage, and a pair of Pratt & Whitney Canada 1,700-horsepower class PT6C-67C turboshafts with FADEC engine controls to provide superior Category A (Class 1) single-engine performance, and high power margins for "hot and high" conditions.

The PT6 was well known to customers in every potential market segment and provided an impressive power-to-weight ratio, while delivering high reliability and durability, as well as excellent operating economics.

The AW139's Honeywell Primus Epic fully integrated avionics system was first introduced on business jets. It offered a four-axis digital automatic flight control system (AFCS) and up to four large, high definition, flat-panel cockpit color displays. This helped minimize unnecessary pilot workload, increase situational awareness, and consolidate vital

A TRUE MULTI-MISSION AIRCRAFT, THE AW139 HAS SECURED CUSTOMERS IN ALMOST EVERY HELICOPTER MARKET SEGMENT AROUND THE WORLD, WITH 1,100 AIRCRAFT ORDERED BY MORE THAN 280 CUSTOMERS IN OVER 70 COUNTRIES ON ALL CONTINENTS.

instrumentation on concise, efficient displays. A four-axis modular digital autopilot with flight director provided hands-off operation in instrument meteorological conditions (IMC) and SAR modes. The latest Phase 8 software upgrade for the Primus Epic has a synthetic vision system that is usable on approach all the way down to the hover.

The AW139 was designed to offer the largest cabin in its weight class, with significantly more cabin volume (283 cubic feet/eight cubic meters) than the Sikorsky S-76 or Bell 412, and a large 120-cubic-foot (3.4-cubic-meter) rear baggage compartment. On first response aircraft, the baggage compartment is accessible in flight, providing useful storage for additional stretchers or rescue equipment.





A Gulf Helicopters AW139 approaches an offshore oil rig. The operator has a large fleet of the type, and passed 100,000 flight hours with AW139s in February 2019.











The type was certified to the latest amendments of aviation regulations (Joint Aviation Regulations/certification standard 29/Federal Aviation Regulations part 29, amendment 45), which introduced a new generation of safety requirements. These included redundant flight systems; better engine burst containment; energy-absorbing landing gear, fuselage and seats; and enhanced bird strike protection. The passenger cabin also has three type IV push-out emergency exit windows on each side to allow rapid egress in case of an emergency landing or ditching. In 2015, Leonardo demonstrated to the Italian Airworthiness Authority

- Ente Nazionale Aviation Civile - a loss of oil or "run dry" capability for the AW139 main gearbox of more than 60 minutes.

More than 70 percent of the global AW139 fleet is equipped with health and usage monitoring systems (HUMS), and this percentage is increasing with Leonardo having introduced in-house solutions based on the Heliwise system.

BY THE NUMBERS

The largest single market for the 1,150 AW139s ordered is the offshore oil-and-gas sector (representing 33 percent of orders), with the balance of aircraft ordered for military service (21 percent), EMS and SAR (17 percent), government and law enforcement (13 percent), corporate and VIP (12 percent), and utility (four percent).

Geographically, the largest concentration of helicopters ordered and delivered is in Europe (28 percent), followed by Asia and Australasia (27 percent), Middle East (13 percent), North America (11 percent), Africa (six percent) and Central and South America (four percent), with the remainder serving global fleet operators (11 percent).

Italy always provided Leonardo with a strong home market, and the AW139 follows this tradition with more than 30 civil AW139s in VVIP, corporate and EMS service, and about 60 more flying with seven Italian government operators.

In 2006, Leonardo established a second AW139 final assembly line at its facility in Philadelphia, Pennsylvania, with the first U.S.-assembled AW139 delivered to Era Helicopters in June 2007. Since then, Philadelphia has delivered almost 270 AW139s to customers in more than 30 countries, including two to customers in Italy.

A third final assembly line opened in Russia in 2012 as part of the HeliVert joint venture between Leonardo and Russian Helicopters (and later Rosneft). The first Russian-assembled AW139 flew on Dec. 18, 2012, but only nine aircraft have been delivered from the facility.

Leonardo makes AW139 fuselages in Brindisi, Italy, and at its PZL-Swidnik plant in Poland and also receives about 25 fuselages a year from Turkish Aerospace. The transmissions and dynamic components are produced in Yeovil, U.K., and Italy.

The original AW139 was conceived as a six-tonne (13,228-lb./6,000 kg) maximum takeoff weight (MTOW) helicopter, but this was increased to 6.4 tonnes (14,110 lb./6,400 kg) prior to first delivery, said Garavaglia.

"Operators made it clear that the 'sweet spot' for the aircraft was the ability to fly 130 nautical miles to an offshore platform with a full load of passengers and bags, with fuel for the return flight plus legal reserves, and an extra margin for winds, etc.," he said. "Fortunately, the aircraft was robust enough to handle the increase to 6.4 tonnes without any major modifications."



David Clark Best-Selling Helicopter Headsets



The H10-13H passive noise-attenuating headset and the Hybrid Electronic Noise-Cancelling DC ONE-XH are purpose-built for helicopter pilots. Designed for the rigors of rotary wing flight. And backed by our extraordinary customer service. So no matter which style headset you choose, you'll enjoy the perfect combination of quiet, comfort and reliability.

See the full line of flight-proven, pilot-preferred David Clark helicopter headsets at **www.davidclark.com** or call **800-298-6235** for more information.







Leonardo then introduced an 882-lb. (400-kg) increased gross weight option in 2008, which lifted the MTOW from 14,110 lb. to 14,991 lb. (6,800 kg), and at Heli-Expo 2015, announced a seven-tonne (15,431-lb./7,000-kg) increased gross weight kit that could be introduced on new production and in-service aircraft.

In offshore configuration, a seven-tonne AW139 incorporating all product improvements will be able to fly up to 165 nautical miles with 12 passengers, and up to 230 nautical miles when transporting eight passengers.

There is no performance penalty at the higher operating weights, with the AW139 retaining a temperature envelope at sea level of -40 C to 50 C, up to sea state six ditching capability, and Category A clear area performance at 15,432 lb. up to ISA+20 at sea level.

AT HOME OFFSHORE

AW139 sales soared as oil prices increased in the 2000s and offshore operators renewed their fleets. Era and Chevron were the first to introduce the AW139 in the Gulf of Mexico in 2005, followed by Bristow, PHI and VIH Cougar in 2010.

The Sikorsky S-76C++ also won orders in the early 2000s to replace Bell 412s and S-76As, but as rigs moved further offshore the S-76

was running out of real estate and couldn't carry 12 passengers and bags on longer trips requiring full fuel. The AW139 started picking up these contracts, but the S-76C++ still had a place flying to offshore platforms with helidecks that were limited to helicopters weighing less than 12,000 lb.

Era's fleet of 36 AW139s topped 200,000 flight hours in June 2019. For many years, Era also operated AW139s on the North Slope of Alaska with the company's Full Ice Protection System (FIPS) required by the customer. The first generation FIPS system suffered from reliability problems which took a while to resolve.

CHC introduced the first AW139 in the southern North Sea as an S-76B replacement in 2006, operating from the former Schreiner/KLM base at Den Helder, Netherlands. Other North Sea AW139 operators include Bristow, Bond, NHV and Bel Air Aviation A/S of Denmark.

Gradually, the AW139 was introduced into all the major oil-andgas regions of the world. The downturn in the offshore industry and the Chapter 11 filings by the three largest offshore operators (CHC, Bristow and PHI) saw the termination of many AW139 leases, but the fleet was readily absorbed by other operators and market segments.

In 2018, Milestone Aviation and Leonardo announced a contract with Aramco in Saudi Arabia for 17 AW139s plus four options for offshore









Powered Aero Loader

A QUANTUM LEAP IN PATIENT MANAGEMENT AND EMS/AMBULANCE FLEET INTEROPERABILITY

The PAL is a zero-lift, push-button operated powered stretcher loader system used for rapid loading and unloading of road ambulance stretchers into HEMS aircraft.

- > Typical load and unload times of less than 30 seconds, at the push of a button
- > Capable of supporting weight of up to 318kg (700lbs)
- Decreases risk of paramedic injury through eliminating manual handling
- > Easily installed on a variety of floor types without the need for tools





Corner of Pathfinder Drive & Henebery Place Caloundra Airport | Caloundra, QLD 4551 Australia P +61 7 5491 7990 | E info@helimods.com support. With this contract, Milestone will have more than 100 AW139s in its leasing portfolio.

MISSION CAPABLE

The AW139 has captured a large share of the market for parapublic operations in its weight class. Such is the extent of its success, Leonardo has a catalogue of more than 1,000 certified options and kits available for the AW139 that were developed and certified in-house or by external suppliers to serve a wide range of mission and customer requirements.

In North America, the AW139 replaced S-76s at the New Jersey State Police, Airbus 365Ns at the Maryland State Police, Bell 412s at the Los Angeles Fire Department, and Sikorsky S-76As at the Ornge air ambulance service in Ontario, Canada. In December 2019, Miami-Dade Fire Rescue (MDFR) ordered four AW139s to replace Bell 412s used for fire suppression, EMS and SAR.

In Australia, Toll Group flies eight EMS AW139s in New South Wales, and its Bankstown base also includes the ACE Training Centre with an AW139 Level D full flight simulator. Australian Helicopters flies six AW139s in support of Air Ambulance Victoria; the Queensland Government Air flies five EMS AW139s from three bases; and the Victoria Police Air Wing took delivery of the first of three AW139s in late 2019. In 2018, CHC Group signed a 30-month contract continuation with the Royal Australia Air Force for SAR services at five bases that included six AW139s replacing the previous S-76 fleet.

In Japan, the AW139 has made strong inroads into law enforcement, firefighting and disaster relief, and SAR markets. There are now 15 AW139s flying with the Japanese Coast Guard and 11 aircraft serving with police aviation units in nine prefectures. The AW139 also flies firefighting missions with the Tokyo and Sapporo Fire Departments and emergency response missions with the Mie and Tochiqi Prefecture

disaster relief departments. Uniquely, Air Nippon Helicopter (NHK) and Kansai TV also use the AW139 for electronic news gathering.

In China, Leonardo has captured a sizable share of the emerging EMS market. In late 2018, Sino-US Intercontinental Helicopter Investment (Sino-US), the exclusive Chinese dealer, placed a follow-on order for 15 EMS-configured AW139s for delivery to Kingwing General Aviation for use on the China Helicopter Air Ambulance project between 2019 and 2021.

MH-139A GREY WOLF

Leonardo says that the most customized aircraft to roll off the assembly line were for the HH-139A Italian Air Force and the AW139s for the Guardia di Finanza, with the Boeing MH-139 Grey Wolf for the U.S. Air Force the next project in line.

The HH-139A integrated all-new Goodrich heavy duty landing gear and low-pressure tires with new sponsons, an integrated self-defense suite, and provisions to position snipers at the cabin doors for "slow mover" intercept missions.

Leonardo is a major defence electronics company, and the Guardia di Finanza aircraft integrated a large number of proprietary systems, including an airborne tactical observation and surveillance mission system linked to a multi-mode/multi-mission surveillance radar, a high definition forward looking infra-red system with moving target indicator, SRT-700 multi-band radios, a M428 identification friend or foe transponder, and an obstacle proximity LiDAR system.

In December 2019, the first of 84 Boeing MH-139A helicopters was presented to the U.S. Air Force, which named the type "Grey Wolf" during a ceremony to mark the occasion at Duke Field at Eglin Air Force Base (AFB), Florida.

The first four MH-139A's will be evaluated by 413th Flight Test Squadron before eventually moving to Malmstrom AFB, Montana,



THE OBVIOUS CHOICE





THERE'S MORE TO THE EC145e

Now with IFR, the EC145e is the obvious choice for a variety of mission-profiles, including HEMS. With more payload capacity, it offers flexibility for children's hospitals and specialty teams requiring unique equipment while maintaining the cabin room needed to take care of the most vulnerable patients.

VISIT US AT HELI-EXPO
BOOTH #3624 | metroaviation.com







to perform additional testing. The aircraft will replace the Bell UH-1Ns that provide security to 450 remote LGM-30 Minuteman III missile silos in North Dakota, Montana and Wyoming.

SUPPORTING THE FLEET

Parallel to AW139 development, Leonardo recognized that its customers would demand advanced support, including initial, recurrent and mission training in an AW139 full flight simulator.

Rotorsim, the joint venture equally owned by Leonardo Helicopters and CAE, currently operates in three countries (Italy, the U.S., and the U.K.), with Level D full flight simulators at the A. Marchetti Training Academy in Sesto Calende, Italy, and the CAE North East Training Center (NETC) in Morristown, New Jersey.

Today, more than 10 AW139 full flight simulators are available for training worldwide, and Leonardo is planning to add additional simulators at its new training center in Philadelphia and elsewhere.

The AW139 has changed the way thousands of helicopter missions are flown every day, and it also changed Leonardo fundamentally as a company, said Garavaglia.

When the program was launched in 1998, Leonardo was mainly a second tier manufacturer of license-built military helicopters. Today, it's a top tier global helicopter manufacturer, proud of what its 12,000 Helicopter Division employees have accomplished over the course of 1,000 AW139 deliveries, and equally determined to grow its business further in the years to come. \nearrow



Ken Swartz | Ken has spent most of his career in international marketing and PR with commercial aircraft manufacturers, airlines and helicopter charter operators. An award-win-

ning aviation journalist, he runs Aeromedia Communications, and can be reached at kennethswartz@me.com.



Data-Driven Insights through

Intelligent Connectivity

Flight Data Monitoring

Real-time HUMS

Flight Following

In-Flight Cameras

WiFi & Cellular

Electronic Flight Bag

Satellite Push-to-Talk

SATCOM Solutions

t 1-844-643-6033

e connect@skytrac.ca

w www.skytrac.ca



FIND SKYTRAC & LATITUDE AT HAI HELI-EXPO BOOTH 7145

Fight fire with fire.

Contact your Latitude Sales Representative today to learn how ATIS™, ATU, and OLMS can give you the edge you need:

- Air Tanker Information System (ATIS)
- Additional Telemetry Unit for Fire Attack Data (ATU)
- Operational Loads Monitoring System (OLMS)





COME SEE US AT HELI-EXPO, BOOTH #5229

ON

MODE

ON



ON

INTEGRATED/CERTIFIED NVG LIGHTING MODS

- Exceptional night and daylight readability
- FAA/EASA approved repair station // Avionics Repairs
- NVG and Non-NVG Illuminated Panels and Overlays // QPL MIL-DTL-7788 Certified
- External lighting
- NVG Goggle Repair & Recertification

SERVING FIRST RESPONDERS WORLDWIDE

- Airborne law enforcement
- Military and government agencies
- Air medical transport
- Aerial firefighting
- Air search and rescue
- Multiple Platforms: Ground base // Maritime // Airborne Both Fixed & Rotary Wing

www.aerodynamix.com

AUTHORIZED DEALER/DISTRIBUTOR AND OEM APPROVED INTERNAL LIGHTING MODIFICATIONS FOR

























ANSWER THE CALL OF DUTY AND THE CALL WITHIN





GO BEYOND

Protect your nation while fulfilling your passion.

Air and Marine Operations offers pilots an exciting career, a competitive salary, and job security.

VISIT US AT HELI-EXPO BOOTH #7719

APPLY NOW: cbp.gov/careers/amo









With wildland fires growing ever larger, more frequent, and more intense, the landscape of aerial firefighting is evolving. The market is evolving, too. In the United States, military surplus Sikorsky UH-60 Black Hawks and Boeing CH-47 Chinooks are starting to fill the need for more capable firefighting helicopters. edging out the Bell mediums that have dominated the market for decades. These surplus aircraft are plentiful and cost-effective, but they're also limited to restricted category operations — a fact that holds them back from their full potential.

Across the Atlantic, Heli Austria has hit on a different solution. In its search for an economical heavy-lift utility and firefighting helicopter, the company saw promise in the Airbus AS332 L and L1 Super Pumas that were being phased out of the offshore industry. Robust, reliable, and still well supported by the factory, the L and L1 variants are less expensive than later AS332 L2 and H225/EC225 LP Super Pumas, without those models' history of main rotor gearbox problems. Moreover, because they are certified in the normal category, they can carry passengers including firefighters without special permission, and with few limits on where they can fly.









Starting in 2016, Heli Austria added four of these Super Pumas to its fleet, acquiring three offshore aircraft from CHC Helicopter, plus a former Japanese police helicopter from a company in New Zealand. Leveraging its expertise as a European Union Aviation Safety Agency (EASA)approved alternative design organization, the company stripped excess weight from the helicopters and updated them with new radios and avionics, including GTN 650 and 750 systems from Garmin. The aircraft also received right-side bubble windows for external load operations, and a new cargo hook weighing system from Onboard Systems.

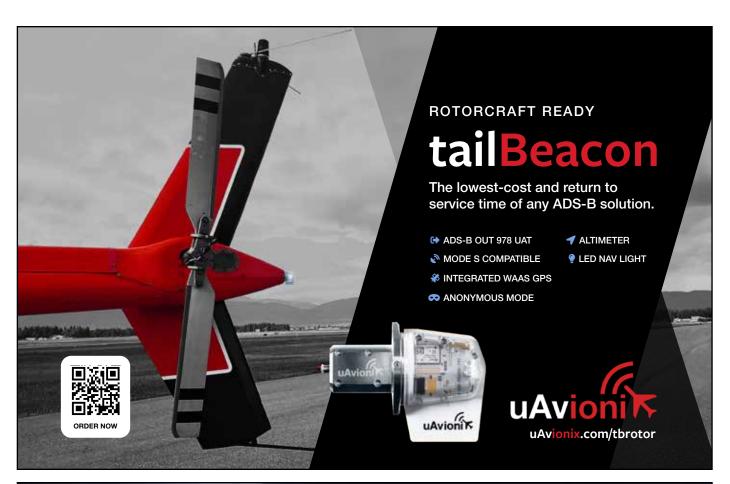
Eventually, in collaboration with a fully approved design organization in Italy, Heli Austria obtained a supplemental type certificate (STC) for "baby sponsons" to replace the original housings for the rear landing gear, shaving around 300 pounds (135 kilograms) off the empty weight of the aircraft. All told, Heli-Austria managed to reduce the weight of its Super Pumas by over 2,200 lb. (1,000 kg) compared to their previous instrument flight rules configurations.

"[Our] first idea was to use the aircraft for heavy-lift tower construction, like cell towers, power line towers, and so on," explained Heli Austria CEO Roy Knaus when Vertical visited the company at its headquarters in St. Johann im Pongau in August. Ski lift construction was another obvious application for the Super Pumas, he added, since ski lifts in Austria are regularly torn down and rebuilt.

"It took us some time to get into this market because in the beginning, of course, customers were a little bit cautious," he recalled. However, with a lifting capacity of around 9,600 lb. (4,350 kg), the Super Puma quickly proved its value, and Heli Austria's heavy-lift aerial construction business has been growing ever since.

Meanwhile, the company learned of a firefighting tender in Sardinia - the Italian island around 200 miles (320 kilometers) west of mainland Italy - for a helicopter with the Super Puma's capabilities. "We bid on it, it was a trial period for one month . . . they were very happy," Knaus said, adding that the first trial led to a second, twomonth trial the following year. The government of Sardinia had been an early European customer of the Erickson S-64 Aircrane for firefighting, and was able to compare the Super Puma's performance against historical data for the Aircrane. The results were favorable.

"Where the Super Puma really excels is the aircraft is dispatched very fast on a fire, it's got a high cruise speed, and it has got a very good endurance because you can stay on the fire for three hours," Knaus explained. Compared to larger aircraft like the Aircrane that spend more time transiting to and refueling at airports, the









Certifying engineer Jean-Louis Leveau came to Heli Austria from CHC Helicopter, where he also worked on Super Pumas. He said that maintenance on the aircraft for heavy-lift applications is somewhat more intensive than for offshore operations: "We have some reinforced inspections because it's a lifting aircraft. Especially the tail boom has to be checked a bit more, and the sling also has to be checked very often."

Roy Knaus said the L and L1 Super Pumas combine a reasonable acquisition price and economical operating costs with good reliability and support from manufacturer Airbus.



Heli Austria has already added some new avionics to its Super Pumas. However, it plans to certify a Genesys Aerosystems glass cockpit for the aircraft, to enhance safety for missions including firefighting at night.

Super Puma with a 4,000-liter (1,060-gallon) Bambi Bucket "stays on the fire all the time and delivers more water onto it," he said.

Satisfied with the aircraft's performance during its trials, Sardinia awarded Heli Austria a three-year firefighting contract, the second season of which wrapped up in August. "We found out how really capable the aircraft is," said Knaus, noting that in the four summers the Super Puma has flown in Sardinia — two on trial and two on full contract — "we didn't have a single day when the aircraft broke down, which is quite extraordinary." Pilot Michael Auer echoed, "It's a very strong helicopter, and also we never have problems with [it]."

As engineer Jean-Louis Leveau explained, the Super Puma's established track record over four decades of operation makes it easy to maintain compared to newer helicopter types with still-undiscovered technical issues. "Technically speaking, the Puma is fantastic, a very good machine," he said. "We have plenty of places where we know to look, especially for the lifting, so as not to have any problems," he said.

TANKING UP

Now, Heli Austria is taking its Super Pumas to the next level with the evolution of a tanked version of the aircraft, called the "Firecat." The operator has acquired an additional eight AS332 L/L1 helicopters that it plans to make available for wet and dry lease, and has partnered with the Australian company Helitak to develop a 4,250-liter (1,120-gallon) belly tank for the aircraft. Helitak's proprietary design features a flexible bladder that expands while being filled, and retracts when empty into a housing with a flying profile of just 12 inches (30 centimeters). Compared to solid tanks, the design occupies less space underneath the aircraft and is also lighter in weight, at around 660 lb. (300 kg) installed. Helitak said the funnel shape of the retractable water bag provides maximum head pressure for controllable water delivery, while a next-generation programmable logic controller provides all of the telemetry and data required for reporting and maintenance management.

As of early December, the first tank had completed testing at Helitak's facilities in Australia and was on its way to the U.S. for certification flight testing in California. Helitak and Heli Austria also planned to showcase the tank at HAI Heli-Expo 2020, Jan. 28 to 30 in Anaheim. The companies aim to receive an STC from the U.S. Federal Aviation Administration in the first half of 2020, with validations by Transport Canada and EASA to follow. Additionally, Helitak plans to certify the tank for other models of the AS332 (now called H215) and H225.

According to Knaus, the tank will offer several benefits. Most immediately, it will enhance safety during operations in wildland-urban interface areas, where jettisonable external loads like water buckets pose a potential hazard to people on the ground. But the long-term goal is to prepare the Firecat for nighttime aerial firefighting operations — something that is currently being done in California and Australia, but would be a first for Europe.



"Night firefighting operations is our next plan," said Knaus, revealing that Heli-Austria plans to certify a Genesys Aerosystems electronic flight instrument system (EFIS) with synthetic vision to enable operations under night vision imaging systems (NVIS). The upgrade is not strictly necessary, but Knaus believes the investment will enhance safety, and it mirrors the company's similar investments in Garmin G500H glass cockpits for its MD 902 and Airbus H125 and, most recently, AS355 aircraft.

"You can put in an NVIS cockpit faster, but we really want to have something that is also in line with the other cockpits that we have, not just use the old steam gauges," Knaus continued. "We want to have the best set-up for our crews."

Heli Austria is targeting EFIS certification by the end of 2020, in time to enable NVIS operations starting in 2021. Details of the NVIS certification have yet to be confirmed and will be an ongoing discussion with EASA, he said.

In his decision to spend a little more for new technology, Knaus is following a playbook that has served him well so far. The second-generation helicopter pilot, now 43, took the reins of his family's business after his father was killed in an Alouette crash in 1997. A little over two decades later, the company has grown to around 200 employees and 45 aircraft — from the Robinson R22 and R44 helicopters in its flight training academy, up through the Bell mediums in its aerial work fleet, and the new-generation Airbus H135 and H145 models it uses for helicopter emergency medical services.

"We think it's always important to do the investment first, and then you see how the market responds, and we've had a very good history with that," Knaus said. "It's not my goal to fly at the lowest prices," he emphasized — rather, Heli Austria strives to establish a higher quality standard, then convince the customer that it's worth paying more for better equipment.

"It's important to us that we can show the customer, and convince the customer er so that long-term the customer says, 'I want to have this,'" Knaus said. "We really think that we're driving innovation in this way, and it also pays off."







Factory Authorized Service Center | FAA Repair Station #YT2R331L | EASA 145.5629

- Fuselage and tailboom structural repair
- Extensive parts inventory
- Non-destructive testing and inspections
- Refurbishments, exchanges, and modifications
- Completions
- Maintenance

- Components and overhauls
- D.A.R. Designee on-site
- Avionics























ESSENTIAL TURBINES IS **NOW DISTRIBUTING**EXTEX ENGINEERED PRODUCTS



EASTERN LOCATION | 443 Meloche Ave., Dorval, Quebec, Canada H9P 2W2
WESTERN LOCATION | 112-19425 Langley Bypass, Surrey, British Columbia, Canada V3S 6K1

PHONE: **+1-514-633-4458**

ESSENTIAL TURBINES INC.

HELI-EXPO BOOTH #525

ELEVATE YOUR AS350



BendixKing. Honeywell





Contact Airwork today for more information on these products

E sales@airworkgroup.com
P +64 9 295 2111
487 Airfield Road, Ardmore, Auckland
New Zealand

www.airworkgroup.com

Airwork capabilities also include

- LTS 101 Turbine inspection & overhaul
- Dynamic Component inspection & overhaul
- Parts & components sales
- · Design, certification & manufacturing
- Aircraft sales & leasing
- MODs and STCs

- Maintenance support
- Hooks & Hoist
- Airwork Support Plan
- Avionics







As night fell over the Ore mountains in Eastern Europe, two Sikorsky UH-60 Black Hawk helicopters lifted off from a small airport on the Slovak-Hungarian border and slipped into the fading winter twilight. Far from being a secret operation or a movie scene, this was a routine training flight; the student aircrew would soon return home to regions in the world where the toehold of security is at its most tenuous. Their instructors, no strangers to this type of nocturnal navigation, are all U.S. military veterans. But while the names of their former units would be recognizable to many, the company for which they fly as civilians is less familiar.

Critical to the development of this unusual arrangement was the 2017 sale of the former Bristow Academy in Titusville, Florida, as it became United States Aviation Training Solutions (USATS). In early 2019, this operation was quietly acquired by International Defense & Aerospace Group (IDAG), a little-known company that was itself only three years old at the time. With personnel hailing from some of the most elite aviation units in the world, they had the experience necessary to transplant the USATS program into something that meets the growing global demand for a quality of military aviation expertise to match that of the systems and aircraft proliferating around the world's trouble-spots.

While high quality was always IDAG's aim, training was not its only focus, as company president and former U.S. Army pilot Bob Caldwell explained. "IDAG came about in 2014 from a desire to provide high quality contracted logistics support, flight training, maintenance, sales and support to emerging, evolving and established militaries around the world," he said.

"My business partner and I had worked together for many years in government service. We realized that there was a need for a company that was nimble, quick to react and could tailor an operation to the specific needs of the customer while maintaining a low profile.







"WE WERE THE FIRST TO CERTIFY A UNIVERSAL GLASS COCKPIT IN THE MD 902 AND WE DID THAT OURSELVES." - BOB CALDWELL, PRESIDENT

That was the mission statement that became IDAG. We started by acquiring companies and hiring people that fit the mold of discipline, attitude and dedication to excellence."

BUILDING A BETTER MOUSETRAP

The initial growth of the company was cautious but continuous. "Piece by piece, we've built a company in a way that is logical and meets our demand for quality," said Caldwell. "We knew we could build a better mousetrap."

The full quote from Ralph Waldo Emerson is, "Build a better mousetrap and the world will beat a path to your door." Along with his business partner in Central Europe, Caldwell soon found that to be true. IDAG became a sales representative for MD Helicopters, a relationship formed from Caldwell's previous experience with the company and one that has continued ever since.

The acquisition of a flying school in Eastern Europe followed. There was a further opportunity to expand in 2016, when several surplus MD 902 Explorers came on the market, along with a simultaneous requirement from the Hungarian Police.

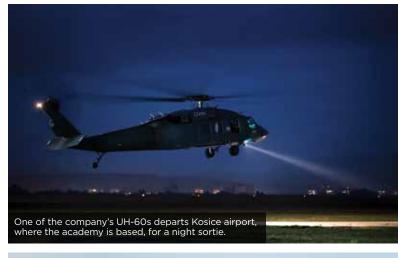
IDAG arranged the procurement of several aircraft from an operator in Europe, and others from surplus as the U.K.'s National Police Air Services (NPAS) was consolidated. As a result, the aircraft all had a slightly different configuration and the first challenge was to homogenize Hungary's new fleet.

"There was no continuity and no consistency in the cockpits or mission equipment of the acquired aircraft," said Caldwell, "We were the first to certify a Universal glass cockpit in the MD 902 and we did that ourselves."

The glass cockpit was installed not in an effort to provide any specific instrument flight rules (IFR) upgrade, but rather to future-proof the aircraft and reduce the pilot's workload. "The aircraft is a dream to fly," Caldwell explained. "And with the existing autopilot and the Universal cockpit, it makes it safer and brings it up to a modern standard." The aircraft were modified in partnership with Specialist Air Services in the U.K. New paint, a FLIR Systems camera and a Spectrolab Nightsun searchlight completed the specification before the aircraft were given fresh annual inspections. "The aircraft were rolled back to a practically new condition," he added.

To service the support requirements of the Hungarian Police Air Service (HPAS), a new company was formed. Aero IDAG moved into a hangar opposite HPAS at Budapest Airport. As well as having





The academy's instructors have hundreds of years of collective combat aviation experience and are hand-picked for their temperament.



Before IDAG had even come into being, former Slovak Air Force nstructor and combat veteran Peter Korba had hopes to establish a military helicopter training academy in the country.

the contract to supply spare parts, Aero IDAG is Hungarian Military Aviation Authority-approved, European Aviation Safety Agency (EASA) part 145 certified and an MD Service Center.

"We service the aircraft and provide spares and technical advice, and we handle overflow maintenance for the police," said Caldwell.

The MD 902s replaced an aging fleet of Eastern-bloc Mi-2 helicopters that, while typically rugged, were showing their age. The change in aircraft complexity and engineering philosophy was a challenge for IDAG to address. "It was a learning curve," said Caldwell. "In my estimation, the MD 902 is the best light helicopter in the world and, even though the design is 20 years old, it is a very sophisticated platform, so we hired several of the most experienced MD 902 maintenance people in the world to work on the aircraft."

IDAG also supports HPAS MD 500s, as well as having factory-trained mechanics for the Airbus Helicopters EC135 and EC145, and Bell 206. "The customer trusts us and, with our direct line to MD Helicopters, we can act as a conduit between them because we want to provide the customer with the best possible solution," said Caldwell.

With the government approvals, EASA certification and the wealth of experience on-site, IDAG also has the capability overhead to serve other clients, whether that is the Hungarian government or commercial operators in the wider region. Such an operation, just over the border in Slovakia, is one with which IDAG is already very familiar.

A SLOVAKIAN SOLUTION

Before IDAG had even come into being, former Slovak Air Force instructor and combat veteran Peter Korba had designs to establish

a military helicopter training academy in the country. With its Mi-2s retired, Slovakia was left only with Mil Mi-24 and Mi-17s — large helicopters completely unsuitable for basic training. Having commanded a training squadron himself while in the service, Korba was ideally placed to provide a solution and established Heli Company in 2004. The company won its first contract to train Slovak military pilots in the same year.

Training began using Schweizer S300s and a basic syllabus. "We started with basic training, a little more than PPL [private pilot license] standard," he explained. "The POI [program of instruction] was set according to the air force requirement."

Within a few years, the company had realized that, with its expertise, it could offer more advanced training, specifically focusing on emergency drills such as autorotative landing. "We also expanded what it was possible for us to deliver to the air force," said Korba. "Step by step, we began training to CPL [commercial pilot license] standard and then more advanced military training."

Heli Company had designed a pretty good mousetrap itself, and in 2015 a path was beaten to its door by European Air Services. Based in the Czech Republic, they proposed an international training center for military helicopter crews in Slovakia. While commercial training would continue, the new academy would target military training specifically. "It was a big challenge, but a great opportunity to bring interesting work here," explained Korba. "We remain open for civilian training, but our focus is on military training and we have been training military students from all over the world for more than two years now."

The acquisition of the majority share of Heli Company by European Air Services brought Korba into the orbit of IDAG. "My partner in IDAG





Certified Installation
Active Noise Reduction
Bluetooth
3 yr Factory Warranty
Quick Disconnect
Built For Your Helmet

The only premium
ANR system for helmets
that is purpose-designed by
Lightspeed for this demanding
task – installed by factory
trained and certified installers



LightspeedAviation.com

was also the founding partner of European Air Services," said Caldwell. While each company is distinct in its organization, Caldwell says they share common roots. "We have grown the family so that every one of the companies under this umbrella specializes in a different discipline and is the best at what they do. We complement each other."

IDAG's purchase of USATS added the final piece of the puzzle to provide what Caldwell calls a 100-percent solution. "We were able to take that core model, the years of experience and the lessons learned, and transplant it to other places in the world," he said. "The partner companies had a concept for a military flight training center of excellence, and with Heli Company we can cover every aspect of flight and aircraft maintenance training."

With the human and financial capital having finally coalesced in Slovakia, it became the natural venue for the proposed training facility. The newly minted Slovak Training Academy (STA) was established, and while commercial training is available, the focus is firmly on military training. The customers are not the students themselves, but rather their home nations, which desire a well-developed aviation capability but lack the collective experience necessary to train their personnel from scratch. The training is impressive in both its breadth and scope, most notably an integrated end-to-end program designed to produce combat-ready crews qualified on their front-line type.

Caldwell explained that students for this program arrive as "penguins."

"We give them a flight suit and they might have a big watch and Ray Bans, [so] they look like they can fly, but they can't yet. By the time they leave our school, they'll be eagles and they really can fly." Students must first pass initial entry rotary-wing (IERW) training, as Korba explained. "The S300 is used for basic training before progressing to the MD 500, and this is the perfect combination of types for effective training."









MD Helicopters, Inc. has delivered preferred rotorcraft solutions for airborne law enforcement operations for more than 50 years. With aircraft that are fast, safe and agile, MD Helicopters' airframes are perfectly suited for the most demanding missions; from ground support and SAR, to special operations and hot-high performance.

The M • 530F° – equipped with the 650 shp Rolls-Royce 250-C30 engine – is engineered specifically to meet the performance requirements for hot-day, high-altitude operation, while offering the lowest cost of ownership in its class.



MD HELICOPTERS**

MADE IN AMERICA

★ MD MD HELICOPTERS.COM

PENGUINS PROGRESS

Having learned the basics and experienced their first turbine type, the penguins' wings have developed enough to progress to their selected type. "We have a group who started on the S300 and are now finishing on the UH-60," said Korba. "We also train MD 530 advanced tactics and Mi-17 AQC [aircraft qualification course] here."

The pace of this progression shouldn't be underestimated, particularly since not only are the students' first languages not English, but their cultural references are likely to be very different and educational standards varied. While this has no bearing on their potential, it does present a hurdle for the instructors, as IDAG's chief UH-60 flight instructor Eddie Rodriguez explained. "Heli Company has done an outstanding job teaching them basic maneuvers and they hand-fly the aircraft very well, but the language barrier can still be a challenge."

A former U.S. Army warrant officer with a variety of combat and training roles in his resumé, Rodriguez is also the aircraft qualification training program manager, responsible for recruiting into the IDAG instructor cadre. His top priority is getting the right people into a job that doesn't suit everybody. "Pilots must have served as instructors and have deployed experience," he explained. "However, part of the job specification is personality. Of course, we want good people with good experience and work ethic, but their personality must fit, too."

Experience teaching foreign students is preferred, and patience is also likely to be high on Rodriguez's list of desirable qualities, as initially it can take an hour to complete a pre-flight and another just to start the aircraft. The training flight itself can last between two-anda-half and three hours, which is a tremendous amount of time for the students to maintain concentration. At this pace, however, an IERW graduate will become a UH-60 pilot in just 12 weeks.

Learning to fly complex helicopters is stressful enough, doing so in a limited time makes it more so. A long way from homes that might be in perilously unstable parts of the world, the students at STA deserve the utmost admiration.

A team of professional mentors, all of whom are former combat pilots or maintainers, ensure that the students are comfortable and all their needs are met. "Part of their job is to go back to the barracks and talk to the students from time to time," explained Rodriguez. "If the students are having a hard time, they sometimes don't want to talk to the instructors. They speak to our mentors more freely, but the feedback so far has been good."

For Caldwell, finally graduating his students as "eagles" is a source of tremendous pride. "They've still got the flight suit and maybe a bigger watch now, but now they really can fly," he said. "It's a tremendous accomplishment and you can see it in their faces because they know that nothing was given — they've earned it. We demand perfection and we only settle for excellence."

Students entering the UH-60 courses will soon benefit from the addition of two more aircraft due to arrive in early 2020, bringing the fleet to six flyable machines, with two for maintenance training. Client states are also likely to benefit from the recent acquisition of several MD 530F helicopters, received in mid-2019.

"I have a long history with MD and a love of their product line," said Caldwell. "The 530 is used specifically for NVG [night vision goggle] and tactics training, and we have significant interest in it from new customers."

IDAG's MD 530Fs have been specified precisely to garner such interest. It is no coincidence that the cockpit and avionics are identical to that of MD's armed scout/attack helicopter, the Cayuse Warrior. The fit and function is precisely replicated in the





Whether it's parts, accessories or services, Aviall has the cost-effective, value-added solutions needed to keep your helicopter flying. In addition to OEM-certified new parts and spares, Aviall now offers used, serviceable materials and rotable parts for multiple rotorcraft platforms and weight classes including Bell, Airbus and Leonardo. **Talk to your Aviall representative today about all of our helicopter solutions.**

PROUDLY KEEPING THE WORLD IN FLIGHT

aviall.com/helicopter

1-800-AVIALL-1







SPECTRUM

> Supporting Life.

Customized Solutions for Your Air Medical Needs.

701-638-3903 | spectrum-aeromed.com

IDAG aircraft, down to the cyclic sticktops and even the seats. "It's the first of its kind," said Caldwell, explaining the design logic. "The Cayuse Warrior is a fantastic scout and light-attack aircraft. MD has had great success with it and we want to be along for the ride."

SHARED REWARDS

Regardless of the success of its preferred aircraft manufacturer, IDAG has created the conditions not only for its own success, but for that of its partner companies; achieving through collaboration and partnership what would have been almost impossible with competition and conflict

While their early successes were doubtless the result of the same ethos, their cooperative approach is most epitomized in the coalition of expertise that formed the Slovak Training Academy. Such talent does not come together by chance. The staggering complexities of delivering non-commercial military training - in privately owned and state-registered aircraft with a civilian staff - are not resolved without hard work, intimate industry knowledge and clear-minded determination.

The direct beneficiaries of these qualities, in Slovakia at least, are the penguins who are gradually becoming eagles. The sense of reward that the newly minted pilots and maintenance technicians feel as they graduate is echoed by the company management, maintenance and flight instructors who have provided the conditions necessary for their success. With hundreds of years of collective combat aviation experience and hand-picked for their temperament, there can be few better qualified to prepare pilots and maintainers for the rigor that they will likely face when they return home.

"We have some of the best people in the world," Caldwell said of the instructors. "We are calculated, methodical, patient and persistent. We will not compromise when it comes to the quality of our personnel or equipment."

This deliberate approach is perhaps the key strength of IDAG and its partners. IDAG is working to be among the best specialized aviation solutions providers in the world. If it continues on the track it appears to be on, it will be able to take its pick of quality personnel.





GONG FISHING

FROM FINDING SHIPWRECKED CREWS, TO WATCHING PODS OF DOLPHINS PLAY IN THE WAVES, TO VISITING SOME OF THE MOST REMOTE ISLANDS ON EARTH; MATTHEW HAYES GIVES HIS TAKE ON LIFE AS A HELICOPTER PILOT ON A PACIFIC OCEAN TUNA BOAT.

STORY & PHOTOS BY MATTHEW HAYES

So, there I was, first trip out, flying at 1,000 feet (300 meters) in the middle of the Pacific Ocean, 800 nautical miles (1,480 kilometers) from land in any direction. There was a decent breeze, a good swell and even from 10 nm miles (18 km) away I could see our boat punching into it, sending white water spraying off the bow. I had 25 minutes of fuel on board and no place to land except our boat or the sea. As I got closer, I could clearly see the boat heaving in the swell. My eyes were wide as I flew the approach and, with concentration levels dialled up, I stuck it to the pad as trained. My mechanic ran out to strap the machine down. He got the first one on and I rolled the throttle back to ground idle. I could taste the sea spray off the bow. I was flying off tuna boats and loving it!

I had always been interested in aviation and gained my fixedwing private pilot's license (PPL) at 21 years old. I then spent 13 years as a skydiver, working as a tandem master, instructor and cameraman around the world, before working offshore in the oiland-gas industry while I gained my commercial pilot's license.

Getting that first piloting job was hard. I made a few laps of New Zealand and on the east coast of Australia, knocking on doors and visiting anyone with a Robinson R44 who might hire a new commercial pilot. I was fortunate to pick up some casual seasonal work flying frost protection on vineyards, as well as flying with some private R44 owners, to help build my hours.

I was sitting on an oil rig in East Timor scrolling through job ads online, which all seemed out of my reach, when I saw an ad for a tuna pilot with Tropic Helicopters. They required a minimum of 1,000 hours, which I was well below, but I thought I'd make contact as I'd heard of guys getting out there with less.

It turned out the 8,000 skydives on my resume caught the attention of Tony Artiga, the company's chief pilot. Three weeks later, I was at their base in the Solomon Islands getting put through my paces in an MD 500C. I had a few hours in a 500, but still found it to be a bit of a handful. Artiga, a very calm and patient instructor with significant military flying experience, quickly brought me up to speed (he is also very knowledgeable about maintenance, and during my contract, we always got the support we needed from him). After a week, I was sent out on my first boat for offshore training.

We set sail out of Tarawa in the Marshall Islands, and I spent the next three weeks getting shown the basics of how to operate a helicopter off a tuna boat. My instructors, JB and Ryan, were both ex-Philippine air force — JB as a pilot and Ryan as a mechanic. They both had thousands of hours' experience on Bell Hueys and 500s, plus years of experience on tuna boats.

Prior to this training, I was anxious about two things: How do I find the boat and how do I land on it?

JB didn't see much point in training me in calm wind conditions, so would usually wait for the wind to kick up a bit. We started off with a stationary boat, then moved towards the boat at half speed, then to a cruising speed of 16 knots. First, we trained

with the wind on the nose, then tried the various out-of-wind approaches and techniques for landing on a pitching, rolling and heaving deck. You can effectively control the relative wind by turning and slowing the boat if needed, which I ended up doing a couple of times over my contract.

LEARNING TO FIND FISH

I had been told that the position was a remote-area operation and was not suitable for people who need to be spoon-fed. The chief pilot would put the less experienced guys on the Korean boats for their larger decks and D models with a C20B for the extra power. I ended up working on two boats during my contract, and both of them were Korean. From what I'd heard and seen, the food and accommodation were better, but you typically didn't fly as much as the guys on the Taiwanese boats.

The crew on both boats were great guys who worked hard, and my own hours increased along with my experience. I went from flying 20 hours a month at the start, to up to 90 hours some months towards the end of my contract.

The helicopter is typically used to look for fish, although sometimes it's used to transfer parts between boats, as a medevac, or even just dropping the captain to a friend's boat for refreshments.

Typically, I'd fly two to three times a day with a spotter, who was normally the second or third officer. We'd fly an upside-down triangle search pattern from the boat, looking for fish up to 35 nm (65 km) away from the boat. That's at least two hours away from



the boat if you have to ditch. The boats have very good radar systems that could pick up flocks of birds from miles away, so we'd be sent out to see what the birds were up to. Were they following fish? If that was the case, it would save the boat a lot of time.

We were often searching for fish-attracting devices (FADs), usually manmade rafts with several meters of netting underneath. These would serve as a safe haven for small fish, which would attract bigger fish, which in turn would attract tuna.

FADs can have hundreds of tonnes of tuna with them, so are of high value to the boat. But they are also typically small and well camouflaged, so can be hard to spot, especially in rough weather. Suffice it to say, once you have spotted one, you don't want to lose sight of it. I made that mistake once, but soon learned to lock onto them.

We had our own FADs with GPS locator beacons attached to them, but the game was to find FADs belonging to other companies' boats, remove their beacon, and attach yours. Every company was at it.

As the helicopter pilot, you're not required to look for fish, but if you learn to spot and estimate tonnage it's appreciated by the captain and your spotter, plus it gives you something to do besides calculate fuel burn, wind, and time and distance to the boat.

The helicopter was sometimes used to encourage the fish to stay in the net (this is called "herding") before it was closed. Some captains use the helicopter for this every set, but I was only asked to do this a few dozen times.

The company would get huge fines or lose its fishing licence if the operators fished illegally, and the boat had an independent fisheries observer onboard to ensure all was "above board." Still, I wasn't so keen on seeing hundreds of tonnes of fish come aboard destined for a can.

LIFE AT SEA

As a contractor, I was simply required to fly and keep the helicopter in serviceable condition. This meant there was a lot of downtime to read, watch movies, study, and watch the world go by. I took lots of photos and edited some videos.

Some days were just unreal: Seeing massive whales breaching while feeding; hundreds of tonnes of tuna feeding; watching whale sharks, manta rays and huge pods of dolphins on the move. It was amazing. Plus, there were some incredible sunsets.

It was pretty much always 35 C (95 F) during the day. My mechanic Bob and I would often sit on the heli deck at night enjoying a beer, looking at the stars, spotting satellites and shoot-

One night I saw a small meteorite that came within a few miles of our boat. It streaked across the sky in front of me before hitting the ocean. I could see great detail in its contrail, it was that close.

Early on in my contract, I was out on a routine patrol looking for FADs. About 400 nm (740 km) northeast of Pago Pago, American Samoa, I spotted something that I thought was a FAD, but soon realized there were people waving from it. I descended to sea level from 800 feet (250 meters) to get a closer look.

There were 11 people sitting on top of a makeshift raft, and not one of them had a life jacket, so I was mindful to keep at a safe distance and not disturb them or the water with my rotorwash. We radioed our boat, which was 90 minutes away, to give them our position, and tried to signal to the people on the raft that the boat was on its way. We were running low on fuel, so returned



Matthew Hayes (right) developed a great working relationship with the MD 500's mechanic, Bob (left), who happily shared his extensive knowledge of the type.





Bob repairs a cracked chin bubble on the MD 500 at the end of a long day's work.





to the boat. It was a calm clear day, so there was no danger of losing them.

An hour and a half later, we pulled alongside them and launched our net boat to recover them. Our Indonesian crewmembers translated their harrowing story.

They were longline fishermen. The captain and first officer were from Taiwan and the rest of the crew from Indonesia. Three days earlier, they had been taking a break after lunch and the boat was drifting. Everyone had been asleep. They believed their captain fell asleep with a lit cigarette on the go, and set fire to his room. By the time the crew knew what was going on, the fire was out of control, and one crewmember died trying to save the captain. They realized they had to abandon ship, grabbed whatever personal belongings they could, and threw large polystyrene blocks over the side to create a makeshift raft.

They spent three long days and nights on the raft before we found them. Fortunately, it had rained the night before, and they managed to suck some water from their clothing. They stayed with us for three nights, and then transferred to one of their company's sister ships.

A LAUNCHING PAD FOR A CAREER

From what I could see and what I heard, the experience of a helicopter pilot working on a tuna boat depended on a huge variety of factors: which boat you got; the captain; the condition of your helicopter; which islands you stopped at; the knowledge, experience and attitude of your mechanic; and, of course, your own attitude and expectations. I had a pretty good run with the boats I was on, as did many other pilots I met in the company.

My guru mechanic, Bob, who is now a good friend, had spent 20 years in the Philippine air force working on MD 500 gunships and had worked 10 years in the tuna grounds. He'd only ever worked on 500s and knew them inside out, so I was in pretty safe hands. We never had any down time through machine issues and it flew smooth. He was also happy to teach me about the 500.

The machine was constantly being maintained and corrosion control was a daily battle. Most of the major maintenance and balancing was done during the two or three days in port while the boat was unloading. The helicopter was inspected by the company whenever in homeport and again at the end of my contract. If it had been in bad shape, the company would not have been impressed.















Boat life can be tough. You're away from your family for over a year, you're most likely the only one on board who speaks your language, and you're at sea anywhere between two and nine weeks at a time with limited communications. Fortunately, I have a very understanding wife who supported me in chasing this dream. I was in daily contact with her through my inReach GPS and she could track me. In the end though, we didn't see each other for almost 18 months.

Overall, I found flying off tuna boats an amazing adventure. I got to see some places that I'd probably not have visited otherwise, such as Pohnpei, Tuvalu, and the Marshall and Solomon Islands. Over the 14 months I was on the boat, we covered an area twice the size of Australia. I met some good guys from all over the world. Some of them used the turbine experience they gained to move onto other roles. One went to a co-pilot position bucketing fires in Chinooks, another guy is flying fire suppression in Chile and Italy, others moved on to medevac.

After my contract, I was lucky enough to land a job with Glacier Country Helicopters in the Southern Alps of New Zealand. I'm currently getting trained on the ins and outs of mountain flying, as well as dealing with powder snow and flat light conditions. It's another steep learning curve and I'm soaking in as much as I can. Without the 500 hours turbine time I picked up on the boats, I wouldn't have got this break.

I'm by no means an authority on flying off tuna boats, just a lowhour pilot who got a start and has first-hand experience of being out there and flying a one-year contract. The work and lifestyle wouldn't suit everyone, but I loved the experience it gave me. >



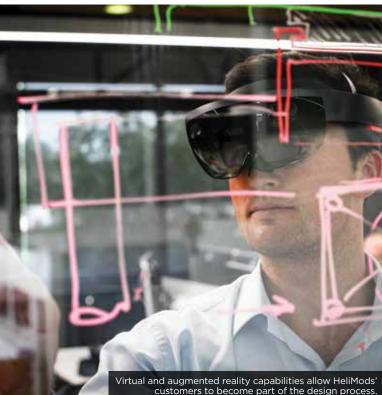
Matthew Hayes | After performing more than 8,000 skydives, Matthew Hayes pursued his long-held dream to become a rotary-wing pilot. He now works as a mountain helicopter pilot for Glacier Country Helicopters in Franz Josef, New Zealand. Follow his journey @helihaze on Instagram.











Helicopters by their very nature are complex machines, and so are the specialist equipment and systems that occupy their interiors. Getting the right design and functionality for crews to carry out specific missions with greatest effect is a formula that is being developed Down Under by HeliMods.

Riding a wave of innovation and investment, this medium-size aerospace technology company has been delivering bespoke helicopter modifications and internal configurations fitted with the latest technologies, primarily for emergency medical services (EMS), search-and-rescue (SAR), and law enforcement operators, both locally and internationally, for more than

HeliMods' facility is headquartered at Caloundra Aerodrome, an hour north of Brisbane on Queensland's laid-back Sunshine Coast. The plethora of awards hanging on the walls tell the story of the company's entrepreneurial journey since 2002. Will Shrapnel, HeliMods' founder and managing director, says the early days were focused on design and certification work in support of maintenance, with customized modifications a minor side interest.

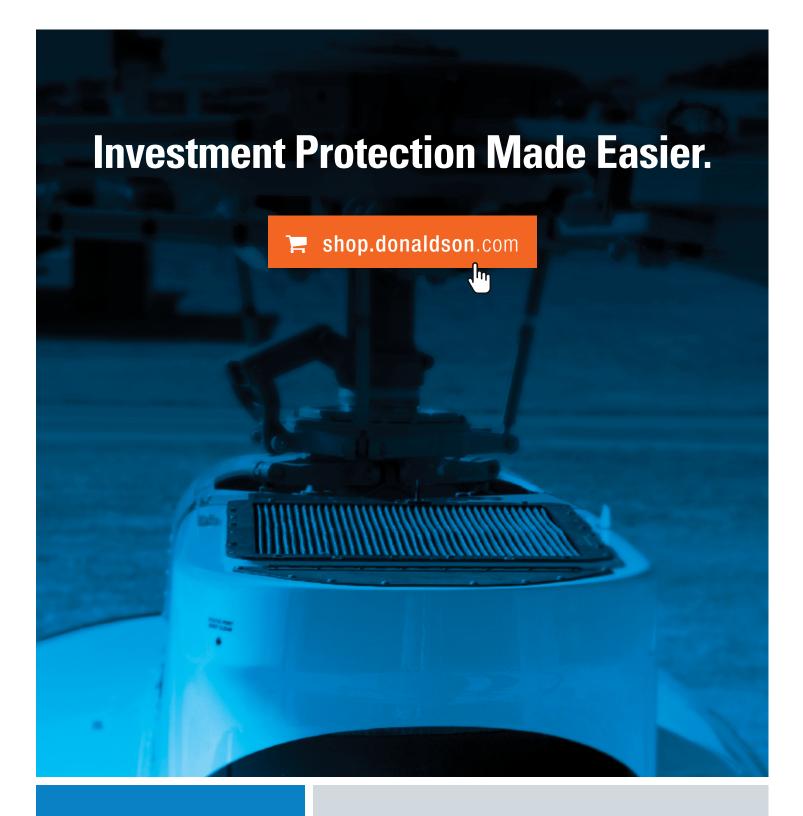
"The modification projects grew from being a 'now and then' sort of thing into one day a week, then a couple of days a week," Shrapnel told Vertical during a visit late last year. "Within three to five years, probably half of my work was designing and incorporating minor modifications into helicopters. From there, the opportunities grew in designing and developing products, and I started to employ people."

Then came larger contracts. When the Queensland government procured the country's first fleet of Leonardo AW139s in 2008/2009, HeliMods got very busy designing and developing products for modern helicopters.











Protecting your investment is easier than ever before. We've unveiled an online solution designed to quickly and easily keep you mission ready anywhere in the world. **Visit Donaldson Filtration Solutions at Heli-Expo 2020, booth 3404** to see for yourself how easy investment protection can be.









HeliMods grew — and so did its workforce — as it continued to invest in contemporary software and hardware technologies. Shrapnel, a pilot and licensed aircraft maintenance engineer, attributes the success and growth of the business - now recognized globally — to the right formula of technology investment and recruitment of talented people.

"We actually have a global workforce," Shrapnel said. "We've got talent that has really sought us out from around the world. I'm one of the few Sunshine Coast locals. People with different backgrounds from different organizations are moving here to be part of this journey of innovation and investment in tech and talent."

"THE INVESTMENT IN TALENT THAT MATCHES OUR TECHNOLOGY GIVES US A DEMOGRAPHIC SHAPE THAT'S YOUNG, THAT'S ENERGETIC. THAT REALLY WANTS TO DRIVE TECHNOLOGY TO THE LIMITS."

- WILL SHRAPNEL, HELIMODS' FOUNDER AND MANAGING DIRECTOR

A YOUTHFUL WORKFORCE

HeliMods has attracted a younger team, with a lot of degree-qualified engineers, programmers, and technicians who are comfortable being in the digital space because of the company's big investment in technology.

"The investment in talent that matches our technology gives us a demographic shape that's young, that's energetic, that really wants to drive technology to the limits," said Shrapnel. "In our engineering team, we have just under 30 CAD workstations where we drive all our projects from. Then there's the production team that runs and supports manufacturing activities. Depending on where we are in project cycles, we have up to 50 people."

From the very early days of the business, when HeliMods started to develop its unique solutions and products, Shrapnel invested in computer-aided design and engineering that was probably disproportionate to the size of his team back then.

"I really wanted to build a foundation that could scale a digital enterprise, where we could reuse a lot of our data," said Shrapnel. "Getting into that whole environment is a mindset. It's a long-term investment to really understand what technologies to bring in, when and where. I guess what we have done in this space has set a new standard of sorts for the rest of industry to look at."

The development of its homegrown Powered Aero Loader (PAL) product has put the company on the map. The HeliMods PAL is a zero-lift, push-button operated powered stretcher loader system that offers effortless loading and unloading by paramedics and aircrew between helicopter and ambulance vehicles.

PAL was the product of years of work and significant investment and is now in use in Canada with Ornge — Ontario's provider of air ambulance services. PAL systems entered service on a rolling schedule throughout 2019 at each of Ornge's eight helicopter bases across the province.

Optional Aux Fuel Tanks Extend Flight Endurance Up to 5 Hours

R66 OPTIONAL AUX FUEL TANKS

OR

23 GALLON TANK

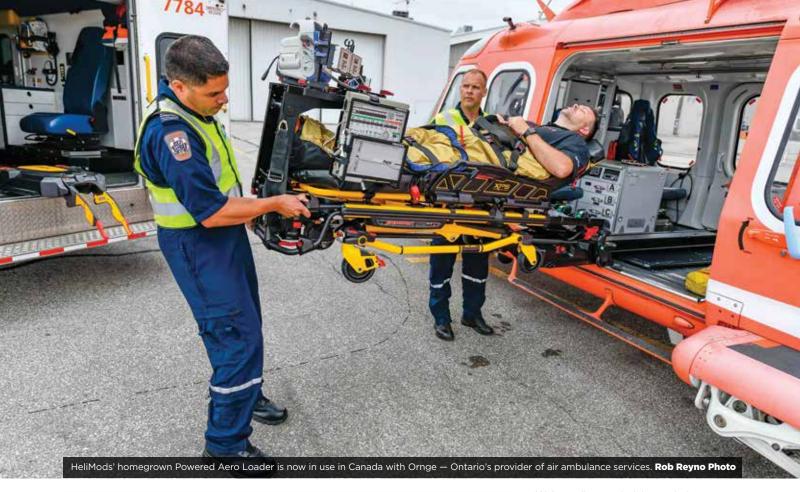
1 HOUR FLIGHT ENDURANCE OVER 100 NAUTICAL MILES* **43 GALLON TANK**

2 HOUR FLIGHT ENDURANCE OVER 200 NAUTICAL MILES*

Contact Your Local Robinson Dealer



www.robinsonheli.com





"We're really proud of the work the team did, and it's been a great result for Ornge," said Shrapnel. "It is an amazing story and amazing outcome for an organization that wanted to really raise the bar for standards in patient care and paramedic care and bring a better outcome for their community."

Walking out on to the hangar floor for a tour around the facility, there is an immediate sense of professionalism. The clean and well-organized hangar space - one of several occupied by HeliMods at the airport - houses an array of machining, fabrication and assembly workshops, all with the latest in equipment. A prototyping floor holds a fullscale one-to-one AW139 mock-up fuselage.

VIRTUAL REALITY AS A TOOL

HeliMods' "wow factor" is provided by virtual and augmented reality tools, which are key to creating its custom fit-outs. Donning a HoloLens headset, a customer can climb aboard a physical AW139 mock-up to look around the cabin and cockpit and "virtually" touch and see their chosen interior configuration. In addition to holograms, the mock-up can incorporate real components during the design and creation of a cabin configuration, making it a sensory-rich experience for the customer.

The HeliMods facility is set up so that a customer and their team of end users can essentially move into and become part of the design development process.

"They've got access to our whole engineering team and our whole tech stack so that, during the course of a day or a few days, they can actually transform requirements into in-cabin configurations that are going to work," said Shrapnel. "We will either produce physical objects like 3D print or will make real-size products, or we can actually install holograms or virtual reality overlays in the space.

"We are portable with our hologram representations of a whole aircraft environment, so we can now take them to a customer and actually install them in an empty aircraft to show them what they're going to get," he said. "We will just take a HoloLens headset and you can actually immerse in the environment where it's mixed reality - real physical objects with holograms

- and our team can be working on those
- same environments back here. So it's a pretty amazing process."

As a counterpart to the work they do in the virtual space, HeliMods also does a lot of work in bringing the physical into the digital domain. Investments in 3D scanning technologies let HeliMods capture highly accurate physical representations of any interior, product or component, converting them into fully rendered digital models.

"Our 3D scanning tech lets us go out to a fleet and take a representation of an aircraft, down to 40 microns in accuracy," said Shrapnel. "We can send that [3D file] directly to our local engineering team here so they're working on a global problem instantly."

HeliMods is making further investments — like Wi-Fi and software — in other technologies around future cabin environments. Taking a whole-of-cabin approach will allow more information to be shared between aircrew, medical crew. and crews on the ground. HeliMods is currently working on new Australian state government police aircraft, including three new AW139s, which are expected to enter service soon.

"The technology they will have represents the absolute leading edge of the industry for sure," said Shrapnel. "We're developing a number of new innovations in cabin fitouts for the aerial policing role. The work that our teams are doing in the tactical aircraft space will also bring significant benefit back into HEMS aircraft."







AMSTAT PROVIDES INDUSTRY LEADING CORPORATE AIRCRAFT MARKET & FLEET DATA

- lets
- **Turboprops**
- **Turbine Helicopters**

In a suite of comprehensive services to meet every business need



Information that moves you forward

US 1 877 426 7828 | Int'l +1 732 530 6400 | www.amstatcorp.com

LONG-TERM PARTNERSHIPS

Designing for efficient maintenance and adaptability are a key focus to every HeliMods project. When a helicopter leaves the hangar, the partnership throughout the life of the machine is just beginning.

"Operators of fleets have historically looked at a five- or 10-year procurement cycle, whereas we promote a more progressive approach that says, 'As soon as new technology becomes available, we'll let you know about it.' Then we can work on how that might be integrated," said Shrapnel. "You have a helicopter that can operate and do its job, and if its job changes, then then you've got a tech partnering organization that can bring that change to bear. We aim to partner with organizations that can share a view and understand a value in taking a long-term view to how they want to operate, rather than a short-term view of, 'How do I save five or 10 percent on an

"That's some of the unique work that we're doing through current state government programs. Our key customers have worked with us to implement configuration lifecycle management, allowing us to bring them new technologies as soon as they're available, so they can always have the latest and the best on board their aircraft."

Having an in-house prototyping capability, coupled with advanced machining and manufacturing, lets the engineering team at HeliMods conduct tests and trials to understand which solution will work the best. At times, engineers will develop concepts in composites and

> alloys to determine the best material for the product.

"That's where we are quite unique." said Shrapnel. "We would be one of the few organizations globally that has an engineering team that's so connected to its production capability. So our engineering team really needs to understand its options in materials and production and know-how to design to get that product into the aircraft."

With contemporary technology in the hands of the right people, that adage of "the sky is the limit" rings true for HeliMods, as Shrapnel keeps a close eye on the future of the modification business. If Shrapnel is awake at night, he's either working or giving serious thought to the future opportunities of the aviation industry as it transforms and grows to embrace the next generation of vertical lift.

"Those new and emerging technologies do require a different breed of engineering, team, and approach — I can't wait to see the multicopter space really work well," said Shrapnel. "There's going to be so many complementary roles for some of the shortrange, short-duration flight for vertical lift, particularly in dense, urban environments. The mod space is still going to be really interesting, because those in the multicopter space and electric air vehicle space, they'll still be mission-configured aircraft."

Over the next few years, HeliMods anticipates it will double in size - both in building layout and staff capacity - to support offshore production lines as well as supporting helicopter fleets in other geographies.

"A doubling in our size will probably be more like a 10-times in our effect," Shrapnel said. "We'll be able to spread out as a team and then tackle some of the new and emerging problems in different air domains. It's a pretty exciting future."





We have more than 1,500 avionics and instrument repair capabilities, including NDT, on the following model helicopters: Agusta (A109A/C/E), Bell (205, 206, 222, 412, 430, 212, 214, 429), Airbus (AS 350B/C/D/E, AS355F/N, SA 365C/N), McDonnell Douglas (369D), Sikorsky (S-76A/B/C, S-92A)



Paul Sadler | An Australian-based freelance photographer and journalist who has covered the civil and military rotary-wing industries for more than 25 years. Full-time, Paul is a media and com-

munication manager within the Australian transport industry, having worked for government and private



The Mission Wireless Intercom



Robust range

Robust range capabilities in- and outside the cabin, for all operational requirements



Qualification

Certified airworthy to aviation authority requirements



Secure communication

Inherent secure com based on AES 256, FIPS 140-2 or embedded hardware encryption



Design

Intuitive and easy to operate, ruggedized all aluminum housing. Amphibious variants available



Clear communications

Full duplex, adaptive noise cancelling, echo cancelling and non-interrupted VOX



Positioning

Secure GPS position reporting of remote crew and optional AIS SART distress feature



Versatility

Connects to all major ICS brands and all standard headsets and helmets

Intercom, Direct Mode and Local Mode



Group support

Groups and intercom loops with simultaneous multiple group attendance on a single frequency



Dual band

Operational modes

UHF and VHF frequencies available



Remote radio keying

Allows access to other platform installed radios for outside crew



NVG

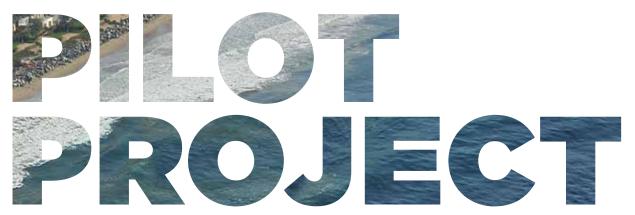
Class B



For product inquiries: post@axnes.com

axnes.com





FOR 30 YEARS, KEN OBI AND ORBIC HELICOPTERS HAVE BEEN GIVING PILOTS THE SKILLS THEY NEED FOR SAFE AND SUCCESSFUL CAREERS.

STORY & PHOTOS BY SKIP ROBINSON

Over the last 30 years, Ken Obi, owner of Orbic Helicopters, has built and maintained a reputation for exceptional flight training and helicopter flight services in Southern California. His company's development owes much to Obi's own reputation as a pilot - he has recorded more than 18,000 flight hours, and 13,000 of those spent training pilots in Robinson helicopters.

Obi's love of helicopters began early. "I took a helicopter demo flight when I was 20 years old and got hooked on helicopters at that moment," he said. "I obtained my private airplane license at Santa Monica Airport and continued on to a commercial helicopter license and CFI [certified flight instructor] at Van Nuys Airport."

In 1990, Obi took over a failing flight school at Van Nuys Airport, near Los Angeles. His goal was to produce the safest, besttrained student pilots possible. "I have found that flying with pilots from all over the world, with varying degrees of experience from private to military trained — taught me a lot and made me a much better instructor and pilot," said Obi.

In 2005, Obi relocated Orbic to Camarillo Airport, located about 40 miles (65 kilometers) northwest of Los Angeles, in Ventura County. Orbic moved into a freestanding office/hangar facility which has fit the company's needs ever since. Camarillo is a great environment for helicopter flight training. Weather-wise, it is flyable almost 365 days a year, other than some early-morning fog during spring and fall. The average daily temperature is very consistent - 19 C (66 F) in winter and 23 C (73 F) in the summer. It rarely gets cold and the only snow is in the mountains. The airport is easy to access, with local accommodations, food, shopping and the beach only a few miles away.

"My goal since day one has been to produce pilots with excellent skills and, in particular, proper judgment," said Obi. "Helicopters are interesting machines with the ability to land offsite, in the

mountains and other places a fixed-wing pilot will never experience. These new (or old) pilots need to be able to recognize a bad situation and how to avoid it. This is what we try to do have our students think things through and make the right call, hopefully every time. A smart pilot is a safe pilot. We feel preventing accidents is best for Orbic, the student and the helicopter industry as a whole."

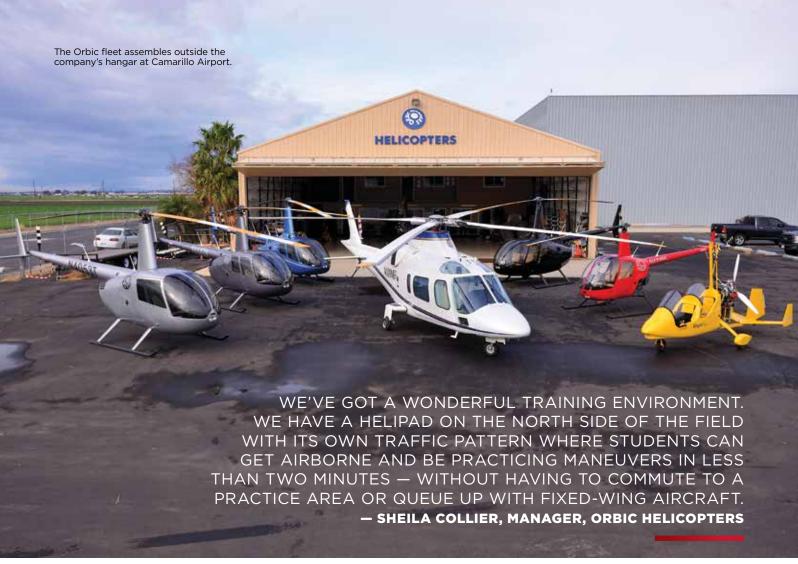
Obi became a Robinson pilot safety course instructor in 2002, although he hung up his khaki-colored flight suit in 2017 to focus on company operations. Robinson was sorry to see him go.

"Ken Obi is one of the most competent, sincere flight instructors I have encountered in my 48 years of flying," said Tim Tucker, Robinson's chief safety instructor. "His knowledge, proficiency and professionalism while a Robinson safety course instructor reflects great credit on himself, Robinson Helicopter Company, and the entire helicopter instructor community."

Orbic currently operates a Robinson R22, R44 Cadet, R44 Raven I, R44 Raven II, and two R66 Turbines. Also in the fleet is a Bell 47G3B-1 and a bright yellow Magni Gyro M16 autogyro. For twin-engine training, Orbic operates a Leonardo AW109E Power.

The Bell 47G3B-1 is the latest addition to Orbic's fleet and is Obi's personal helicopter. The aircraft will not be used for flight training but will be available to the public for tours or pleasure flights. This Bell 47 has passed through a couple of owners in the last 20 years, and each has kept it in pristine condition. With a full custom leather interior and a nice suppressed exhaust, the helicopter flies like it's made of one piece. "This was a present to myself," said Obi. "It really flies beautifully and is a superb example of the breed."

Orbic's newest venture is a program to train people to fly autogyros, in particular the Magni M16 Tandem Trainer. This Italian



aircraft cruises between 75 and 95 miles per hour (120 and 150 kilometers an hour) and has well over three hours' endurance. A transition to this machine takes eight to 12 hours for a trained helicopter pilot. The cost per hour is reasonable, and Orbic feels it will be a popular addition to its normal helicopter flight training.

EXCELLENT TRAINING FACILITIES

Orbic's location is another of the company's key assets. "Camarillo is like an oasis for GA [general aviation] flying," said Orbic manager Sheila Collier, a commercial helicopter pilot and former Orbic student. A former US Air Force base. Camarillo transitioned into a civilian airfield during the 1970s. With the Greater L.A. area's relentless outward expansion, what was once a guiet airfield adjacent to a sleepy farming community is now ideally positioned to serve as a hub for the region's GA activities.

"There are so many reasons for an aspiring pilot to choose Camarillo," said Collier. "We've got a wonderful training environment. We have a helipad on the north side of the field with its own traffic pattern where students can get airborne and be practicing maneuvers in less than two minutes — without having to commute to a practice area or queue up with fixed-wing aircraft. We've got two civilian airfields and a military field within a few minutes' flight."

The airfield also functions as a sort of self-contained aviation community. In addition to playing host to a variety of fixed-base operators and multiple flight schools, Camarillo is home to several useful services and attractions.



SERVICE THAT DOESN'T STOP AT INSTALLATION.



- Steven Simpson, ECR Simulator & Facilities Manager, Bristow, Europe & Caspian Region

Frasca delivers state-of-the-art Full Flight Simulators, and backs them up with industry leading support and service. We've built them for a diverse range of customers worldwide, and we can build one for you.

Visit us at Heli-Expo 2020 booth 7724 to discuss your unique simulation needs.









IGNITING IDEAS. >> PROVOKING CHANGE.

10TH ANNIVERSARY JETNET IQ GLOBAL BUSINESS AVIATION SUMMIT

NEW SEASON. NEW PREDICTIONS.

June 8-9, 2020 | The Ritz-Carlton New York, Westchester
Three Renaissance Square, White Plains, NY
Registration: jetnet.com/summit

Our industry's best and brightest are meeting, sharing, and networking for the 10th year in a row, and you're invited. Map out your business moves for the year ahead with the same insights as the industry's leaders, a virtual "Who's Who" of business aviation, with unique perspectives on the industry's present and future: analysts, bankers, brokers, wealth consultants, attorneys, sales and marketing leaders, and C-level executives. Save the dates, and save your seat!

Questions, please contact: Paul Cardarelli | paul@jetnet.com | 1.800.553.8638 ext. 254 Rollie Vincent | rollie@jetnet.com | 972.439.2069

SPECIAL THANKS TO OUR PLATINUM SPONSORS















Orbic is a Federal Aviation Administration-approved part 145 repair station for all Robinson models, so all maintenance is done in house.



Instructor Julian Byrne talks students through a ground school lesson in Orbic's classroom.

Ken Obi (center), owner of Orbic Helicopters, has recorded more than 18,000 flight hours, and 13,000 of those have been spent training pilots in Robinson helicopters

can offer a large variety of helicopter training for the hobbyist or for anyone seeking a career in aviation." This includes ratings from private through certified flight instructor - instrument, touchdown autorotations, and recurrent training, as well as training courses for insurance requirements, foreign students and private owners.

The company also offers turbine transition training and twin-engine helicopter training. Orbic often performs specialized training with police department and public agencies for initial and recurrent training. "Orbic's been around so long that many local police air support units use us for their training," said Robinson. "We also do flight training with police departments from outside of the U.S. Recently, we started a program with the Ventura County fire and sheriff departments, providing flight training to the crew chiefs. In the event the pilot becomes incapacitated, the crew chief is able to fly the aircraft to provide time for the pilot to recover or, in a worst case, land the helicopter if the pilot is unable."

SPREADING ITS WINGS

Orbic's mission profile has expanded over the years. In addition to its flight training operations, it is also a certified part 135 air carrier and air taxi operator, and Orbic pilots perform scenic tours, passenger-carrying







charter flights, aerial surveys, aerial photography and video production work.

Orbic's exposure to a variety of jobs in multiple fields is good for both the company and its pilots. "Flight instruction is fantastic for keeping pilots' aircraft-handling skills sharp," said company flight instructor Julian Byrne. "But it can also be limiting. If you spend too much time doing the same six tasks in the same familiar area, it's easy to become too comfortable. Your handling skills may be excellent, but you get too accustomed to the same routines, the same radio calls, the same landmarks and weather patterns. . . . Getting away from the usual training environment and focusing on different tasks helps maintain pilots' real-world PIC abilities."

Byrne said Orbic's pilots were lucky in being well-positioned to take on a variety of aerial work. "We're a stone's throw from the L.A. basin, so we have all sorts of customers. You might be flying frost control for a local farmer one week, and flying clients out to Palm Springs or filming a sports broadcast the next."

The company's operations routinely take its aircraft as far as San Francisco or Las Vegas - and sometimes even further. "I ferried a machine down from Alaska last November," said Byrne.











"It breaks things up, helps expand people's horizons a bit, keeps us sharp. You can study training materials and practice maneuvers as much as you like, but there's no substitute for getting out in the real world and putting theory into practice. You learn a lot about the aircraft, the environment, and about yourself."

Orbic's students also benefit from their instructors' experiences in the field and, occasionally, they can find themselves in a position to do some real-world flying of their own. "We try and include students in our work wherever we can," said Byrne. "Any time we're looking at flying an otherwise empty ship, we'll try and offer that extra seat

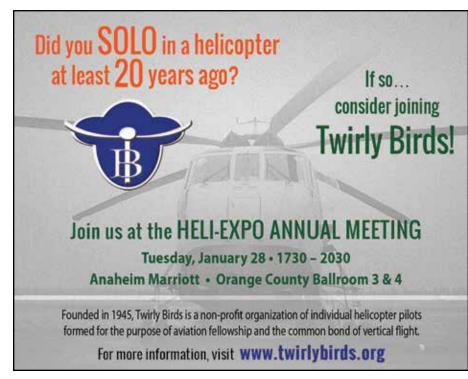
to a student — ferry legs, frost control, things like that. The students really love it, and it's great to expose them to new environments. It's eye-opening and can be a real confidence booster for them."

Orbic has been a Robinson Helicopter authorized dealer and service center since 2005. It is also a Federal Aviation Administrationapproved part 145 repair station for all Robinson models, so all maintenance is done in house. "We have complete quality control on our helicopters' maintenance, and I make sure that is kept to a very high standard," said Obi. "Since we fly every model of Robinson, we know

each inside and out."

Obi remains a loyal supporter of the Robinson brand. "I've flown these my entire career and have a lot of confidence in every model," he said. "The R22s are a very simple design, but robust in operation and able to go to overhaul with very few problems. When the R44 came out, it gave operators additional seats and more capability. For more than 25 years, they have proven to be one of the most useful helicopters ever designed."

Orbic plans to stay the course as it moves forward. It will continue to train students to the highest standard at an airport with year-round consistent weather. The Robinson line of helicopters will stay, with possibly a few additions, and its professional pilots are always in demand for many film, production and utility jobs. 🧲





Skip Robinson | Skip has covered helicopter operations through photography for 25 years and has worked with Vertical Magazine for over a decade. His main interests are rescue, parapublic and military operations. Skip is based in Los Angeles, California.

HELICOPTER AND UNMANNED FLIGHT EXPOSITION





HELICOPTER EXPOSITION AND CONFERENCE

For Australia, New Zealand, and the Indo Asia Pacific Region

FREE to attend 3-day program:

- Over 100 Companies on Display
- Free Conference Sessions and Networking Functions
- Operations, MRO and Safety Conferences
- Innovation and Industry Awards
- Static Helicopter Display

OEM Technical Workshops:







Meet with us at HAI HELI-EXPO



Rodd Craig: M: +61 (0) 457 848 104 E:expo@amda.com.au





OF ITS TIME A Bell Model 48/YH-12B with experimental floats at Bell's Niagara Falls, N.Y., plant. **Bell/Niagara Aerospace Museum Photo**

BELL'S MODEL 48 TROOP CARRIER HELICOPTER WAS A POST-WAR GAME-CHANGER.

In the late 1940s, the Bell Aircraft Corporation had several notable successes as it began developing early helicopters. These included the two-place Model 47 (the first commercially certified helicopter), the military two-seat Model 47A, and BY BOB PETITE the six-seat Model 42. Although the Bell Model 42 attracted little interest for a pro-

duction version from the civilian market, Bell actively courted the U.S. Army Air Forces' (USAAF) Engineering Division at Wright Field in Dayton, Ohio, to purchase a military variant of the Model 42, called the Model 48.

During 1946, Bell received its first procurement request for the Model 48 from the USAAF. In the form of a military prototype, the aircraft was known as the XR-12, and it was the largest helicopter Bell had manufactured at that point. Approval was initially granted for the purchase of three XR-12s from research and development funds, and 10 service test XR-12s from production funds. The contract had been arranged primarily to keep Bell's helicopter development continuing, and it helped keep Bell in business. The helicopters were scheduled to be delivered by the summer of 1946. Two prototype Model 48/XR-12 helicopters were manufactured based on the Model 42 civil helicopter, plus one static-test version. The two helicopters remained at Bell and were used for testing and research.

The XR-12 could carry two crewmembers and four passengers, and was to be used for liaison, courier, observation, cargo transport and personnel evacuation missions. It varied from the Model 42 in having a smaller tail boom, shorter rotor mast, and stabilizers on the tail boom. The helicopter had a Pratt & Whitney R-1340 550-horsepower air-cooled Wasp engine with a gear driven turbocharger. It was on fixed tricycle landing gear and came with a rescue hatch and winch. Floats were an additional option.

While Bell subsequently received a production order for 34 Model 48/R-12A helicopters from the USAAF, none were ever manufactured, and the order was cancelled in 1947.

Instead, the USAAF decided to have Bell manufacture a much larger stretched version of the Model 48, capable of carrying up to eight people. Now called the Model 48A (and the XR-12B by the military), one aircraft was built for evaluation. This new helicopter had a wider larger cabin on a fourwheel undercarriage, and was powered by a 600-hp Pratt & Whitney engine. The nose of the helicopter was covered with transparent plastic panels.

The XR-12B had a single two-blade main rotor, with a rotor system and stabilizer bar like the Bell Model 47, but scaled up for the much larger rotorcraft. This arrangement provided the ultimate in stability for the XR-12B. A single, two-blade controllable pitch tail rotor, mounted on the left side of the tail boom, provided proper torque compensation and directional control. Flight controls - consisting of main rotor pitch control levers, conventional-type control sticks, and tail rotor control pedals - were provided in a dual installation.

The helicopter also had a hatch and rescue winch located between the pilot's and co-pilot's seats, which could be operated by either the pilot or co-pilot. There were large separate doors for the passengers and for loading larger cargo, and seating for up to six fully-equipped soldiers. The cabin arrangement provided enough space and facilities to transport six litter patients with a medical person in the co-pilot's seat.









MILITARY TESTING

An evaluation of U.S. military services found there was a need for a helicopter with enough cubic capacity to permit internal loading of about 1,500 pounds (680 kilograms) of personnel and cargo for reasonable distances. Flight tests of the XR-12B proved operations with useful loads of 2,300 lb. (1,040 kg) were entirely feasible, and a design study was initiated to provide the cabin arrangement and facilities to meet this requirement.

Ultimately, Bell manufactured 10 YR-12B service-test helicopters, with the aim of delivering them in the summer of 1946, at a cost of almost \$175,000 each. However, problems with main rotor blade weaving and with the rotor governor were poised to cause major delivery delays. At this point, the USAAF stepped in to help solve the main rotor concerns. It was obvious that more development and delays would be needed before the helicopter would be ready for introduction into service. There was even talk of replacing the Model 48 helicopter with the Sikorsky S-51. The first Bell Model 48A/YR-12B helicopters were finally delivered to the USAAF in September 1946.

The YR-12B had a main rotor diameter of 47 feet, six inches (14.48 meters), a fuselage length of 39 feet, seven inches (12.06 meters), and a height of 11 feet, three inches (3.43 meters). Fully loaded, the YR-12 weighed 6,286 lb. (2,854 kg), and it had an empty weight of 3,700 lb. (1,680 kg). The aircraft's cruising speed was 90 mph (145 km/h), and its maximum speed was 105 mph (168 km/h). It had a service ceiling of 12,800 feet (3,960 meters) and a range of 300 miles (480 kilometers).

Flight restrictions for the YR-12B included no aerobatic maneuvers, operating with caution when flying below 30 mph (48 km/h), and a maximum gross weight for flight of 6,600 lb. (2,995 kg). This was all subject to change.

Floats for the YR-12B helicopter allowed landings on ground, water and deep snow. The floats permitted taxiing on water at speeds up to 50 miles per hour (80 km/h).

Initial tests with the U.S. Army ground forces as a troop carrier and cargo hauler went reasonably well, and the helicopter was used experimentally at bases across the U.S.

On Sept. 18, 1947, the United States Air Force (USAF) was formed and took over the procurement of helicopters for the Army ground forces. In 1948, the USAF changed the designations for helicopters from R for rotary-wing to H for helicopters, so the YR-12B became the YH-12B.

By 1950, with no production sales for the H-12B from the U.S. military, Bell was looking at future sales of the civilian Model 48A. Bell made plans to have a new 10-place aircraft for the production version of the Model 48.

The production Model 48 had an empty weight of only 4,200 lb. (1,907 kg) - 500 lb. (227 kg) less than the YH-12B. Its normal gross weight was 6,400 lb. (2,900 kg), with an overload gross weight of 7,200 lb. (3,265 kg). This new version could carry a pilot, co-pilot and eight passengers. The helicopter would be powered by the Canadianbuilt Pratt & Whitney R-1340 engine.

The Model 48 had new skids, floats, and ski landing gear as options. Prolonged instrument flight with autopilot was also possible. In addition, the Model 48 was completely engineered for Arctic operations. The enhanced helicopter cruised at 90 mph (144 km/h), with a never-exceed speed of 140 mph (224 km/h). It also came with a rescue hoist and winch.

In December 1950, Bell approached the Canadian government with a proposal to mass produce the Model 48. The proposal boasted of a new helicopter capable of carrying eight troops in an assault

ALLOW ME TO INTRODUCE MYSELF.















AIR MEDICAL // LAW ENFORCEMENT // SEARCH-AND-RESCUE // FIRE // MILITARY

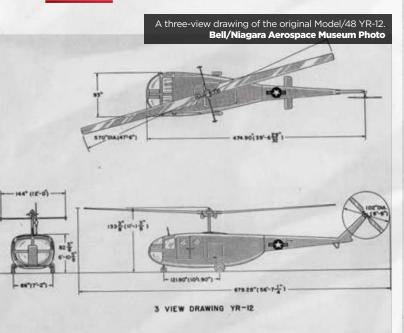
Vertical











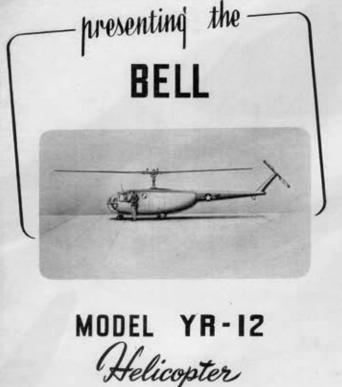
transport role, the ability to carry six litters in an evacuation mode, and one that could move cargo and perform resupply missions.

The Model 48 had been designed so that it could be easily prepared for transport over long distances by standard cargo airplanes. It required only the removal of the rear wheels, and the main rotor and mast of the helicopter. The rotor blades, hub, mast, and wheels would be stored next to the helicopter fuselage.

However, there would be no military sales to Canada, and the YH-12B was withdrawn from use by the U.S. military by the early 1950s and replaced by other helicopters. By the mid-1950s, Bell still had at least one YH-12B helicopter — the first service test aircraft — at its main plant.

TRANSATLANTIC CROSSINGS

In 1952, Bell set up a licensing agreement to build helicopters with Italian manufacturer Giovanni Agusta, starting with the Model 47D-1 two-place light aircraft. During 1956, the Bell Model 48A/YH-12B was shipped to Italy, where Agusta had begun to design and produce its own new helicopters, along with licensing Bell products. Agusta had plans to design a new and larger (up to nine-passenger) piston helicopter using the rotor system and dynamics of the Model 48. Bell



engineers assisted Agusta in the engineering of this new AB-102 helicopter, which used the same Pratt & Whitney R-1340 radial engine as the Model 48A. The AB-102 prototype first flew in February 1959.

Eventually, the Bell Model 48A/YH-12B was put on display in the Agusta Museum, and was later moved to the Volandia Museum in Milan.

The aircraft recently made the trip back across the Atlantic, arriving at its final home at the Lawrence D. Bell Aircraft Museum in Mentone, Indiana, where it is undergoing restoration.

The Model 48 may have been ahead of its time for both the company and the U.S. Armed Forces. It would eventually be replaced by the very successful Model 204/XH-40 turbine-powered assault helicopter. If you have any information as to the location of other YH-12B helicopters, please contact the author through Vertical Magazine. Jeff Evans, Paul Faltyn/Niagara Aerospace Museum, Mario Bazzani, and Don Brabec contributed material to this story.



Bob Petite | Bob is a member of the Twirly Birds, The Vertical Flight Society, the Canadian Aviation Historical Society, the American Aviation Historical Society and the Bell 47 Helicopter Association, Inc. He is the author of *The Bell 47 Helicopter Story*.







The Airborne Public Safety Association (APSA), the only organization dedicated exclusively to the education and training of those who serve, save and protect from the air, returns to Houston, TX, the site of their inaugural conference & exposition in 1971, to celebrate this milestone anniversary event. The public safety aviation community (law enforcement, firefighting, SAR, natural resources, UAS and others) will come together to commemorate 50 years of training excellence and kick-off APSA's next half century of supporting, promoting and advancing the safe and effective utilization of aircraft by governmental public safety agencies. Join us for courses, classes, exhibits and special networking events!

For more information, call (301) 631-2406 or visit www.PublicSafetyAviation.org



PROTECTING AVIATORS FOR 100 YEARS



CALL: 609-587-3300

VISIT: go.switlik.com/VERTICAL



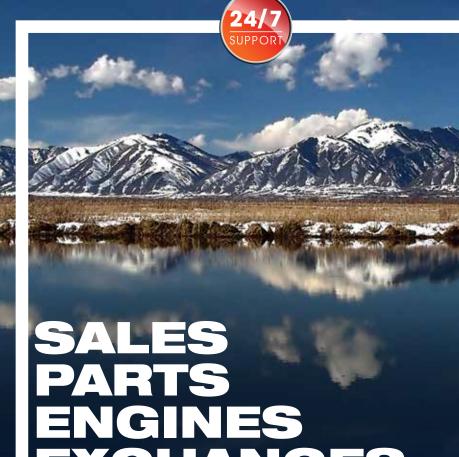
MarketPlace

YOUR #1 ROTORCRAFT RESOURCE FOR...

MRO • PRODUCTS • SERVICES • SALES & LEASING • EMPLOYMENT •







WE ARE AN APPROVED TRAINING ORGANIZATION FOR THE LT101 & HTS900 ENGINE SERIES OFFERING FLIGHT LINE MAINTENANCE COURSES











LT101 - HTS900

TRIUMPH ENGINE CONTROL SYSTEMS REPAIR CENTER +1 (801) 785-9898 INTERMOUNTAINTURBINE.COM HONEYWELL AUTHORIZED SERVICE CENTER

VISIT US AT HELI-EXPO BOOTH #604













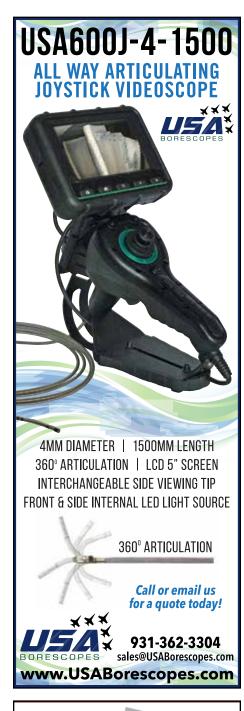














www.tradewindinternational.com











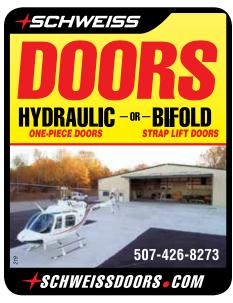










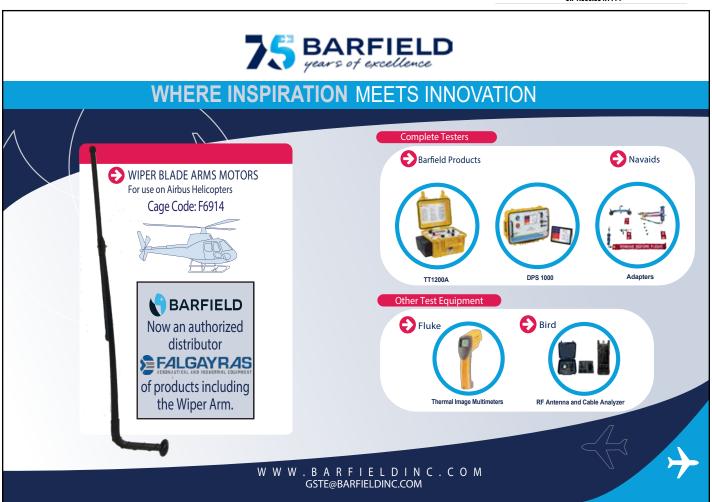


I SEE YOU LOOKING!

MARKETPLACE ADS DO GET NOTICED!

TO ADVERTISE, CONTACT CARLA MCKAY AT CARLA@MHMPUB.COM

OR 1.866.834.1114





It's not what we do. It's how we do it.

-AOG PARTS SUPPORT

-NEW, USED AND SERVICEABLE PARTS AVAILABLE

> -MASSIVE, ON-SHELF, INVENTORY

-READY-TO-SHIP WORLDWIDE

VISIT US AT HELI-EXPO 2020 BOOTH 5717!

helimart.com

+1 (714) 755-2999 Toll Free US/CAN 1-800-826-6899









INDUSTRY LEADING product knowledge.

Experience has no substitute.

40+ STCS // OVER 10 MILLION NEW & OVERHAULED PARTS IN INVENTORY



50 countries. 6 continents.

Our services and products support industry-leading helicopter makes and models around the world.

VISIT US AT HELI-EXPO воотн #4639

> **855.500.2376** (toll free for North America) // **250.769.6344** Kelowna & Abbotsford, B.C., Canada sales@alpineaerotech.com

CONTACT



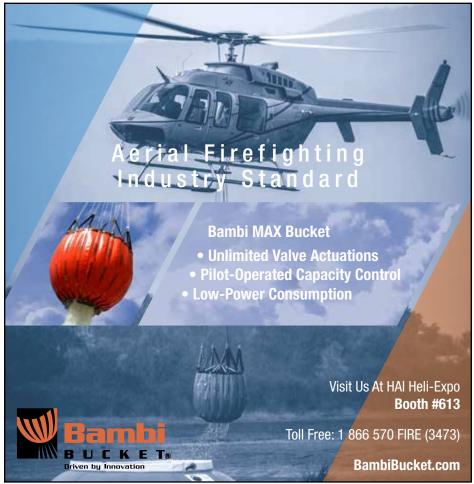












Flight Training Devices



IIMC Training Emergency Procedure Training CRM Training Confined Space Training Hover Training Currency Training Train often and

> always be prepared **Safety First**

platinumsimulators.com +1-760-683-8922

















GETTING YOUR AVIATION FIX HAS

Visit the MHM Publishing shop to find the latest Skies, Vertical, and Vertical 911 products. SPECIAL PROMOS | SUBSCRIPTIONS | NEW & OLD ISSUES | DIRECTORIES | POSTERS | CALENDARS | APPAREL





🕑 shopcanada.mhmpub.com | 🍘 shopinternational.mhmpub.com















THE BELL 47 **HELICOPTER**

For everyone interested in early helicopter history, this book on the history of the **Bell 47** is for you.

Written by Robert S. Petite and Jeffery C. Evans, this book is the most thoroughly detailed documentation to date of the world's first commercial helicopter.

- Over 1,100 pictures, many never seen before
- 29 detailed chapters
- One giant volume totalling 750 pages
- **\$75.00** plus shipping & GST (Canada only)

helicopterheritagecanada.com



ENGINEERS & APPRENTICES

With Pool and Base positions available

- Works on an exciting range of products with a dynamic industry leader
- Enjoy a competitive compensation package
- Time or experience on the following types: BH04/BH05/BH06/AS350

Delta Helicopters is a privately-owned family business located in St. Albert, Alberta, Canada, operating with a fleet of 24 helicopters and 6 bases.





ERTICALMAG.COM



Helicopters Ltd.

We are a family owned business

that has been operating since 1972; we currently operate a fleet of 23 helicopters.



POOL PILOTS FOR FULL-TIME POOL POSITION

BASE PILOT POSITION - Slave Lake, AB BASE PILOT/BASE MANAGER POSITIONS— Fort McMurray & High Level, AB.

WORK LOCATIONS

- Head office address #13-26004 Township Road 544, Sturgeon County, Alberta, T8T 0B6
- We operate out of five bases in Alberta: Slave Lake, High Level, Rainbow Lake, Lac La Biche, and Ft. McMurray
- All our bases are equipped with hangars, and have crew housing for staff when working at a base
- Aircraft types are Bell 206B, Bell 204B, Bell 205A1-17++ (BLR), Bell 212, A-Star 350BA, A-Star 350B2

JOB DUTIES

- Helicopter pilot Act as pilot-in-command of company aircraft
- Delta Helicopters works mainly in the oil-and-gas sector, pipeline patrols and maintenance, tree planting, and fire suppression
- Language of work is English

SALARY

- \$83,300.00 to \$91,975.00/year
- · Benefits include excellent health and dental coverage

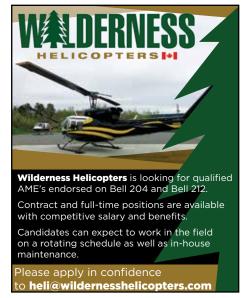
QUALIFICATIONS

- Hold a Canadian Commercial Helicopters License
- Minimum of 750 Pilot-in-Command hours, and 1000 total hours to fly lights / Bell 206.
- Minimum of 1000 Pilot-in-Command hours, and 1500 total hours to fly all other company aircraft.
- 250 hours must be on turbine type helicopter and 50 hours on aircraft type. Longline experience considered an asset.

Apply in confidence to:

Gordon Bean (Chief Pilot), Email: gbean@deltahelicopters.com Gerry Corley-Smith, Email: gcorley-smith@deltahelicopters.com Phone: 1-800-665-3564, Fax: 780-458-0175

All applicants must possess excellent customer service skills along with organizational & communication skills and the ability to work independently and in a team environment.







THE RAT'S NEST **FROM HELL**

Ramona, California, is the ideal location for a sleepy, country airport: broad meadows, horse farms, a pond here or there. Sometimes it's so quiet there, you can hear the powerlines sing in the wind.

It's not always peaceful at the airport. Two noisy retardant tankers and two air-walloping helicopters are based there in the summer, contracted firefighters all. When it's nasty out, there is a comfy helitack lounge, friendly to helicopter and air tanker crews alike, offering a retreat from the weather, an opportunity to socialize between fire drills and maybe catch a movie or two.

Ramona can have hectic fire seasons. Other times, it's pretty slow. I spent several busy weeks there before I was able to watch Silence of the Lambs from the start. An early mission to the firing range east of town left me dangling: Anthony Hopkins was lecturing a clueless Jody Foster about savoring someone's liver with fava beans? This was a black comedy, I decided.

Disturbing movies tend to send me off into the sky with irrational fears pilot-skinning mechanics, for example. Avoid walking down into dark dungeons at all costs, I reminded myself. Shifting back to the JetRanger I had ahold of, I wondered about these redundant fires at the shooting range. The last one was started by tracers, so I naturally fretted about what awaited us.

Arriving on scene to a large plume of white smoke, we radioed in a two-acre spot fire involving dry foliage at the base of a two-story cliff. No shooters in the vicinity. This one could easily be knocked down with a few buckets of green pond water, my crew of three and I agreed.

Ramona Helitack made quick work of dragging our short-cabled Bambi Bucket from the cargo hold, giving me the required operational checks before sending me off to douse the blaze.

Sal, our helitack base manager, met up with the first water tender to arrive on scene. He began directing a hose-lay from the same pond I was dipping out of, toward the foot of the fire, as I made several bucket drops and returned to our impromptu helispot, not far away.

In the midst of a three-minute engine cooldown, I noticed a large, heaping rat's nest at my two o'clock, some 30 feet

away. Were my aching eyeballs deceiving me, or was a wisp of white smoke rising from the peak of the nest - a miniature volcano? I smelled some really rank smoke!

Realizing the dry-as-a-bone rat's nest was the perfect model for an energetic fire, I radioed Sal. "A smoldering rat's nest?" He replied. "We're tied up over here, better put a bucket on it."

Music to my ears! Water bucket work is high on my list of groovy things to do when strapped inside a hot helicopter. I made brief work of revving up the engine, lifting off smartly to minimize my rotor wash on the simmering volcano.

Oops! After pulling away, a dense cloud of smoke poured out of the nest, telling me I'd better get with the bucket-work or the nest was likely to claim our helispot and keep on spreading.

I had worked long enough with Sal to earn his confidence in my judgment and firefighting abilities. He knew that hauling water buckets around was not the most challenging helicopter work I did. And he respected that. But respect can be fickle, I conjectured, as I flew for my third bucket of water, having missed the fire in the rat's nest with the first two.

It's true! I missed a relatively easy

target a total of three times, blowing my rotor-headed mind in the process. The only excuse I have is that there was zero wind to help stabilize the ship. A maxgross, out-of-ground-effect bucket drop using a short lanyard — called for perfect pilot inputs.

Aerodynamically speaking, there was a short moment involved between the cargo hook and the bucket, turning a relatively simple task into a swinging hitor-miss affair.

After my third unsuccessful drop, Sal and the crew hoofed it back to the helispot to appraise the flaming rat's nest firsthand. The igloo-shaped mound of tiny interwoven sticks was fully involved by then, putting out lots of heat. There was plenty of mud surrounding it, thanks to me.

Strike three and you're out?

Good thing we had a pumper crew backing us up and plenty of hose. I watched them address the problematic nest with nozzles while I swatted persistent deer flies with a battered ballcap.

The crew didn't spare me their acidic taunts on the chatter frequency after my third drop, trust me. I sulked among dead flies, waiting for vermin-en-fuego to be put out the old-fashioned way.







IT'S TIME FOR A DIGITAL UPGRADE TO YOUR BELL 407

With a new Bell 407 G1000 NXi Retrofit Kit, converting original analog displays to a glass cockpit featuring the latest technology provides state-of-the-art instrumentation, reduced pilot exertion, and an improved aircraft.

- Completely new avionics (Dual NAV/COMM/WAAS GPS, ADAHRS)
- G1000 NXi Integrated Flight Deck
- On glass engine instrumentation replacing Litton engine instruments
- Easier-to-read digital displays for reduced pilot fatigue
- Improved dependability, accuracy, and situational awareness

Contact your sales representative for more information at 800-251-7094





GO ABOVE AND BEYOND FLIGHT