

Vertical



www.verticalmag.com

THE PULSE OF THE HELICOPTER INDUSTRY

THE H160. WHAT THE PEOPLE YOU RELY ON, RELY ON.



**FLY
WE MAKE IT**

The new generation H160 boasts a range of unparalleled safety features. Maximized pilot visibility, intuitive information display, unrivalled pilot assistance with Helionix®, and unmatched flight envelope protection. What's more, it carries up to 12 passengers with a radius of action of 120 NM, while burning 15% less fuel. With so many impressive features, the H160 is a huge step forward not just for its category, but for the environment, too.

Safety. We make it fly.



FEBRUARY/MARCH 2019 // HELI-EXPO ISSUE // BOOTH #B3818



www.verticalmag.com

Vertical

THE PULSE OF THE HELICOPTER INDUSTRY



ALL IN

Air Center bets on the H225

THE H160. WHAT THE PEOPLE YOU RELY ON, RELY ON.



**FLY
WE MAKE IT**

The new generation H160 boasts a range of unparalleled safety features. Maximized pilot visibility, intuitive information display, unrivalled pilot assistance with Helionix®, and unmatched flight envelope protection. What's more, it carries up to 12 passengers with a radius of action of 120 NM, while burning 15% less fuel. With so many impressive features, the H160 is a huge step forward not just for its category, but for the environment, too.

Safety. We make it fly.





GEAR UP TUNE UP TOOL UP

Count on us to keep you flying.

Reach optimal performance
with DART products and
services on your aircraft.

VISIT US AT HAI BOOTH #C2010

www.dartaerospace.com

 **DART**
AEROSPACE

BIGGER.

Increased Capabilities

BETTER.

Faster Turn Times

BOLDER.

Enhanced Customer Service

WE DELIVER

on what you value the most. For over a century, customers have relied on StandardAero to provide best-in-class rotary wing support with excellent operational efficiency and innovative custom MRO solutions. We've significantly expanded our industry-leading helicopter support capabilities to include new turboshaft engines and new airframes on civil & military rotary wing aircraft – capabilities that are backed by certified technicians and experienced aerospace professionals who have a passion for delivering award-winning customer service. Contact us today to learn how we can support you!

Engines

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

Airframes

- Airbus AS350/EC130 series & AS332/H225 Super Puma
- Bell 204/205, 206, 212/412, 222, 230, 407, 427 & 430
- Sikorsky S-92, S-76 & S-61

Dynamic Components

Fuel Systems

Avionics

STCs



StandardAero

www.standardaero.com/heli
helicopters@standardaero.com
+1.204.318.7544

Visit us at
HELI-EXPO
#B1429

It's About Your Business



AW¹⁶⁹

Challenging times require superior answers.

Leonardo Helicopters redefines mobility by setting new levels in luxury, comfort, performance and safety.

Maximise your time and be where it counts.

Inspired by the vision, curiosity and creativity of the great master inventor - Leonardo is designing the technology of tomorrow.

Visit us at HAI Heli Expo - Stand B7024

70

1948 • 2018

leonardocompany.com

Helicopters | Aeronautics | Electronics, Defence & Security Systems | Space

 **LEONARDO**
HELICOPTERS



We have also generated an impressive following.

Accessories

Avionics

Hydraulics

Instruments

MRO Services

Starter Generators

Wheels & Brakes



PHP
PRECISION HELIPARTS
A PAG Company



Inventory Supported
Maintenance Repair Overhaul

- 9 global locations give you just-in-time MRO support
- \$39.4 million inventory / 100,000 line items
- Largest rotatable pool of starter generators
- OEM Authorized stocking distributor
- AOG Support teams available 24/7

Our customers will attest that in the right hands, a worn starter generator can perform to the same high standards it did as the day it was installed. Get the most out of your investment. Call today or visit us at www.heliparts.com.

Visit us at Heli-Expo, Booth #B5624



TABLE OF CONTENTS

FEBRUARY/MARCH ISSUE // VOLUME 18 ISSUE 1

062

INTRODUCING THE NEXUS

Bell unveils its urban air taxi design as it looks ahead to a new era of flight.

BY OLIVER JOHNSON

 WATCH VIDEO

072

PROTECTING THE KRUGER

The SANParks Air Wing plays a critical role in protecting wildlife in Kruger National Park.

BY ELAN HEAD

 WATCH VIDEO

104

TREADING WATER

What's the status of the offshore sector after another challenging year?

BY KENNETH I. SWARTZ

116

THE LITTLE COPTER THAT COULD

The Robinson R22 turns 40.

BY GUY R. MAHER

 COVER STORY



086

ALL IN

Air Center Helicopters bets big on the H225 for utility work.

BY DAN MEGNA

 WATCH VIDEO

130

THE DETAIL SPECIALISTS

Masco continues to evolve as it begins its 51st year in the aviation industry.

BY OLIVER JOHNSON

 WATCH VIDEO

140

POWER PACKED

EMS operator AirLife is enhancing its service with two Eagle 407HPs.

BY SKIP ROBINSON

150

MANAGING THE WEIGHT

The story behind Helitowcart's towing products.

BY DAYNA FEDY

156

A PEOPLE PROBLEM

Does the helicopter industry have a labor shortage or a skills shortage?

BY OLIVER JOHNSON

 IN EVERY ISSUE

12 FOCUS ON SAFETY // 14 FOCUS ON TRAINING // 16 FOCUS ON MAINTENANCE // 18 FOCUS ON LEADERSHIP // 20 FOCUS ON OPERATIONS // 22 FIELD OPS PHOTOS // 26 ROTORBEAT // 58 Q & A // 170 VERTICAL REWIND // 185 MARKETPLACE // 202 THERE I WAS...

FACEBOOK PHOTO CONTEST

CONGRATULATIONS, **Jimmy van Drunen!**

January Winner



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.

INSTA HELI HIGHLIGHT

CHECK OUT @phantompharewell

ARE YOU ON INSTAGRAM?

We recommend you check out one of our favorite accounts, @phantompharewell, specializing in aviation photography.



THE TEAM

Publishers

GROUP PUBLISHER Mike Reyno, mike@mhmpub.com
GROUP PUBLISHER Linda Reyno, linda@mhmpub.com
ASSOCIATE PUBLISHER Derek Kast, derek@mhmpub.com

Editors

EDITOR-IN-CHIEF Oliver Johnson, oliver@mhmpub.com
SPECIAL PROJECTS EDITOR Elan Head, elan@mhmpub.com
JR. EDITOR Dayna Fedya, dayna@mhmpub.com

Sales

SALES & MARKETING DIRECTOR Tim Muise, tim@mhmpub.com
MARKETPLACE SALES MANAGER Carla McKay, carla@mhmpub.com
CIRCULATION MANAGER Leanne Willis, leanne@mhmpub.com

Design & Web

PRODUCTION MANAGER Jen Colven, jen@mhmpub.com
GRAPHIC DESIGNER Kaytlyn Wismayer, kaytlyn@mhmpub.com
WEB DEVELOPER Shawn Pieters, shawnp@mhmpub.com

Contributing Writers

John Carinha, Thierry Dubois, Geoff Goodyear, Lisa Gordon, Kim Hutchings, Guy R. Maher, Dan Megna, Mike Muench, Ken Pole, Skip Robinson, Andy Roe, Kenneth I. Swartz, Corey Taylor

Contributing Photographers

Paul Bock, Dan Campbell, Joe Copalman, Eric Dumigan, Stephen Fochuk, Leo Francini, Lana Gibson, Lloyd Horgan, Terry Jones, Stacie Maher, Dan Megna, Heath Moffatt, Anthony Pecchi, Bob Petite, Dennis Pierce, Mike Reyno, Rob Reyno, Skip Robinson, Dan Sweet, Wes Van Dell



Subscribe to Vertical Daily News
verticalmag.com/subscribe



Read the Magazine Online
verticalmag.com/issues



Follow us on Twitter
 Follow @verticalmag



Like us on Facebook
facebook.com/verticalmag



Follow us on LinkedIn
linkedin.com/company/vertical-magazine



Follow us on Instagram
 Follow @verticalmag



Watch videos on Vimeo
vimeo.com/mhmmmedia



Shop Vertical Merch
shopcanada.mhmpub.com
shopinternational.mhmpub.com

verticalmag.com // feb/mar 2019 // volume 18, issue 1



insightmagonline.com



verticalmag.com



skiesmag.com



IN CANADA:

500 Trillium Dr., Unit 23, Kitchener, ON N2R 1E5

IN THE UNITED STATES:

701 S. Main Street, Fall River, WI 53932

PUBLISHED AND PRODUCED BY: 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) by MHM Publishing Inc., paid at Fall River, WI.

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 stories and pictures, but the publisher cannot assume any responsibility for the safe return of submitted material.

© Copyright 2019 MHM Publishing Inc.

International Serial Number ISSN 1703-8812

Canadian Publication Mail Agreement Number: 40741549

Postmaster: If undeliverable, return mailing label only.

Printed in U.S.A.

Vertical is proud to be a member of



ENERGY OF AN INNOVATOR. HERITAGE OF A LEGEND.

**A REVOLUTIONARY TOTAL TRAINING SOLUTION,
BACKED BY THE BEST IN AVIATION.**

TRU Simulation + Training is part of the Textron family of brands, in company with Bell, Cessna, Beechcraft and Lycoming. Leveraging its connection to aviation leaders, TRU brings you turnkey devices, courseware and ongoing support. Discover cutting-edge training powered by decades of experience.

TRUsimulation.com



Learn more about TRU's capabilities
at the Bell booth: C4007

TRANSFORM YOUR REALITY



The term “recognize” can be complicated. Recognition of a familiar face is instant, but recognition of a hazard or a mistake embedded in a multi-dimensional task (like the ones we always face) is rarely so obvious — or quick.

Experience is the key to recognizing hazards lurking in our work lives. Writer and humorist Franklin P. Jones wrote that: “Experience is that marvelous thing that enables you to recognize a mistake when you make it again.”

We don’t all have the same experience, so effectively communicating and sharing what we have faced is critical if we are to collectively avoid making the same mistakes again.

Recognizing a mistake you have made in an operation is sometimes difficult and not always easy to accept. Acknowledgement is usually accompanied by the following symptoms: a shuffling of the feet and avoiding eye contact with others. This is usually followed by a period of humble contrition.

As you can gather from past articles, my family has no shortage of mistake recognition, but some mistakes take a while to figure out. My great-grandfather started a construction company over a century ago, and during my childhood we were regaled with stories of building roads and maintaining civic infrastructure with real horse power. Not the hydraulically-boosted turbocharged diesel stuff of today, but the oat-swilling, manure-producing tractors of yesteryear. So as not to lose our connection with our past, we always had horses, right up through my generation. One family favorite was a Newfoundland pony named Jerry.

The Newfoundland pony, designated a heritage breed by the provincial government, is known for its short, stout appearance,

and a rather resilient and cantankerous demeanor. Jerry the horse had the cantankerous demeanor thing down to a fine science. He had long lost any herding instinct and was not above the odd unapproved walkabout far beyond his home range.

It came to pass that Jerry was being cared for by my uncle Denny and his family. Jerry was living a gracious life at the family’s summer residence in Point Leamington. He was passing his time between grazing and fighting with anyone who tried to ride him. Life was good.

“

Experience is that marvelous thing that enables you to recognize a mistake when you make it again.

”

One day, my uncle was passing by a field just outside of Grand Falls and noticed several horses grazing. He stopped his pickup and focused his gaze on one brown and spotted horse off to the side. He got out to take a closer look, and then it dawned on him that he was staring at Jerry! There was no mistaking him — the markings were quite distinct. But how could the horse have come some 20 miles (over 30 kilometers) from Point Leamington? Past experience had taught us never to underestimate Jerry’s abilities or determination. There was no time to ruminate on how the horse got there, my uncle needed to get him back home!

He gathered a few men to assist, and they were able to corral the elusive Jerry with moderate difficulty. Getting him into the back of the truck, however, proved to be a significant challenge. Jerry had expended considerable initiative and energy getting to the field and had no intention of leaving it until all his socializing and grazing had

been completed. It required a herculean effort on the part of the work crew, but their persistence paid off, and eventually Jerry, much to his dismay, was firmly secured in the back of the pickup.

My uncle was exhausted, but he was no doubt proud that despite several generations of Goodyears having passed, we still had wrangling abilities. He proceeded to head back to Point Leamington to return Jerry to where he belonged. It was a fairly long drive, during which my uncle had lots of time to dwell on how that damned horse was able to wander off so far. For his part, Jerry had lots of time to dwell on how he was going to get back to his field of dreams.

When approaching Point Leamington, my uncle caught sight of one of the locals riding their horse along the road. This was not uncommon in rural Newfoundland, and drivers were duty-bound to give the riders the right of way. As he got closer, he realized that the rider was his daughter Heather, and she was riding... Jerry!

Research tells us that horses can recognize their owners. Clearly the assumption that vice-versa applies had been thrown into doubt. Uncle Denny slowed to a stop, being careful not to upset whoever’s horse he had in the back of the truck. He rolled down his window as his daughter approached.

“Hey Dad — where did you get the horse?” asked Heather.

And so the foot-shuffling began, but the most pressing issue was the execution of operation, “Equine Repatriation.” Jerry’s doppelgänger was quietly returned to his home field, but not before someone noticed that the real Jerry was a stallion. Understudy Jerry was a mare. Oh my.

There are several lessons here for us:

1. Had there been a basic risk assessment done, “determine gender” might have been on a checklist.
2. A brief walk around or detailed inspection might have also thrown Jerry’s identity into question. Sort of a “look before you lift.” (As opposed to “leap.” Get it?)

Drill down into tasks to tease out hazards, and when one pops up that you did not recognize, make sure to pass on the story!

Fly safe. 🚀

One Aircraft. Every Mission.



offshore



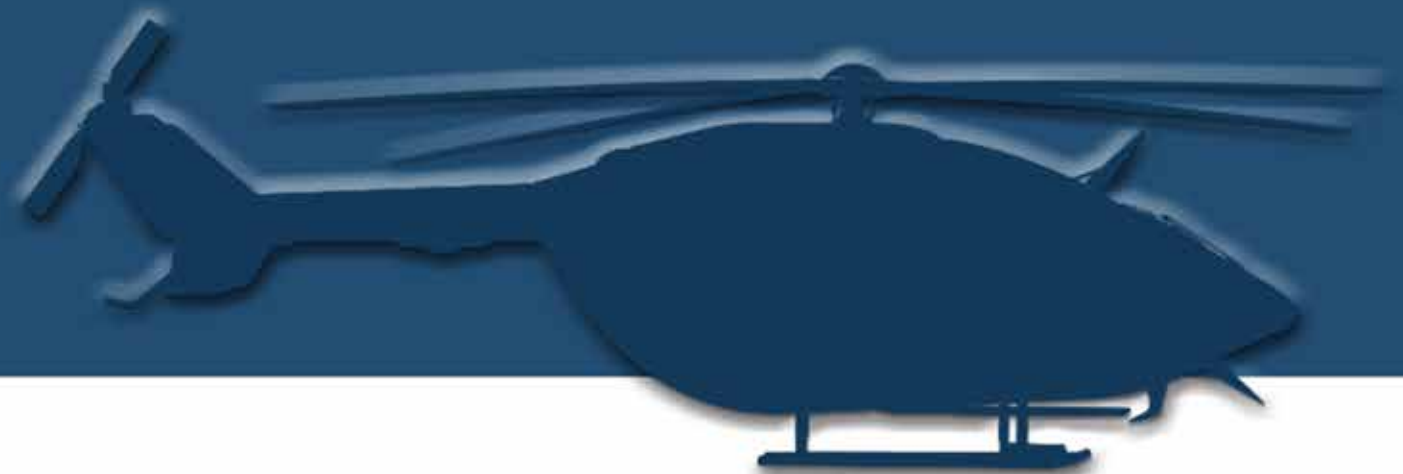
fire + rescue



public safety



medical



The Airbus EC145e is a powerful, reliable and affordable light twin helicopter boasting a short delivery lead-time, excellent cost competitiveness and increased useful payload. With a versatile platform, it can handle any mission that comes your way.

Available at Metro Aviation
Visit us at HELI-EXPO, C1023
metroaviation.com





Blade overpitching and the resulting loss of rotor rpm is not as common now as it was in the early days of commercial helicopter flight. However, if you fly a helicopter with a low-inertia rotor system — such as a Robinson R22 or R44 — you will hear the shriek of the low rpm horn if you are too heavy-handed with the collective pitch lever, especially when climbing.

A spinning rotor blade produces lift by grabbing a parcel of air and thrusting it down and back to propel the helicopter forward. In positive pitch, the upper portion of the blade behind the airflow creates drag. This counters the lift component. When the drag force becomes greater than the lift produced, the blade rotation will decay, and any remaining lift will rapidly diminish as the blade stalls.

Early piston helicopters were notoriously underpowered, and often lost power altogether. While I am not old enough to have had first-hand experience of these aircraft, a colleague of mine was. I have suffered an engine failure only twice in my career, but my friend proudly claims he had 300! This may be an exaggeration, but the point is that the early commercial helicopter pilots were a tough breed.

These pilots had to be careful using collective pitch power: too much would slow the rotor, even with the throttle hard open against the stop. If the pilot had the presence of mind to lower the collective and push forward with the cyclic, the rpm would return and the extra lift from forward flight would keep the helicopter flying. However, if the pilot further raised the collective in desperation, the rpm would continue to decay and the helicopter would settle onto whatever ground feature was immediately below.

Pilots in those days were often self-taught. Those with a good feel for helicopter flight found that the power they were using early in an approach to landing, just as the rpm started to decay at a slow speed close to translation, was all the power they had to work with. They also knew that this was not enough power to hover with at the end of the approach. One solution was to slowly maintain landing power on approach, and then slide onto the ground at translation to avoid hovering. Those uncomfortable with slow speed flight on approach would rush the ground and then run on like an airplane. Both methods worked.

A departure requires more power than a landing, so how did the early pioneers take off? The pilot would wind the rpm up above the green arc to 3,500 or more, pull the collective briskly, and push forward. Hopefully the helicopter climbed through translation before the rpm decayed below 2,900 — the bottom of the green arc. Early commercial helicopter flight was not for the faint of heart!

“Even though overpitching is not as common as it once was, pilots should still be aware of its potential as a hazard and know how to minimize required power to avoid it.”

These days, both piston and turbine engines have enough power to keep pilots from overpitching in normal situations. Even so, pilots must be aware of the dangers of overpitching and be ready for corrective action. As an example, let's join an R44 for a ride into the mountains with three passengers and fuel within allowable weight and balance limitations. Up ahead, the

ground begins to rise. The high terrain is at 7,000 to 8,000 feet (2,130 to 2,440 meters). Our pilot begins to climb and checks the allowable power setting against the altitude and temperature readings on the performance chart.

The steep sides of the mountains are just ahead and the pilot turns to parallel the slope of one mountain and continues climbing. The collective is lowered slightly to remain within climb power limits as we climb through 6,500 feet (1,980 meters) and the rate of climb begins to slow. Distracted for a moment, the pilot pulls back on the cyclic slightly and the airspeed reduces to 50 knots. Also without realizing it, the collective rises in the pilot's tight grip and suddenly a loud horn is heard.

Due to both training and experience, the pilot immediately lowers collective slightly and tips forward with the cyclic. The horn is silenced. The pilot continues to climb slowly and after reaching the summit of the ridge, accelerates down the other side. The passengers are curious about the horn, but otherwise are happy and unconcerned.

The pilot experienced the onset of overpitching, but immediate corrective action resulted in only a brief control issue. The pilot will pay closer attention to speed and power in a similar climb in the future. Another pilot who instead pulls further on the collective when startled by the horn will overpitch the blades and stall the rotor system. That pilot and those onboard would be in serious trouble. Better training is the best prevention for this type of incident.

Turbine helicopter pilots pulling excessive collective pitch will overtorque or overtemperature the engine before the rpm decays. It's unlikely the pilot will lose control of the helicopter, but the engine repairs will be costly. Without proper training, overpitching accidents and turbine overtorques do and will continue to occur. Even though overpitching is not as common as it once was, pilots should still be aware of its potential as a hazard and know how to minimize required power to avoid it. 🚫

BOSE

AVIATION

A20 WITH COIL CORD

**Technology
developed
over 30 years.
Appreciated
in seconds.**



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 C139 certification, making it the choice of pilots the world over. Hear the A20 difference today.

Visit us at Bose.com/A20 or call 888.757.9985.

Come see us at HAI Booth #B6311.



**See and order yours
at Bose.com/A20.**

Select coil cord model at checkout.

Connect with us @BoseAviation

© 2019 Bose Corporation



**In select models*

FOCUS ON MAINTENANCE // JOHN CARINHA



I've been lucky enough that my work has taken me to many beautiful places around the world. But the other side of my own country — the East Coast of Canada — somehow remained on my geographic bucket list. It wasn't until this past fall that I got the call to head over to the Maritimes, where I would be helping a staff-starved company that was spread thin for manpower.

If you've spent any time working in aviation, you know it's rare that any two days are ever the same. The same rule applies to any two aircraft. And on this trip, although I was there to service a few different helicopters, it was a Bell 212 that held my attention. It was an older model, but still logged several hundred hours per year. It had clearly been flown by many a flight crew, and was a patchwork of decades of modifications, restorative work and overhaul.

Among a healthy snag list, the stand out was a reported mode C (altitude reporting) issue — it was simply inoperative. Air traffic control was not picking up any reported altitude, rendering the aircraft ineligible to pass through the surrounding airspace. Upon confirming the issue with certified test equipment, the complacent side of me (hello human factors) was quick to surmise that the altitude encoder was where the fault lay. A quick swap with a serviceable spare encoder proved that I was dead wrong; the problem persisted. I then moved my focus to the transponder, which serves as the courier of the information (altitude). It was not to blame, either. Then looking at the wiring, I performed a continuity check, only to find it, too, was serviceable.

It's usually at this point that one can sometimes be tempted to continue to force the "square peg into the round hole,"

convinced that the problem MUST be in the parts of the system already checked. However, a quick glance at the aircraft's logbook hinted that there was more to this story. The reported fault had a paper trail, and had been reported several times over the course of the past couple years. As much as avionics techs are sometimes mocked as Ghostbusters — chasing things that aren't entirely there — this discovery led me to take a step back and assess the installed avionics. I needed to look at how they possibly tied in or relied on/required altitude data themselves to function.

My focus soon landed on a GPS system, which created a brief "aha" moment. More often than not, GPS receivers have an altitude data input. The model in question, however, only had provisions for a data (RS232) input. This meant the old-school Gillham or Grey Code, provided by the existing encoder, had to be interfaced to an adapter somewhere. In other words, the signal language had to be adapted, so the GPS would process it differently from its origin.

“
If you've spent any time
working in aviation,
you know it's rare that
any two days are ever
the same. The same rule
applies to any
two aircraft.”

A short while later, I found something that gave truth to the adage that one never stops learning. I found the adapter, and it was one I had never seen before in my career (at least not the particular model that was installed). A quick call to the

company's technical records department produced some of the original installation drawings for the components and systems in question.

Over the course of several years and through two (and possibly three) different installation agencies, the altitude reporting system had been added to, subtracted from, and everything in between. The smoking gun was nothing more than the black ink that ran across several drawings connecting all of these systems, and the fact they ran uninterrupted. Tied to a common point at a set of terminal modules, the connections branched out to the systems that required an encoded altitude signal: the GPS, the transponder, and the interface adapter. Without isolation between components (think electrical one-way valves, known as diodes), each component was invariably loading the encoder's output and affecting the others, resulting in a sometimes serviceable, other times erratic — and at this point completely inoperative — state of operation.

For what I would guess was not just years, but feasibly a decade or more, this aircraft flew with a flawed design, or at least a flawed retrofit design. Working remotely, one can only carry with them and prepare for a finite number of probable situations. The solution to this issue required a full wiring rework, which resulted in our shop sending a replacement harness (pre-terminated to the end user to have installed) to accommodate the required component isolation and allow for the system to function as it was originally intended.

It might be easy to assume an aging aircraft will have a well-known list of repeat or common issues — it has flown and served a long enough life to have seen it all. This experience showed that an old helicopter can still teach some new lessons — and with it, the odd surprise resolution that nobody saw coming. ✚



HELICOPTER ENGINES

FOCUSED ON YOU

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

🐦: @SafranHCEngines





I was in kindergarten or first grade when I learned that amazing things can happen when you blend colors. Mix blue and yellow, and you get green; red and blue make purple; yellow and red make orange; red and white make pink... and on you go. Mix any two colors and a new one will appear like magic. But what happens when you blend too many colors at once? Well, it's not so magic anymore, because you end up with a dark blob of ugly mush and there is no way of fixing it!

Getting the right blend of people in a company is much like blending different pigments in a palette: you need the right mix of ingredients if you are to achieve your desired result.

Let's look at cultural change at a company. There may be several reasons why a company may want (or need) to change its culture. For example, there could be a new president/CEO who wants to make changes, the company may be forced to make changes due to outside oversight, the current policies and procedures could be outdated and holding the company back, or, most importantly, the lives of others could depend on it (through improving a safety culture).

Regardless of the reason, when a company is trying to make a cultural change, it can be difficult for employees used to the old way of doing things to adapt, and some will resist the change for as long as possible. Changing company culture requires everyone to get on board, so when some people resist, it delays the whole process — and can prevent it from happening at all (when people simply resort to the old ways). People's behavior is one of the most influential factors in whether or not real cultural change is effected.

What can you do if your company is experiencing cultural change? There are five key elements: Listen, model your message, look for leaders, build trust, and continue to manage your culture. Let's look at those in detail.

Firstly, people like to know they are being heard. So, if they are concerned about something, it is important to take the time to fully listen. There is a saying that goes something along the lines of, "We have two ears and one mouth." The point is that we need to take the time to listen to what someone has to say and contribute before we jump in and start adding our thoughts, beliefs, or opinions. This may sound obvious, but oftentimes it can be challenging to do.

What do I mean by modeling your message? Well, simply saying that there are going to be changes is not enough in itself to create lasting differences. "Neuroscience research suggests that people act their way into believing rather than thinking their way into acting," state Jon Katzenbach, Carolin Oelschlegel and James Thomas in *10 Principles of Organizational Culture*. Simply put, if you can change people's behavior, their mindset will follow.

Look for the leaders to help you enact the change. It's often the case that there are leaders in the company who are not necessarily in a recognizable leadership role. Most of the time we think of a leader as the person who has the authority, but there are also "informal leaders" who can be recognized through informal internal social relationships within the company. Identify these informal leaders and get them involved and excited about the new changes.

Next, focus on building trust. When a new leader comes in and starts to make changes, there can sometimes be a trust issue with employees. In *The Ups and Downs of Managing Hierarchies*, Adam Galinsky and Maurice Schweitzer argue that by building a psychologically safe environment

When you help everyone to see the possibilities presented by blending the old with the new, amazing things can happen. It's the opportunity for growth and learning, and if it's done for the right reasons, a new culture can be created.

where people feel encouraged to speak up and share ideas, you can build trust more quickly — and also restore it when it has broken down. Allowing people to feel like they are an integral part of the change by being able to voice their concerns and ideas will build the trust that is needed to make the change stand the test of time.

Lastly, once you put the new changes in place, the goal is to monitor them. Company culture is something that should remain fluid and flexible to a certain point.

"When aligned with strategic and operating priorities, culture can provide hidden sources of energy and motivation that can accelerate changes faster than formal processes and programs," explain Katzenbach, Oelschlegel and Thomas.

Generally speaking, people don't like change — but in reality, change can be a good thing. When you help everyone to see the possibilities presented by blending the old with the new, amazing things can happen. It's the opportunity for growth and learning, and if it's done for the right reasons, a new culture can be created. Remember, when it comes to making changes in your company culture, the goal is to make "magic" — not "mush." 🍀



For missions accomplished

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



March 4-7 • Atlanta
Exhibits Open March 5-7

Join us on our booth B4016.
We look forward to updating you on the latest SH09 developments.



The last couple of years have been good for much of the Canadian helicopter industry, mostly due to the forest's propensity to burst into flames on a somewhat reliable basis — especially in British Columbia and Alberta. Some companies had their best ever years in 2017 and 2018, while others, bogged down by financiers micro-mismanaging from afar, all but disappeared from the Canadian firmament.

Where would we be without the boon that forest fires bring? If we examine the state of oil-and-gas and mineral exploration work — traditionally as much as two-thirds of the annual flight hours in Canada — we'd see a sorry state of affairs. I daresay that fires have actually saved some companies, while providing a layer of fat for those not so close to oblivion. Last year's peak season saw numerous aircraft that could not be staffed due to the chronic shortage of experienced pilots. Some companies dared to try less experienced pilots, some of whom managed to crash on their very first day — luckily without serious injury.

In this precarious situation we remain, praying for natural disasters to make our budgets, so do we really need the federal government doing all it can to prevent our success — notably with the imposition of the deeply flawed “fatigue management” rules? Some of us had high hopes when Marc Garneau became the Minister of Transport. As a scientist, surely he would understand how poorly the working group that created the rules had performed? Alas, within days he was defending that work and making statements about it all being “based on the latest science.” I could tell he had not read any of the peer-reviewed papers provided to the working group during their deliberations. If he had, he'd

have known there wasn't a single study relevant to day visual flight rules (VFR) helicopter operations. I think it's far too late for him to get caught up now, but this attack on what has hitherto been one of the world's preeminent helicopter industries (with so many firsts that the international hall of fame is peopled with hundreds of innovators born north of the 49th parallel) continues in an unabated fashion.

At the recent Helicopter Association of Canada conference in Vancouver, British Columbia, François Collins, Transport Canada's Associate Director General of Aviation, was kind (and brave) enough to take questions from a room full of operators. He started off his session by reminding everyone that we are all subject to CARs (that's the Canadian aviation regulations for those from elsewhere) 602.02, which states an operator won't require a person to act as crew, and the person will not do so, “if the operator or the person has reason to believe that the person is not, or is not likely to be, fit for duty.”

The curious paradox of “the person” having reason to believe they're not fit aside, Collins looked out over our group and asked how we, as operators, ensured this fitness. Our silence, which was mostly confusion over what he was asking, was confirmation for him that we really don't know what we're doing, and the regulator needs to provide even more oversight to save us from ourselves. My attempt to get the microphone came to naught, leaving me stewing in the crowd.

If I had been given that microphone, I was going to point out to Collins that the airlines, the world from which he sprung, prove over and over again they have absolutely no control over the fitness for duty of their personnel, and if it wasn't for the keen noses of airport security people and the odd flight attendant, the drunken pilots that make the news could have flown with no one the wiser. How many have done so?

What people from the airline world fail to understand is that, besides our very strong culture of safety, our customers help ensure our fitness to fly. Their lives depend on it.

“

I am not a lawyer, but my pilot senses tell me that creating a regulation and saying we can escape it by implementing some safety measures is cumbersome and, frankly, ridiculous.

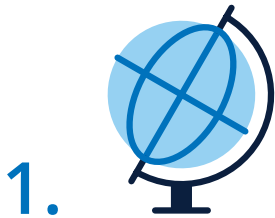
”

Some clients have their own rules we must follow, but more importantly, our customers sit in the seat next to us. Our customers cook our food and provide our beds. We fish with our customers and share stories around the dinner table at night. If there is an issue with fitness for duty or even the basic skills of the pilot, our customers let us know — and quickly! The amount of oversight we receive far exceeds anything the airlines can possibly implement for their crews, isolated as they are in their sterile cockpits.

Transport Canada continues to say it will allow escape from these misbegotten regulations if an operator establishes a fatigue management program. I am not a lawyer, but my pilot senses tell me that creating a regulation and saying we can escape it by implementing some safety measures is cumbersome and, frankly, ridiculous. Why not just produce a regulation that says an operator needs a fatigue management plan? Is that not far more logical and efficient than what is currently being bandied about? A friend from Transport Canada tells me he agrees but says using logic with a government department is the equivalent of trying to find the proverbial corner of a round house.

One day, under these rules, there will be a mighty conflagration in some high-value forested area of the country, and the silence will be deafening as the helicopters remain on the ground with no one to fly them. What will Collins say then? 🚫

How does CAE elevate your training experience?



1.

With centers located in some of the world's most desired locations



2.

With highly skilled and dedicated instructors delivering customized training



3.

Through a customer service team offering a friendlier, more cultural experience



4.

By working with OEMs and NAAs to deliver programs specific to your needs



5.

By creating and using the world's most advanced industry tools and technologies



6.

By training more aviation personnel than anyone else globally

Work with the team that works with you.

Visit us at HAI Heli-Expo Booth B6427 | cae.com/helicopter-training

Your worldwide
training partner
of choice



WE HIGHLIGHT PHOTOS SUBMITTED THROUGH [VERTICALMAG.COM](https://www.verticalmag.com), [FACEBOOK.COM/VERTICALMAG](https://www.facebook.com/verticalmag) & [@INSTAGRAM @VERTICALMAG](https://www.instagram.com/verticalmag)



 A HELINET AVIATION LEONARDO A109 BEATS RUSH HOUR TRAFFIC IN LOS ANGELES. **ROBERT GLUCKMAN PHOTO**



 U.S. ARMY PILOTS CWO2 BRIAN D. SLEASE AND CWO2 VINH Q. DO RETURN TO LADD ARMY AIRFIELD IN FORT WAINWRIGHT, ALASKA, AFTER CONDUCTING A MAINTENANCE TEST FLIGHT IN A BOEING AH-64D APACHE LONGBOW HELICOPTER. **WO1 CAMERON G. ROXBERRY PHOTO**



THE SILHOUETTE OF AN MD 530F CONDUCTING HUMAN EXTERNAL CARGO OPERATIONS AT SUNSET IN BAKERSFIELD, CALIFORNIA. **TYLER PRICE PHOTO**



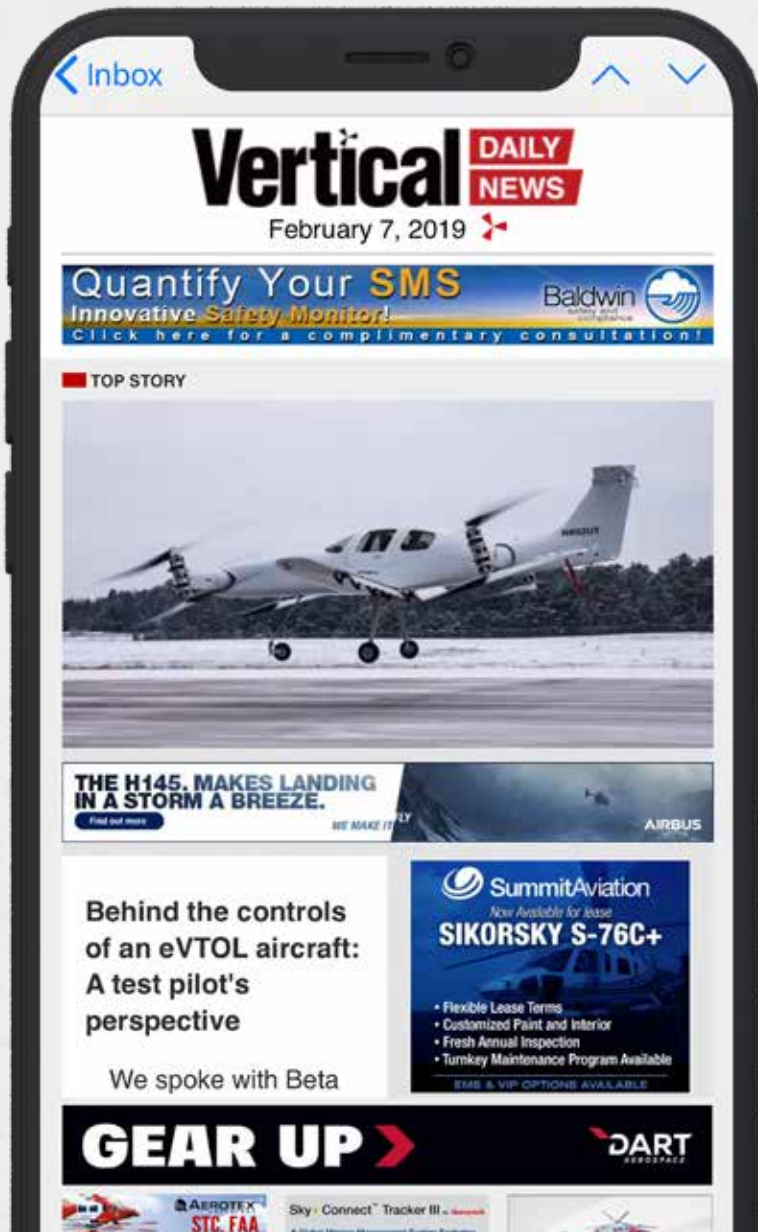
 A SIKORSKY S-61N COMES IN TO LAND IN SPILLER INLET, BRITISH COLUMBIA, AFTER A DAY OF SLINGING LOGS OFF A HILL. **ERNIE CLIFFE PHOTO**

Vertical **DAILY NEWS** TOP 10

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

01 **WHY AN ELECTRIC R44 HELICOPTER MAKES MORE SENSE THAN YOU THINK**

The story behind the record-breaking electric-powered Robinson R44 helicopter.



BELL UNVEILS FULL DESIGN FOR NEXUS AIR TAXI

Hybrid electric propulsion and six tilting ducted fans in Bell's air taxi.

AIRCRANE CRASHES INTO DAM DURING FIREFIGHTING IN AUSTRALIA

No fatalities, but Erickson S-64E crash results in temporary "safety shutdown."

SIKORSKY AND BOEING RELEASE FIRST PHOTOS OF SB-1 DEFIANT

Team provides pics of aircraft competing for U.S. Army's JMR-TD program.

CH-53K HELICOPTER PROGRAM DELAYED BY TECHNICAL ISSUES

Program likely to miss a key milestone due to issues discovered during testing.

MAST BUMPING, LOOSE CLOTHING IMPLICATED IN WALLIS BROTHERS CRASHES

Reports highlight factors in separate fatal helicopter accidents in New Zealand.

SUBARU CONDUCTS FIRST FLIGHT OF UH-X PROTOTYPE

The prototype took to the sky on Dec. 25 for a 55-minute flight.

THE DECADE-LONG FIGHT TO SAVE THE KRUGER'S RHINOS FROM POACHING

SANParks' AS350/H125s support anti-poaching and conservation missions in Kruger National Park.

BRISTOW YET TO CLOSE COLUMBIA DEAL

Bristow is still working to close its \$560-million acquisition of Columbia Helicopters.

U.S. ARMY SELECTS GE'S T901 ENGINE FOR IMPROVED TURBINE ENGINE PROGRAM

Improved Turbine Engine Program will re-engine the U.S. Army's AH-64s and UH-60s.



READ MORE

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.

feb/mar 2019

for more **DAILY NEWS UPDATES** visit **VERTICALMAG.COM**

The new regulations reduce a maximum tour length from 42 days to just 17, and pilots will need 36 hours of time off in every seven days while in camp. **Mike Reyno Photo**



New flight & duty regs hit Canada

BY LISA GORDON

Transport Canada's new flight and duty time regulations, finally unveiled on Dec. 12, 2018, have been labelled "a catastrophe for our industry segment" by Helicopter Association of Canada (HAC) president Fred Jones.

The Transportation Safety Board of Canada quickly applauded Transport Canada's announcement, noting it has identified fatigue as a contributing factor or a risk in at least 34 aviation occurrences since the early 1990s. In October 2018, the agency added fatigue management to its Watchlist 2018, a collection of the most pressing issues impacting transportation safety.

But most Canadian aviation associations united early in the regulatory process to

fight against what they called a "one size fits all" approach to the flight and duty time revisions.

"For helicopter operators, it represents a radical departure from the status quo on virtually every level of the negotiations," said Jones.

The new regs reduce the permitted length of a work tour from the current 42 days (which Jones admits is a high number in need of adjustment) to just 17 days. When travel days are subtracted from that ceiling, he said in many cases there are just two weeks left to work productively on the job site.

What's more, pilots will need 36 hours of time off in every seven days while in camp — which means that the customer will need to down-tool for a day each week, unless there is a second pilot available onsite.

"The two-week tour has now become the biggest problem, because to rotate crews in and out of remote sites every two weeks is insanity," said Jones.

Another issue that is top of mind for Jones is the omission of the so-called "zeroing" principle.

Currently, if a pilot is given five days off in a row, it zeroes their accumulated flight time and gives them a fresh start. This was a principle that Jones said was proven during the flight and duty time working group, and supported by the fatigue scientist hired by Transport Canada.

"That was erased completely from the new regs — it doesn't exist anymore," he said. "That is one of those points strongly supported by the science. When you consider the distances in our industry and that flight crews want to spend time with their fami-

lies, I would argue that pilots like to work straight stretches and then take extended periods of time off.

“Legally, under existing rules, you could give pilots time off while in camp. But nobody wants to do that.”

HAC — which speaks for 140 operators who collectively represent more than 80 percent of commercial helicopters flying in Canada today — has long been opposed to prescriptive flight and duty time regulations that do not contemplate the inherent differences between unique segments of the aviation industry.

“My phone has been ringing off the hook since we circulated the regs,” added Jones. He explained that while the new regulations are not applicable to Canadian Aviation Regulations (CARs) 702 aerial work operations, a category which accounts for a great deal of helicopter activity, most operators still “flip flop” between aerial work and passenger carrying — sometimes many times in the same day.

“Passenger work will be subject to the new rules, but utility ops will not. Problem is, you can’t change out a [remote] pilot, so while they are in the field they will be subject to the more restrictive regulations.”

Many of HAC’s members are seasonal operations that “make hay for four months a year” and are often conducting deployed operations in isolated locations, some of which could take three travel days to access.

MAKING A SPECIAL CASE

For operators who feel unable to comply with the new prescriptive flight and duty time regulations as they are written, the new legislation offers another option in the form of a Fatigue Risk Management System (FRMS).

According to the new regulations, this is a plan developed by operators that will allow them “the flexibility to set flight hours based on their unique operations if they can demonstrate that alertness and safety will not be affected.”

Jones said that while Transport Canada indicated it would be open to an FRMS

proposal on “zeroing,” he is worried that developing a viable FRMS will be too complicated, costly and time consuming for small operators.

“You will first have to build the science for it, test the theory, develop some methodology, and test fatigue levels using some sort of approved tool. There will be a big price tag attached to developing an FRMS — unless Transport Canada is prepared to consider an FRMS that is scalable to the size and complexity of the operator. That is something they have been unable to do for safety management systems for 15 years.”

While the helicopter industry will have four years to prepare for implementation of the new flight and duty time regulations, Jones pointed out the situation will be further exacerbated by the current shortage of experienced pilots.

“We can’t get experienced pilots to operate our aircraft in today’s regulatory environment; when these regulations come into force, it will be an even bigger challenge.”

SO HOW IS HAC MOVING FORWARD?

Jones said the final version of the regulations is, in some cases, more conservative than the draft outline.

“Nobody had a chance to comment on those changes,” he said. “So the first line of defence in my view is to attack the existing regs as published. The second line of defence would be an exemption. Then, if we need to, HAC will create an FRMS framework for our operators — we would have no option at that point.”

As written, the regulations will cause significant hardship for small helicopter and fixed-wing operators serving northern, remote and Indigenous communities, Jones predicted.

“There’s no doubt about it: These regs will translate into service cuts. They will affect the viability of many small helicopter operators in Canada.

“We need to get together with Transport Canada and come up with a plan so [that] we’ll be ready in four years.”

RotorBits

THE CARLYLE GROUP TO

ACQUIRE STANDARDAERO

Global alternative asset manager The Carlyle Group is to acquire StandardAero, a global provider of aftermarket engine maintenance, repair and overhaul (MRO) services for the aerospace and defense industries, from Veritas Capital. The transaction is subject to customary regulatory conditions and is expected to close by the end of the first quarter of 2019.

Founded in 1911, StandardAero is one of the world’s largest independent MRO providers offering extensive services and custom solutions for commercial aviation, business aviation, military and industrial power customers.

Leonardo Photo



SAKHALIN ENERGY SIGNS

CONTRACT FOR 3 AW189s

Sakhalin Energy Investment Company Ltd. has signed a contract for three Leonardo AW189s. The aircraft will be used to perform transport operations from Sakhalin Island in Russia, supporting the oil-and-gas industry. Deliveries are expected to start in the first quarter of 2020.

“This latest order confirms the competitiveness of Leonardo’s modern product range in the oil-and-gas market and further strengthens the success of the AW189,” said Gian Piero Cuttillo, managing director of Leonardo Helicopters. “We’re confident the AW189 will allow Sakhalin Energy to perform a quantum leap forward in operational capabilities.”



BELL 525 BEGINS COLD WEATHER TESTS

BY OLIVER JOHNSON

On Jan. 21, the first of two Bell 525 Relentless helicopters arrived in Yellowknife, Northwest Territories, to begin cold weather flight tests, with Bell targeting certification of its fly-by-wire super medium helicopter by the end of 2019.

Susan Griffin — executive vice president of commercial business at Bell — reported “significant progress” on the aircraft’s flight test activities in 2018, including the completion of hot and high tests.

Four aircraft are now involved in the flight test program, which had recorded almost 900 flight hours by the end of December.

Two aircraft (ships two and three) are participating in the Canadian cold-weather trials, which are expected to last several months. During a media update on the program in mid-December, Bell said a third aircraft (ship four) was scheduled for snow testing in New York over the winter, with the fourth (ship five) expected to soon begin its flight testing program.

The Federal Aviation Administration (FAA) has joined the test program, which will now focus on the remaining flight and component fatigue tests. After certification in an oil-and-gas configuration, the team will immediately switch focus to certify the aircraft in search-and-rescue configuration, as well as certify a full ice protection system. Certification of the type from the

European Aviation Safety Agency (EASA) is expected six to nine months after FAA approval.

The 525 program suffered a major setback in July 2016 when the first prototype crashed during flight testing, killing both test pilots on board. In January 2018, the U.S. National Transportation Safety Board (NTSB) issued its final report on the accident, which found that the crash was caused by unanticipated severe vibrations as the aircraft attempted to recover rotor RPM following a one-engine inoperative (OEI) test at 185 knots.

According to Josh O’Neil, flight test manager for the 525, the team has implemented all the corrective actions recommended by both the NTSB report and Bell own’s report into the accident — and has finished a “thorough investigation” of the accident in-flight.

“So [that involves] actually going back and understanding those flight conditions, recreating them in flight, and proving out the aircraft is safe there and everywhere else in the [flight] envelope,” said O’Neil.

Production started on the first serial 525 at Bell’s facility in Amarillo, Texas, in summer 2018, though the manufacturer will not reveal current or future production rates.

Bell claims the aircraft will be the most technologically-advanced helicopter ever to be certified in its category (part 29, 14 Code of Federal Regulations), with its

fly-by-wire controls enhancing safety and reducing pilot workload; a “precedent-setting” drive system that meets the latest EASA standards for run-dry performance (and tested to over an hour); and a technologically advanced, low-switch cockpit. It will certainly be the first commercially-certified fly-by-wire aircraft.

When certified, the super-medium aircraft will be entering a difficult offshore oil-and-gas market that has been enduring some of the most significant headwinds in its history. There, it will compete against the Airbus H175 and Leonardo AW189 — and Bell believes it will also compete against the heavier Sikorsky S-92.

In an oil-and-gas configuration, the 525 can carry 16 passengers in seats that are 20 inches wide. In a high-density seating configuration, it can carry up to 20 passengers.

“I think the oil-and-gas companies and the operators, with the downturn, I think they’ve learned to be more efficient in the way that they’re operating,” said Griffin. “I do see that the 525 has an opportunity in that market. Obviously the S-92 is the predominant heavy aircraft [offshore] right now, but I think bringing a second competitor into that market . . . so that the industry isn’t so reliant on just one . . . I think the safety features that [the 525] brings into those markets — I think it’ll be recognized for that.”

Perhaps because of the current state of the offshore market, Bell is firmly pitching the aircraft at “multiple” markets, with VIP and search-and-rescue the other key sectors for the type.

The manufacturer has not publicly disclosed how many letters of intent or orders it has received for the type, but said it has received “a lot of interest” from those three operating sectors, with potential customers invited to the type’s home at the Flight Research Center to see the aircraft fly.

“Hopefully [early] in the next year we’ll get a marketing license to be able to start allowing people to travel in the aircraft,” said Griffin.

According to Byron Ward, VP of the 525 program, these flights will likely start in the second or third quarter of 2019, with the newly-completed ship five likely to perform the majority of marketing flights.





“Its interior is already installed and checked out — and it looks very nice,” he said.



MD HELICOPTERS™

MISSION PROVEN. CHALLENGE READY.

Building upon a tradition of excellence that is unmatched in the aerospace industry, MD Helicopters delivers iconic, American-made light-twin and single-engine helicopters to military, law enforcement, EMS/air medical, utility and VIP operators worldwide. A 'first-choice' manufacturer among discerning rotorcraft operators, MD Helicopters continues the Howard Hughes tradition of always leaning forward to develop and deliver the best-quality, best-value helicopters in the world.

 MDHELICOPTERS.COM
 [MD HELICOPTERS, INC.](https://www.facebook.com/MDHELICOPTERS)
 [@MDHELICOPTERS](https://twitter.com/MDHELICOPTERS)
 [@MDHELICOPTERS](https://www.instagram.com/MDHELICOPTERS)



MD™ 500E



MD™ 530F



**MD™ 530F
CAYUSE WARRIOR**



MD™ 520N



MD™ 600N



**MD™ 902
EXPLORER**



BRISTOW'S COLUMBIA PURCHASE FALLS THROUGH

Bristow Group has taken a \$20 million hit after its planned \$560 million purchase of Columbia Helicopters fell through, with the two companies having “mutually agreed” to terminate the move.

The termination, announced shortly after the close of stock market business on Feb. 11, was followed by a sharp drop in the value of Bristow's stock price, from \$3.06 per share on Feb. 11, to \$1.24 per share on Feb. 13.

“The decision to enter into a mutual termination of the purchase agreement was based on a number of developments following the entry into the agreement, which led both Bristow and Columbia to conclude that it was not possible to combine the two companies at this time,” said Bristow board of directors chairman Thomas Knudson in a press release announcing the move. “We continue to value our relationship with Columbia and look forward to having the opportunity to work together in the future.”

The acquisition, labelled “the largest transaction in the company's history” by Bristow CEO Jonathan Baliff, was announced by the Houston, Texas-based offshore transport giant on Nov. 9, 2018. Included in the terms of the purchase

agreement was a clause that stipulated Bristow would have to pay the Aurora, Oregon-based heavy lift specialist a \$20 million termination fee if it couldn't complete the acquisition.

On Jan. 8, activist investor Global Value Investment Corp. (GVIC) delivered an open letter to Knudson objecting to the proposed financing of the acquisition, which it said would be “both expensive and highly dilutive to existing shareholders.” GVIC added that it was “prepared to take all actions it deems necessary to ensure shareholders' interests are fully considered and protected.”

Although the acquisition has fallen through, the companies “continue to believe in the potential for collaboration between Bristow and Columbia,” and “are actively considering mutually beneficial opportunities to work together,” stated Columbia president and CEO Steve Bandy.

Bristow announced the termination of the agreement on the same day it released preliminary financial results for the quarter ended Dec. 31, reflecting a quarterly loss of \$0.57 per share.

“December 2018 quarter results continued to reflect an environment that remains uneven and challenging in the oil-and-gas

footprint,” the company stated. “Solid performance in the U.K. SAR business, Africa region and Norway operations was mostly offset by the continued losses in the company's Eastern and Airnorth fixed-wing operations, negative impact of foreign exchange volatility, and expenses associated with the [Columbia] transaction.”

Bristow also filed a notification of late filing with the Securities and Exchange Commission after concluding that inadequate monitoring control processes related to certain of its secured financing and lease agreements may have resulted in misstatements in its financial reports since March 31, 2018.

The company said it is now evaluating “whether certain debt balances should be reclassified from long-term to short-term in those financial statements, whether related waivers can be obtained from lenders, if necessary, and the resulting impact on the assessment of the company's ability to continue as a going concern.”

Bristow also announced that the retirement of Baliff, previously expected to coincide with the completion of the Columbia acquisition, will now become effective on Feb. 28. Thomas Amonett, currently vice-chairman of the board and interim president of Bristow, will perform the additional role of interim CEO until a new CEO is selected.

HILLSBORO AERO ACADEMY LAUNCHES HELI ACADEMY

BY OLIVER JOHNSON

Famed flight school Hillsboro Aero Academy (HAA) is to convert its Troutdale Campus in Oregon into an exclusive helicopter training campus, to be known as the Hillsboro Heli Academy.

The move is a reflection of the operator's desire to better focus the helicopter part of its school, which had until now been sharing facilities with the company's fixed-wing schools in Hillsboro and Troutdale, Oregon; and Las Vegas, Nevada. The change will see Hillsboro Heli Academy essentially run as its own operation, with Troutdale functioning as the main hub of the school's rotary-wing training activity.

"The airline industry has been strong and subsequently our focus on helicopters got overshadowed for a brief second by the airplane school and how well we were performing there," said helicopter chief instructor Lasse Brevik. "Now we're putting all of our helicopters, our helicopter instructors, everything that we have [on the rotary-wing side] and we're making our Troutdale campus our main helicopter focus."

HAA was established as part of Hillsboro Helicopters (later known as Hillsboro Aviation) in 1980, but split from the charter and sales side of the business when owner Max Lyons sold the flight school in 2014. It currently operates as a fixed- and rotary-wing flight school, with the helicopter side staffed by 25 instructors.

"[The launch of Hillsboro Heli Academy] is a pretty big change for the company — it's the biggest one we've done since 2014, when

we started separating the flight school from the charter and sales department," said Brevik. "I think this is something that the helicopter industry really needs. We really want to get the message out there to students that the helicopter industry is still a very strong industry."

Director of helicopter training Jared Friend has taken up a position as head of the Hillsboro Heli Academy, and the launch of the school as a distinct entity will become complete once all fixed-wing students and certified flight instructors (CFIs) have completed their transition to HAA's other campuses.

"We realized for the helicopter school that we needed to separate ourselves a little bit — just in mindset, not actually in reality — and really have a team that is focused and a location that is specifically focused on helicopter training," said Friend. "We're pretty excited about how this can grow our unity and our culture and also give us an opportunity to work with helicopter industry leaders to renew our helicopter brand."

Last year, HAA completed 350 check rides with its rotary-wing students. It currently has a fleet of 21 helicopters (19 Robinson R22s and two Robinson R44s), and Brevik said the company doesn't have any plans to change its fleet in the near future.

"We're always looking at what is needed by the industry from new graduates, in terms of skills, knowledge, safety, and professionalism," said Brevik. "If that requires us to look into other types, then we will. But the R22 and R44 are absolutely the best trainers for what the industry is doing right now."

GET ADS-B "OUT" FOR ONLY \$1,795¹



GDL® 82 ADS-B DATALINK FOR HELICOPTERS

SIMPLE
INSTALLATION

KEEP YOUR EXISTING
TRANSPONDER

ADS-B "OUT"
COMPLIANT

AUTOSQUAWK
TECHNOLOGY

To learn more, see your Garmin dealer or visit Garmin.com/ADS-B

GARMIN.

¹MSRP © 2018 Garmin Ltd. or its subsidiaries.

AIRBUS HELICOPTERS SEES STRONG SALES INCREASE IN 2018

Airbus Helicopters delivered 356 rotorcraft and logged gross orders for 413 helicopters (net 381) in 2018 — up from 350 gross orders the previous year.

Notably, the company booked 148 orders for light twin-engine aircraft in the H135/H145 family, and secured 15 orders for its next-generation H160. At the end of 2018, the manufacturer's overall backlog had increased to 717 helicopters.

"Our commercial performance in 2018 demonstrates the resilience we have developed as a company to help us navigate what remains a challenging environment," said Bruno Even, Airbus Helicopters' CEO, in a press release announcing the results. "Even though the civil and parapublic market remains at a low level worldwide, we have managed to maintain our global

leadership thanks to our wide and modern portfolio of products and services and our international footprint."

Even said the company had also increased its market share in the military sector.

"These positive trends give us the means to prepare the future and continue our transformation, with innovation at our core and customer loyalty at heart," he added.

Landmark deliveries in 2018 included the first of 100 H135s for China in Qingdao, where a dedicated final assembly line will serve the growing demand of the Chinese market for civil and parapublic helicopters. Meanwhile, Hong Kong Government Flying Service took delivery of the first H175s in public services configuration.

The year also saw something of a rebirth

for the Super Puma family, with successes in military campaigns joined by orders from new civil and parapublic customers who are repurposing former oil-and-gas machines.

Also on the military front, the NH90 received an order for 28 units in Qatar, while Spain requested another 23 of the aircraft in a follow-on order.

Key program milestones for the manufacturer in 2018 included the powering-on and ground testing of the CityAirbus electric vertical take off and landing technology demonstrator, ahead of a maiden flight expected early in 2019. The first H160 in serial configuration entered flight trials in 2018, while the VSR700 unmanned aerial system demonstrator performed its first unmanned flights at the end of the year.

Airbus recorded 15 orders for its H160 in 2018, as the first serial H160 — set to be delivered to Babcock in 2020 — performed its first flight. **Mike Reyno Photo**



WAYPOINT BOUGHT BY MACQUARIE

Macquarie Group has reached an agreement to purchase Waypoint Leasing Holdings Ltd. for approximately \$650 million. The move came after Waypoint filed for Chapter 11 bankruptcy protection on Nov. 25, citing the major downturn in the offshore oil-and-gas sector and CHC Helicopter's bankruptcy restructuring process as contributory factors.

At the time of the filing, Waypoint had a fleet of 165 aircraft, assets of \$1.62 billion, and liabilities of \$1.23 billion. It also revealed it had undertaken a "comprehensive sale process" over the previous months.

In a press release announcing the acquisition, the companies said Waypoint's helicopter assets and management team will be merged with Macquarie Rotorcraft Leasing, and Macquarie will employ the Waypoint staff.

Waypoint said it has received \$45 million of debtor-in-possession (DIP) financing from several of its existing lenders to complete the sale.

"This is a momentous step forward in achieving our goal to transform Waypoint," said Hooman Yazhari, chief executive officer of Waypoint. "With Macquarie's strong balance sheet and incredible depth in aviation, the integrated platform will be the most dynamic in the industry."

Yazhari added that he expected "a speedy conclusion" to the sale process.



Leasing company Waypoint had a global fleet of 165 aircraft when it entered a Chapter 11 process in Nov. 2018. **Rob Reyno Photo**

"This transaction builds upon Macquarie's strong franchise in the aviation finance sector," said Stephen Cook, global head of transportation finance at Macquarie. "The Waypoint team has built a leading presence in the helicopter leasing market. Combining our own business and asset expertise, this is a transformative development for our current business. Macquarie Rotorcraft Leasing intends to build on this acquisition to be a pre-eminent provider of helicopter leasing and financing products."

Waypoint had previously been in negotiations for more than a year regarding a potential sale to a Chinese company. The move had even received Chinese regulatory approval, but the purchaser had been unable to close the transaction.

Macquarie's acquisition of Waypoint is expected to close in the first quarter of 2019, subject to various approvals. Waypoint said it will continue to operate as usual until the move closes.

UPGRADE TO AN ADS-B "OUT" TRANSPONDER FOR ONLY \$2,995¹



GTX™ 335 ADS-B "OUT" TRANSPONDER FOR HELICOPTERS

ADS-B "OUT" COMPLIANT

COMMON TRANSPONDER SIZE

BUILT-IN WAAS GPS POSITION SOURCE

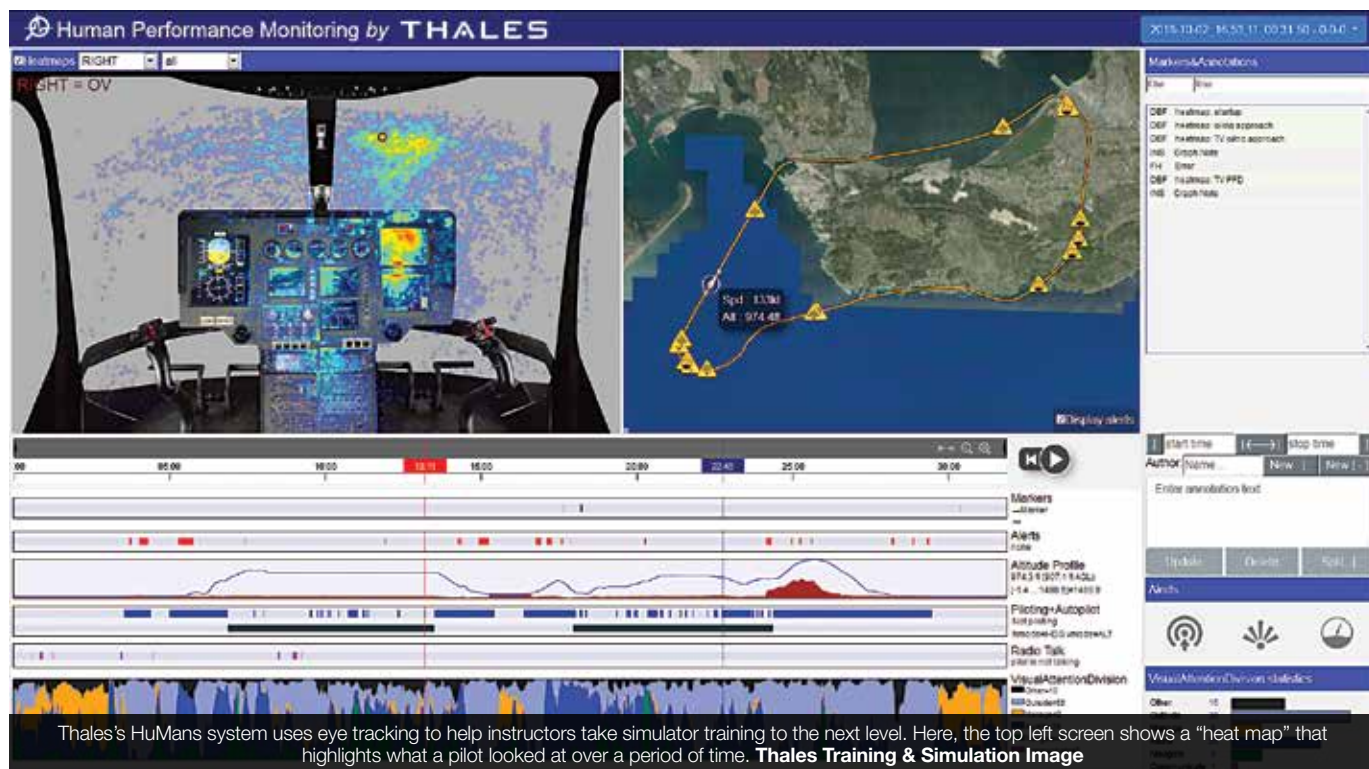
FLIGHT TIME, ALTITUDE ALERTS AND MORE

To learn more, see your Garmin dealer or visit Garmin.com/ADS-B

GARMIN.

¹Promotional price available on orders placed before Jun. 28, 2019. © 2019 Garmin Ltd. or its subsidiaries.

THALES BRINGS NEUROSCIENCE TO TRAINING



BY THIERRY DUBOIS

Thales has created a new tool for flight simulator instructors, allowing them to better understand a pilot's cognitive state — thus enabling more effective training sessions.

Designed as an option for Reality H simulators, the HuMans system makes the most of recent advancements in eye-tracking and neuroscience. "Sitting behind the pilot, the instructor was missing what the pilot is looking at and how he comprehends the situation," said Benoit Plantier, CEO, Thales Training & Simulation (TTS).

HuMans uses an eye-tracking system where cameras and accompanying image analysis software follow pupil movement. The cameras are located on the instrument panel and over the pilot's head. For the instructor, the interface is a tablet. The combination opens a world of possibilities.

The instructor may simply look at the pilot's face or the instruments. Or he can follow a dot located at the focus of the pilot's gaze. As that focus is shown for the last few seconds (that duration being adjustable), the instructor can see a line representing recent focus.

Three alarms draw the instructor's attention

to particular problems, said Christophe Bruzy, TTS's technical director. The first one is tunnel vision — excessive focus on an instrument. The second alarm triggers when the pilot has not looked "outside" for too long a period of time. Finally, another alarm indicates too little time spent looking at instruments. Pointing out such issues helps the student progress in situational awareness.

For an instructor, the tools can provide a clear idea of how comfortable the student is. If the student is both successful and relaxed, the instructor can inject more difficulties in the scenario, better exploiting training time. Or, if the mission proves too difficult, the instructor can adapt it to the trainee's capabilities.

After the training session, the instructor can see a "heat map" of the pilot's gaze. The map integrates the focus of the pilot's eyes over an adjustable period of time. Depending on the time the pilot spent looking at a given area, the area appears in different colors. The heat map is so precise that it draws the shape of the various displays.

The technology also allows for a portion of the "flight" to be replayed. The instructor

just selects a particular location (picked on the map) or time reference on which to concentrate, allowing their comments to be contextualized. For example, they may tell the trainee "you were looking at the right/wrong instrument" at a precise moment during the flight. It could have been when flying over an obstacle, during the approach, or at the beginning of a rain shower.

Thales hopes these new capabilities will improve training by making it "evidence-based." The instructor can factually measure student progress, Bruzy emphasized. The trainee's methods — such as his or her visual pattern — can be validated, and they can see their own progress in an objective manner.

It took Thales five years of research and development to create HuMans. "We have benefited from 15 years of academic research and we have collaborated for five to six years with laboratories," said Bruzy. The company made the most of advanced studies performed at France's national research institute, CNRS, in cognitive science and mathematics. The country's IRBA armed forces biomedical research institute also helped in human factor analysis.

Non-intrusive eye tracking (where the pilot is not required to wear a device) helped develop HuMans. Another contributing technology was artificial intelligence. The massive amount of data collected during a training session — 70 gigabytes, taking video into account — has to be made “intelligible for a human being,” said Bruzy. “You have to offer digested data to the instructor.”

The product was developed with instructors to factor in the user. Thanks to that “user experience” approach, HuMans incorporates fewer indicators than if it had been developed only by engineers.

“The tool can be mastered in one hour,” said Etienne Chevreau, TTS’ head of strategy and marketing.

Similarly, more sensors were used during development for respiratory and heart rates, as well as an encephalogram. They were used to create models but, to keep the installation straightforward, only the eye-tracking system was retained in the product.

In future, however, non-intrusive equipment may be introduced to monitor the trainee’s heart rate. Measuring rate variation and inter-beat duration may be useful. From

those and other — unspecified — parameters, the mental workload could be inferred, Bruzy explained. A four-level bar, representing the student’s mental workload from low to very busy, could then be shown to the instructor. For a complex mission, mental workload has to be kept below a certain threshold, Plantier pointed out.

“At the center of the training process is now the human being, with a behavior that can induce dangerous situations [and can therefore be corrected],” said Bruzy. Technical and behavioral skills are continuously evaluated, using facts. The new tool was devised to help the instructor meet teaching goals, Bruzy stressed.

In the future, when enough Reality H simulators are in service with the HuMans option, Thales hopes to be able to quantify how much time the tool saves during training.



Between the two screen shown here, two of three alarms are illuminated, warning the instructor that the pilot is in an “tunnel vision” situation, or is not looking through the windows or at the instrument panel enough. **Thales Training & Simulation Image**

HERE’S ONE INVESTMENT IN ADS-B THAT ALSO PAYS DIVIDENDS.



GTX™ 345 ADS-B “OUT” AND “IN” TRANSPONDER FOR HELICOPTERS

REPLACEMENT
TRANSPONDER

ADS-B “IN”
TRAFFIC AND WEATHER

PATENTED TARGETTREND™
INTUITIVE TRAFFIC TECHNOLOGY

DISPLAYS ON COMPATIBLE
AVIONICS AND APPS

To learn more, see your Garmin dealer or visit Garmin.com/ADS-B

GARMIN.

AIRBUS HELICOPTERS NORTH AMERICA CELEBRATES MILESTONES



There are nearly 2,600 Airbus aircraft operating in North America, with more than 700 customers. **Mike Reyno Photo**

Airbus Helicopters North America is celebrating two milestones this year, with 2019 marking Airbus Helicopters, Inc.'s 50th year of sales and support for U.S. helicopter operators, and Airbus Helicopters Canada Ltd.'s 35th year.

"For 50 years, our customers and the local communities in which we are based have relied on us as a strong partner for advancing the aviation industry in North America," said Chris Emerson, head of the North America region. "This represents 50 years of experience, expertise, customer experience, innovation, and technology — a strong foundation that has secured our leadership position today and that will prepare us for success in the next 50 years."

Airbus Helicopters, Inc.'s operations began in the U.S. in 1969

with the establishment of Vought Helicopter, Inc. in Texas, which France's Aerospatiale took over in 1974. The company opened the doors to its current facilities in Grand Prairie in 1980.

Airbus Helicopters Canada traces its roots to MBB Helicopter Canada Ltd., founded in 1984 in Fort Erie, Ontario, after successful negotiations between MBB Helicopters, Fleet Aerospace, and the Canadian and Ontario governments.

The U.S. and Canadian companies were renamed American Eurocopter Corporation and Eurocopter Canada Ltd. when the helicopter divisions of Aerospatiale and MBB merged to form Eurocopter Group in 1992. In 2003, American Eurocopter opened production facilities in Columbus, Mississippi, and in 2004, Eurocopter Canada expanded its presence in Fort Erie and Richmond, British Columbia.

After a series of product development, sales, and delivery milestones, the two companies took on the Airbus branding in 2014, and now comprise a regional organization, Airbus Helicopters North America, which will be celebrating the milestone anniversaries with events and campaigns throughout the year.

Airbus Helicopters has more than 700 customers operating nearly 2,600 aircraft in North America. Airbus Helicopters, Inc. and Airbus Helicopters Canada Ltd. manufacture, market, sell, assemble, support and provide training solutions for Airbus helicopters through two sites in the United States, one in Canada, and a large network of service centers.

Visit Booth #C3126 at HAI Heli-Expo 2019 • Atlanta, GA • March 4-7

Rotorcraft Reliability, From Sun Up to Sun Down.

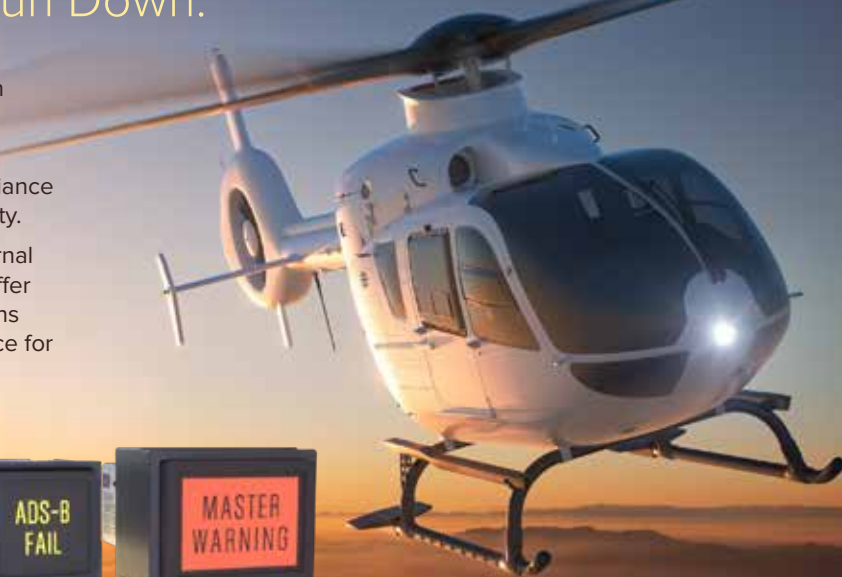
For 50 years, rotorcraft OEMs have trusted VIVISUN® lighted pushbutton switches for superior performance.

VIVISUN offers best-in-class sunlight readability, native night vision compliance and rugged, life of the platform quality.

Switches and annunciators with internal NEXSYS® Component Technology offer unmatched system integration options that make VIVISUN the optimal choice for your critical SWaP applications.

Call or visit us online today to learn how VIVISUN innovations can help your next project take flight.

+1 (888) 848-4786
www.appliedavionics.com



Manufactured by
Applied Avionics

©2019. VIVISUN® and NEXSYS® are registered trademarks of Applied Avionics, Inc. All rights reserved.



Experience has no substitute.

We are

Personable. Reliable.
Experienced.
Efficient. Innovative.

We value

Accountability.
Integrity. Quality.
Safety.

VISIT US AT HELI-EXPO **BOOTH C2634**

CONTACT US **24/7** FOR SUPPORT

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



The Garmin G500H TXi is available in a horizontal format that allows the display of a PFD and a MFD simultaneously. **Garmin Photo**

GARMIN G500H TXI CERTIFIED FOR VFR

The Garmin G500H TXi touchscreen flight display has been certified for normal category visual flight rules (VFR) helicopters. The G500H TXi has an expanded feature set that offers various panel possibilities and a streamlined upgrade path for helicopters already equipped with the original G500H flight display. A new software version for the GTN 650/750 series has also been approved for helicopters.

"Based on the success and adoption rate of the original G500H series, we're excited to bring the next generation G500H TXi displays to the helicopter market," said Carl Wolf, vice president of aviation sales and marketing. "The growth-oriented G500H TXi boasts innovative features with vibrant graphical displays and greater situational awareness tools, and when paired with the GTN, pilots receive a harmonious avionics suite that adds even more capability in the cockpit."

Designed specifically for normal category VFR helicopters, the G500H TXi is available in several sizes and formats, including a large 10.6-inch touch-controlled display and two versions of seven-inch touch-controlled displays in either portrait or landscape orientations.

Both displays offer concentric knobs for added versatility and convenience. The 10.6-inch G500H TXi is available in a horizontal format that can accommodate primary flight

display (PFD) information and a multi-function display (MFD) simultaneously. The seven-inch portrait display can be individually dedicated to a PFD or MFD.

For space-limited panels, the seven-inch landscape display can serve as a dedicated PFD with instrument tapes and an arc-view horizontal situation indicator (HSI). The G500H TXi also features multiple video input options, night vision goggle (NVG) compatibility and a graphical map overlay within the HSI for most display formats.

Garmin said the G500H TXi incorporates a clean-sheet touchscreen design with modern processors that support improved map and chart rendering, faster panning and contemporary single-finger zoom and pinch-to-zoom gestures. For helicopters already equipped with the original G500H series flight display, Garmin said the G500H TXi is fully compatible with existing system sensors for a straightforward upgrade path.

The G500H TXi has a five-color helicopter terrain awareness and warning system (HTAWS), WireAware wire-strike avoidance technology, as well as optional Garmin HSVT 3D synthetic vision.

HTAWS offers forward-looking avoidance capability and predicts where potential hazards may exist to help pilots maintain safe separation from nearby terrain, towers or

obstacles. A helicopter-specific obstacle database contains over 200,000 additional low-altitude obstacles. An expanded version is also available and offers over 700,000 miles of power line data.

Garmin WireAware wire-strike avoidance technology uses this database to overlay powerline locations and relative altitude information on the moving map and provides both aural and visual alerting when operating near powerlines.

Connex cockpit connectivity with Flight Stream 510 and added Database Concierge is also available as an option with the G500H TXi. Using a compatible tablet or smart phone, pilots can upload and sync database information using the Garmin Pilot app. Additional features include the streaming of traffic, weather, GPS information, and back-up attitude information from the G500H TXi to the Garmin Pilot, FltPlan Go or ForeFlight Mobile applications.

The latest software upgrade for the GTN 650/750 incorporates optional hardware compatibilities, and new operational features and capabilities. These include the ability for pilots to set a user-defined waypoint as an airport, minimizing terrain alerts while landing at an airport that is not in the aviation database.

The update also adds a QWERTY keyboard within the GTN 650/750, giving pilots a more familiar way to input information.

Both the G500H TXi and GTN 650/750 software upgrade are available immediately.

At ASU, we take R&D very seriously. We believe that every new product, new innovation, and new discovery leads us a step closer to our ultimate goal: to get each of our operators home safe every night.

This is the vanguard of night vision technology backed by more than 20 years of research, experience, and innovation.

This is ASU. Heli Expo Booth #C1435



THIS IS
INNOVATION
ENVISIONED.



www.ASU-NVG.com

HAI REVEALS SALUTE TO EXCELLENCE AWARDS WINNERS



The winners of Helicopter Association International's Salute to Excellence Awards. Clockwise from top left: Thomas "TJ" Hall, DeWitte Binkley, Marty Wright, Andreas Hermansky, and Chris Sharpe.



Helicopter Association International (HAI) has announced the winners of its annual Salute to Excellence Awards — created to celebrate the highest standards of professionalism in helicopter aviation.

Thomas "TJ" Hall, Andreas Hermansky, Oliver Johnson, Chris Sharpe, Marty Wright, and DeWitte Binkley have been named as the recipients of the 2019 Salute to Excellence Awards, which will be presented at HAI's Salute to Excellence Awards luncheon at HAI Heli-Expo 2019 in Atlanta, Georgia, on March 6.

"TJ" Hall, airbase lead mechanic for Air

Methods, is the winner of the Rolls-Royce Excellence in Helicopter Maintenance Award. This award recognizes an individual for longstanding excellence in helicopter maintenance, maintenance instruction or supervision, or a single significant contribution to helicopter maintenance.

Hall started his career as a young enlisted helicopter mechanic and crew chief in the U.S. Marine Corps during the Vietnam War, and March 2019 will represent his 50th year in helicopter maintenance.

After spending 12 years in the Marines and with several overseas deployments, Hall entered the civilian world of helicopter maintenance, obtaining his Airframe and Powerplant (A&P) license and going to work for Burnside-Ott as a contractor at Naval Air Station Whiting Field.

From there, Hall was hired by Era Helicopters working in Louisiana in the petroleum industry until he transitioned to the helicopter air ambulance industry with Air Methods in 1992, where he remains to this day.

Over his career, Hall served as Air Methods' lead mechanic at three different

bases. He entered the management side of the business serving as the program aviation manager (a job normally held by a pilot) for MedCenter Air in Charlotte, North Carolina, and was then promoted to southeastern regional area maintenance manager.

After nearly a decade in the world of maintenance management, Hall decided to go back to "the line" and worked as a traveling relief mechanic before coming back to Charlotte, his current home, where he is once again working as a base lead mechanic.

Hall's insight both as a mechanic and a leader have had a tremendously positive effect on Air Methods' program. He is always willing to work, and he most recently volunteered to be the "deployed" mechanic for the Federal Emergency Management Agency recovery during Hurricane Florence.

Andreas Hermansky is the recipient of the Appareo Pilot of the Year Award, which recognizes an outstanding single feat performed by a helicopter pilot during the year — or extraordinary professionalism over a period of time.

On Aug. 4, 2018, a de Havilland Beaver flightseeing tour of the Alaska Range crashed with five people on board in Denali National Park, 14 miles southwest of the summit of Denali at an elevation of 11,000 feet. A call from the pilot of the downed airplane after the crash indicated some survivors had serious injuries. Hermansky mobilized the park's helicopter to fly mountaineering rangers to the accident site, but was unable to reach the victims because of persistent cloud cover obscuring the wreckage.

Ongoing rain, snow, cloud cover, and wind in the Alaska Range over succeeding days hampered National Park Service (NPS) rescue efforts. In subsequent days, Hermansky flew several reconnaissance flights to the area.

On Aug. 6, he was able to perform a short-haul mission with Chris Erickson, an NPS ranger, tethered to a rope below the helicopter to access the site. Over the scene for just five minutes because of deteriorating weather conditions, the ranger determined there were no longer any crash survivors. The aircraft was badly

damaged and sitting in treacherous terrain. Safe recovery of the deceased would be difficult.

Weather conditions improved on Aug. 10, allowing for a comprehensive evaluation of the wreckage, during which Hermansky piloted a short-haul operation of unprecedented duration and difficulty. The entire mission lasted 51 minutes on scene. Because of the unstable terrain and weather, the ranger, Tucker Chenoweth, was connected to the 200-foot line throughout the recovery.

Hermansky held a precise hover above the ranger and the crash site for about 40 minutes, repositioning the ranger several times to locate the deceased and to assess the feasibility of recovering remains and removing the aircraft from the primary flightseeing route in the Alaska Range.

Hermansky was born in Austria and immigrated to the United States in 2000, following more than a decade of law enforcement work. After flight training, he worked as a flight instructor in California before he was hired by Temsco to fly tours in Alaska.

In 2010, he began working with the Denali National Park and Preserve mountaineering staff as the pilot for the park's exclusive-use contracted Airbus H125 AStar, with the primary mission of providing emergency medical and search-and-rescue (SAR) services in the austere, high-altitude environment of the Alaska Range.

Hermansky's work with the Denali program includes regularly flying short-haul and STEP rescue missions up to 20,000 feet (6,100 meters). He has amassed over 2,600 of his 8,000 flight hours within Denali National Park and has completed nearly 300 SAR missions in Denali and national parks across Alaska.

He has helped save many lives by bringing visitors in jeopardy to the definitive care they need, and has initiated numerous modifications to the aircraft to facilitate flying at high elevation and in a range of environmental conditions. Throughout his tenure at Denali, he has engaged deeply with rangers to develop consistent, safe practices for operating in this high-risk environment.

Oliver Johnson, editor-in-chief of *Vertical Magazine*, is the winner of HAI's Salute to Excellence Lightspeed Aviation Excellence in Communications Award (see p. 44 for more details). The award is presented to the individual or organization achieving the

most creative and distinct dissemination of information about the helicopter industry.

The winner of the BLR Aerospace Excellence in Safety Award is **Chris Sharpe**, project manager of HeliSOS in Guatemala.

The award acknowledges outstanding contributions in the promotion of safety and safety awareness throughout the international helicopter community.

A native of the United Kingdom, Sharpe spent 18 years in the British Royal Navy

before beginning his civilian aviation career in 2010. He has considerable expertise as a combat flight paramedic and search-and-rescue crewman, with more than 15,000 flight hours and approximately 6,000 rescues to his name.

In early 2015, Sharpe began working as chief aircrewman, search-and-rescue specialist, and flight paramedic for helicopter operator Helicópteros de Guatemala and SOS Servicios Médicos, a provider of medical and emergency transport services and medical training. The two companies



The Future of Avionics Today

NEW JA10



- 8 users • Up to 10 coms
- 4 Rx • 4 direct inputs
- Cell phone operation mode
- Compatible with Hi or Low impedance headsets
- Tx capability for pilot, co-pilot & 3 passengers
- Additional user control panel compatible

800-527-2581 | 214-320-9770

DALLAS AVIONICS, INC.

**HAI B5808
AEA 620**

dallasavionics.com

ISO9001:2015/AS9100RevD

joined together to create the HeliSOS project, a licensed and accredited helicopter air ambulance and rescue service. Under Sharpe's management, HeliSOS is the first helicopter fully licensed as an advanced cardiac life-support air ambulance in Guatemala.

Sharpe has given his time — and often, his own money — to train and educate others. He developed and offered aircrew survival courses for the anti-narcotics and anti-terrorist units of the Guatemalan Air Force. He initiated the first community

visit of a helicopter air ambulance to the Colegio Maya, a pre-K through 12 school in Guatemala City, acquainting future generations with the helicopter industry.

Sharpe also opened Black Wolf Helicopter Special Operations, which offers training and operational support to government and military helicopter special ops units, as well as charter and adventure flights. All Black Wolf profits go to support HeliSOS's initiatives to provide first-class air ambulance and rescue services to all, regardless of their ability to pay.

Marty Wright, chief flight instructor at the Bell Training Academy, is the recipient of the W.A. "Dub" Blessing Flight Instructor of the Year Award.

The award, sponsored by H. Ross Perot and the Perot family, recognizes superlative contributions by a helicopter flight instructor in upholding high standards of excellence.

As chief flight instructor for the Bell Training Academy, Wright is responsible for maintaining the highest standards of instruction and training on Bell products in the industry. He is directly responsible for the training, standardization, and mentoring of the 34 academy instructors, and instrumental in the development and approval of regulatory certifications for Bell's Federal Aviation Administration (FAA) part 142 training center.

Wright joined Bell as a V-22 pilot ground instructor after retiring from the U.S. Marine Corps following 22 years of service. During his military and civilian career, he has amassed more than 7,800 hours of flight instruction in six different Bell model aircraft and the Sikorsky CH-53.

During his years with the Bell Training Academy, Wright has been described as a gifted leader, helicopter pilot, and flight instructor, who can articulate subtle and complex helicopter aerodynamics and relate them to his students in an easy fashion.

In addition to his duties at Bell, Wright also provides guidance for the entire helicopter pilot community, contributing several published articles on autorotations and serving as supporting instructor for the FAA "Autorotations: Reality Exposed" presentation given at HAI and rotorcraft safety symposiums from 2015 to 2017.

He also assisted in the filming of the Discovery Channel's *Belly of the Beast* helicopter series in 2010; coordinated Bell's support of Hurricane Katrina relief efforts in August and September of 2005; and received a Certificate of Achievement from the U.S. Park Police for assistance with an F-16 crash that occurred during a Bell 412 training flight for Park Police pilots.

Finally, **DeWitte Binkley**, general manager at SureFlight in Coatesville, Pennsylvania, is the recipient of the Salute to Excellence Lifetime Achievement Award. This award, sponsored by Bell, salutes excellence in management and leadership. The award is granted to an individual for long and significant service to the international helicopter community.



Southeast Aerospace
WWW.SEAEROSPACE.COM

SEA Part 29 ADS-B STC

NOW AVAILABLE!

Visit SEA @ HAI
Booth B3514

321-255-9877

sales@seaaerospace.com



TECH-TOOL PLASTICS

EXCELLENCE. ELEVATED.

42

YEARS

OF DEDICATED
WINDOW-ONLY
MANUFACTURING!





Click these icons to see the range of products we offer

- Hand-crafted windows with high clarity & superior optics.
- Engineered & field tested for ease of installation.
- Fast and friendly customer service. Reduce your AOG, as we stock inventory of all 407 Windows.* **SHIP TODAY!**

* Only clear & light grey windows are in stock. For all other colors, expect a 5-7 turn-around time.

info@tech-tool.com | 1.800.433.2210 | www.tech-tool.com

DVCS6100

DIGITAL AUDIO TECHNOLOGY

- Customizable and expandable
- Multicast
- Simulcast
- Up to 16 Transceivers
- Over 10,000 flight hours mean time between failure



ACU6100



ACU6101



Hall B #B5927

beckerusa.com

BECKER

Continued from p. 42

Binkley began his aviation career as an aircraft painter in 1977 at Atlantic Aviation in Wilmington, Delaware. From there, he became an independent contractor running the AgustaWestland helicopter paint facility in Philadelphia, eventually becoming a full-time employee. While at AgustaWestland, he worked with maintenance manager Mario Ceriani to design and mock-up the first A109 wide-body test aircraft — Binkley actually hand-carved the first A109 mock-up.

He then moved on to Keystone Helicopter,

where, for 23 years, he managed the paint shop. When Keystone was acquired by Sikorsky Global, he continued in that role, building relationships with aviation customers worldwide.

In 2008, Binkley was approached by Robert Watkins, founder of Rampmaster, to consult on opening a new aviation paint shop called SureFlight. In 2009, the new venture opened, with just 3,600 square feet of hangar space and Binkley as the general manager and first employee. Under his leadership, SureFlight has expanded to more

than 34,000 square feet. It now handles avionics and interiors as well as painting, and is a certified FAA repair station.

Although Binkley has high expectations for quality and detail, HAI said he never asks more of the employees he works with than he asks of himself. He treats everyone with respect, as valuable members of the team. That respect comes back to him in the form of some of the most talented, dedicated, and hardest-working people in aviation.

Despite often working 60 or more hours a week, Binkley always seems to find time for charitable work. He has donated time and materials for painting and restoration of equipment for the Chester County Sheriff's Department, including squad cars, a SWAT Hummer, and an emergency response trailer. Binkley also assisted Peter Wright, Sr., in developing the American Helicopter Museum in West Chester, Pennsylvania, donating time and materials to renovate aircraft for displays.

RotorBits



Lockheed Martin Photo

S-92 TO BEGIN OPERATIONS

IN MEXICO

A major oil company has selected three Sikorsky S-92s to provide deepwater transportation to rigs off the shores of Mexico. Three fielded S-92 helicopters will support the client's operations, including crew change and search-and-rescue.

"We are very happy the customer has selected the S-92 for this important service," said David Martin, Sikorsky's vice president of oil-and-gas. "We are respectful of the trust our customers place in us, and we are working hard to ensure this mature and reliable helicopter is also the most economical."

Mexico's Directorate General of Civil Aeronautics approved the offshore and utility type certificate for the Sikorsky S-92A in November 2017.



Bambi
BUCKET®

2019
HAI HELI-EXPO
BY HELICOPTER ASSOCIATION INTERNATIONAL
March 4-7 • Atlanta

Visit us at Booth B7613

BambiBucket.com

DRIVEN BY INNOVATION

RotorBits



Airbus Photo

FIRST SERIAL H160 TAKES FLIGHT

The first serial Airbus H160 to roll off the type's brand-new assembly line in Marignane, France, performed its first flight on Dec. 14.

The helicopter, which will be delivered to launch customer Babcock in 2020, has a unique livery that is a testament to the several hundred people working towards the platform's certification at the end of next year, the program's industrial maturity, and its seamless entry into service — as they have all signed the helicopter.

The first serial aircraft will join the three H160 prototypes, which have already accumulated over 1,000 flight hours in the final steps of the flight test campaign.



Boeing Photo

FIRST FLIGHT FOR BOEING

AUTONOMOUS eVTOL

Boeing successfully completed the first test flight of its autonomous passenger air vehicle (PAV) prototype on Jan. 22 in Manassas, Virginia. Boeing NeXt, which leads the company's urban air mobility efforts, utilized Boeing subsidiary Aurora Flight Sciences to design and develop the electric vertical takeoff and landing (eVTOL) aircraft.

The PAV prototype completed a controlled takeoff, hover and landing during the flight, which tested the vehicle's autonomous functions and ground control systems. Future flights will test forward, wing-borne flight, as well as the transition phase between vertical and forward-flight modes. This transition phase is typically the most significant engineering challenge for any high-speed VTOL aircraft.

Powered by an electric propulsion system, the PAV prototype is designed for fully autonomous flight from takeoff to landing, with a range of up to 50 miles (80.47 kilometers).



EVS-4000, SkyVis™ Helmet-Mounted Display

Critical Missions

Avionics for when it is needed most.

UNIVERSAL™ AVIONICS

an Elbit Systems Company

Visit Heli-Expo booth **C4028** to learn more.

BELL SEES SLOW MARKET RECOVERY IN 2018



The first law enforcement Bell 505 Jet Ranger X was delivered in 2018. Bell highlighted the success of the aircraft as it reflected on the year, with 91 505s delivered in 2018. **Skip Robinson Photo**

BY OLIVER JOHNSON

The last year represented a continuation of the civil helicopter market's slow recovery from its 2015 nadir, according to Bell, with the manufacturer recording notable landmarks as the industry continued its slow growth.

"We are starting to see some positive trends in the market," Susan Griffin, executive vice president of commercial business at Bell, told reporters during a media event at the manufacturer's headquarters in Fort Worth, Texas. "Every quarter we had more deliveries in 2018 versus 2017."

The year began with Bell renaming and rebranding itself, dropping the "Helicopter" that had been part of its name for almost 60 years, to reflect a broadening of the company's work into tiltrotors, electric vertical takeoff and landing (eVTOL) aircraft, and new propulsion systems.

But, while the manufacturer continued this work into the development of new vertical-lift technology throughout the year, it also recorded some notable milestones in its more traditional product lines.

Bell introduced the latest version of the 407 — the 407GX_i, delivered the 100th Bell 505 Jet Ranger X (the global fleet has already reached 10,000 flight hours), reached 330,000 flight hours across its 429 fleet, and announced the 412 EPX. The latter type's development is being led by Subaru, with Bell in support, and it recorded its first flight on Dec. 25.

Flight testing continued on the 525 Relentless, with the program now having recorded almost 900 flight hours and completing hot-and-high tests in the summer.

But of all Bell's commercial helicopter products, Griffin highlighted the performance of the 505, in particular. "We believe we're getting a significant piece of

the [short light single] market," she said, with the manufacturer delivering 91 of the type in 2018 — including the first law enforcement aircraft.

In terms of product support, the company made changes to its parts distribution policy following the results of the 2018 *Vertical Magazine* OEM survey, and Griffin said the company will "continue to look to see if there's additional policy changes that we'll be making as we go forward, to see if we can better align our services and support to meet customer needs."

Customers can expect to see "several" new aftermarket initiatives, including some technology advancements, over the next few months, she added.

Bell expects more of the same gradual market recovery in 2019. "I don't expect a significant change," said Griffin. "I think we'll just continue to see the market come back slowly."

RotorBits



Bell Photo

BELL FORT WORTH NAMED VERTICAL HERITAGE SITE

Bell's Fort Worth, Texas, headquarters has been named a Vertical Heritage Site by the Vertical Flight Society.

In 1951, Bell broke ground in Fort Worth for the first factory in the world specifically built to manufacture helicopters. Since then, generations of iconic rotorcraft and tiltrotors have been conceived at the site, with more than 35,000 Bell aircraft delivered worldwide.

The Vertical Flight Society — founded in 1943 as the American Helicopter Society — is the world's oldest and largest society dedicated to advancing vertical flight technology.



Airbus Photo

SOCAL AIR SERVICES RECEIVES AIRBUS H145

Airbus Helicopters, Inc. has delivered an H145 to new customer SoCal Air Services, a venture recently launched by Fred Luddy, founder of ServiceNow.

"We are extremely excited to begin flying our new H145," said Luddy. "What really impressed us with the H145 was its large cabin capacity, high performance, safety features, stylish design, and configuration versatility, all of which make it an invaluable asset as we build our new business and expand others."

SoCal Air Services, based in Carlsbad, California, will operate the helicopter for charter flights, movie work, real estate operations and to support Luddy's other business interests.



INNOVATING TOGETHER

MAKING THE IMPOSSIBLE REAL™

95 years of innovation and collaboration

A continuous journey to create solutions
that move every person in the world.

InnovatingTogether.LORD.com



**2019
HAI HELI-EXPO**
BY HELICOPTER ASSOCIATION INTERNATIONAL
Booth #B4006

LORD

HAI RECOGNIZES *VERTICAL* EDITOR OLIVER JOHNSON



Johnson has been editor-in-chief of *Vertical* Magazine for six years. He has been named the winner of Helicopter Association International's Excellence in Communications Award.

BY ELAN HEAD

Putting together a magazine like *Vertical* is no small feat. And while each issue reflects a collaboration between our talented writers, photographers, designers, and salespeople, one person more than any other is responsible for the finished product: our editor-in-chief Oliver Johnson.

Johnson joined MHM Publishing in 2012 and took over *Vertical* in 2013. Since then, he has overseen its continued evolution as the largest, most respected helicopter magazine in the world. This year, we are thrilled to see him recognized for his achievements with Helicopter Association International's 2019 Excellence in Communications Award — marking the sixth time that *Vertical* or one of its contributors has received the honor.

Growing up in the U.K. in Shrewsbury, West Midlands, Johnson never anticipated a career in either aviation or journalism. He earned his undergraduate degree in American Studies from the University of Nottingham, then decided to take some time off to travel the world. His plan was to start in Spain and from there travel overland through Europe, Russia, China, and Southeast Asia to Australia.

As he recalled, however, "it didn't quite

work out like that," because he met his future wife Angela, a Canadian, on his third day in Spain. Angela was studying in the U.K. at the time, so Johnson returned to his home country for a while to see where the relationship might lead. But he did eventually complete his overland journey, this time starting from Russia. He chronicled his travels in a blog, and through it "found a real passion for storytelling," he said. "And it wasn't just about my own experiences, but the stories you find along the way in places you didn't know existed."

Based on that newfound passion, Angela suggested he consider pursuing journalism. The idea was appealing, so he completed an intensive one-year master's degree program taught by seasoned journalists at the University of Sheffield. He then moved across the pond to Waterloo, Ontario, where Angela had enrolled in a PhD program. After a stint with a home-building/renovation magazine, Johnson noticed an opening for an online editor position with MHM Publishing in the near-by town of Kitchener.

"I didn't necessarily expect there was going to be a helicopter magazine based in Kitchener — it didn't seem like an obvious place for it," he recalled. Publishers Mike and Linda Reyno, who had started *Vertical* out of their home basement in

Kitchener in 2002, were just as surprised to discover a local candidate of Johnson's caliber. He got the job, and soon demonstrated the talent to assume responsibility for MHM Publishing's flagship magazine.

Although Johnson had no previous experience with aviation, "when you're surrounded by the industry, when you're living and breathing it every day, it's hard not to absorb it," he said. The most important advice Mike Reyno gave him was to never pretend to know something he didn't know, but to ask questions instead. Johnson's open-mindedness and humility were appreciated by his interview subjects, even as he was learning more about the helicopter industry every day. As he pointed out, "When you get in there and speak to the people who are in the industry, you'll find that people are incredibly open and generous with their time and attention."

For Johnson, writing about helicopters has opened up an entirely new world of storytelling possibilities. "It's a really fascinating industry to cover for so many reasons," one of which is "the access it gives you to an enormous variety of other industries," he said. From emergency medical services to utility work, helicopters are used for so many different purposes around the world that there is always something new and surprising to share with *Vertical*'s readers. Moreover, the people who build, fly, crew, and maintain helicopters all have incredible tales of their own, he said, and "it does feel like a privilege to be able to tell their stories."

Although *Vertical* will always contain a high level of technical content, Johnson strives to keep the magazine as accessible as possible, for several reasons. One of these is to give people in the helicopter industry a magazine that they can proudly share with their families. Another is to help attract new people to the industry — something that will become increasingly important in the context of an anticipated labor shortage.

"It's a really unique and special business," he said. "If we are to get the next generation interested enough in joining the industry, perhaps telling these stories is a great way to do it."

HELMET OR HEADSET

Lightspeed has the right ANR solution for you.



Upgrade your helmet

Purpose built for helmet installations, the Lightspeed ANR solution is built on the legacy of Lightspeed's award winning ANR and packed with all of the premium features you expect—including Bluetooth, detachable cable, and a 3-year warranty.



The ultimate headset

Meet Zulu 3, the most comfortable, most durable headset we have ever made. In addition to outstanding performance, Zulu 3 is incredibly comfortable for long duty days, has the rugged Kevlar-reinforced cable, fully featured Bluetooth, and the industry leading 7-year warranty.

► Please visit us in booth C3832 at HAI Heli-Expo 2019 in Atlanta, Georgia

LightspeedAviation.com



Lightspeed Aviation is a proud sponsor of the HAI Excellence in Communications Award

FORMER BRISTOW ACADEMY ACQUIRED BY IDAG



U.S. Aviation Training Solutions, formerly known as the Bristow Academy, has a training fleet that includes 25 Schweizer RSG S-300s, as well as a smaller number of Robinson R22s, R44s, and Bell 206B3s.

The flight school formerly known as Bristow Academy is once again under new ownership.

Founded in 1987 as Helicopter Adventures Inc., the school was acquired by the off-shore giant Bristow Group in 2007 and renamed Bristow Academy. In late 2017, citing a desire to streamline its operations in the midst of a “historic” downturn in the oil-and-gas market, Bristow sold the academy — headquartered in Titusville, Florida — to a group of investors who changed the name to U.S. Aviation Training Solutions (USATS).

Now, International Defense and Aerospace Group (IDAG) president and CEO Bob Caldwell has revealed that USATS is being acquired by IDAG.

“We saw an opportunity and we jumped on it,” Caldwell told *Vertical* in early February, a few weeks before the deal was expected to close. USATS, he said, is “what we consider to be the gold standard in aviation training . . . We want to bring it back to prominence.”

Caldwell said that USATS will be a good fit for IDAG’s existing lines of business, which already include FlightTrails Academy in Budapest, Hungary. Beyond flight training, IDAG specializes in buying and selling aircraft, aviation consulting, and providing

logistical support and services. The company holds government contracts in central and eastern Europe — including one to support the Hungarian National Police’s fleet of MD 902s — and is an authorized sales representative for MD Helicopters Inc. in the region.

IDAG was also one of the first commercial companies to acquire surplus Sikorsky UH-60 Black Hawk helicopters from the U.S. Army, and plans to add training for the model to the offerings at USATS, with a focus on serving the growing commercial Black Hawk market. “There are instructors out there who love the aircraft and want to continue flying the aircraft,” he said. “We’re looking to expand the envelope and bring in a diverse group of aircraft and people from around the world.”

However, Caldwell said he doesn’t foresee a move away from USATS’ primary training helicopter, the S-300, which was acquired from Sikorsky in January 2018 by Schweizer RSG. USATS operates 25 of the model, in addition to a smaller number of Robinson R22, R44, and Bell 206B3 helicopters.

“We absolutely plan on sticking with the S-300,” Caldwell told *Vertical*, noting that “IDAG and USATS have a very long history, trust and comfort level with the Schweizer

300 series.” Although Schweizer RSG has been relatively quiet since acquiring the S-300 line, “we wouldn’t have bought [USATS] if we didn’t think they could sustain the aircraft,” Caldwell said.

While the school’s primary focus has always been on helicopter pilot training, it also offers fixed-wing instruction in Cessna 172 and Diamond DA42 airplanes, and has a rotor transition program for the growing number of helicopter pilots who are pursuing airline careers. Caldwell said he would like to further expand this part of the business, “holding the same standard of excellence” that is associated with the school’s helicopter programs.

The company is also pursuing a number of government pilot training contracts both in the U.S. and around the world, he said. “There’s a lot of discussion and a tremendous amount of activity on the business development side.”

He emphasized, however, that current students shouldn’t see any disruption in their training as IDAG assumes ownership of the academy. The aircraft won’t change, and existing personnel will remain in place, including the school’s longstanding director, Todd Smith.

“It will be seamless,” Caldwell promised.



HS-20200 RESCUE HOISTS LIFT WITH FORCE

SEE IT IN ACTION

Visit us at **Heli-Expo 2019, Booth B5606**
Atlanta, Georgia | March 5-7

DEDICATED TO THE MISSION. JUST LIKE YOU.

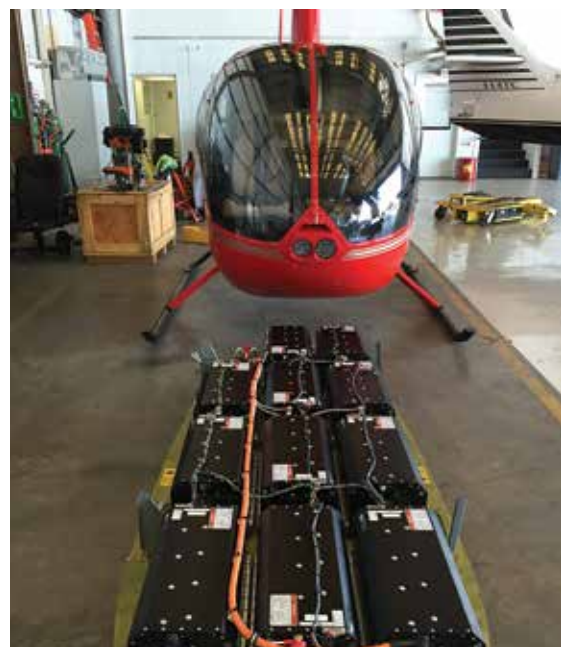
Breeze-Eastern is the world's only dedicated helicopter hoist and winch provider.

breeze-eastern.com

ELECTRIC R44 BREAKS WORLD RECORD



The aircraft's twin electric motors are stacked together and provide redundancy in the event of a motor failure. "We're basically flying a twin, if you want to look at it that way," said Ric Webb. **Tier 1 Photo**



The aircraft's 1,100 pounds of batteries are installed under the belly. Tier 1 president Glen Dromgoole acknowledged that "the biggest hurdle with electric aviation is improving the energy density of the power supply." **Tier 1 Photo**

BY ELAN HEAD

When Martine Rothblatt decided she wanted to convert a conventional helicopter to electric power, she didn't get much support from the aviation community.

"I began asking other helicopter people I knew about that, and I have to tell you, every single person said, 'No. It's impossible, it's ridiculous, it's stupid, batteries are too heavy, maybe in 50 years when batteries are light,'" she recalled at a 2016 gathering of the Tesla Motors Club.

Rothblatt was undeterred, in part because this serial entrepreneur — named by *Forbes* as one of the world's 100 greatest living business minds — has built her career on achieving the impossible. Rothblatt broke new ground in the '90s as the founder of Sirius satellite radio; then, when her daughter was diagnosed with pulmonary arterial hypertension, she founded the pharmaceutical company United Therapeutics, which developed a new medicine to treat it.

More recently, a United Therapeutics subsidiary, Lung Biotechnology, has pioneered techniques for restoring damaged lungs to a state suitable for transplantation. "People told me this was impossible to do," she said, yet these "remanufactured" lungs have been successfully transplanted into hundreds of patients

who might have otherwise languished on transplant waiting lists. Now, the company is blazing a trail for xenotransplantation — the transplantation of animal organs into humans — as well as the 3D printing of organs, which could someday lead to a world of "organs on demand."

Lung Biotechnology already uses helicopters to fly its remanufactured lungs to waiting surgeons. In Rothblatt's ideal future, "when you're talking about not a few hundred organs, but hundreds of thousands or millions of organs, you are going to need a very large fleet of

helicopters delivering all these," she said. For Rothblatt, a helicopter and airplane pilot who loves to fly but who also believes that global warming is "the existential issue of our time," today's fossil fuel-guzzling rotorcraft aren't going to cut it.

As she put it, "What is really the point of saving people's lives with an organ transplant if all of humanity could be wiped out in a climactic existential event from global warming? If we just think a little bit harder, we can do the good thing and the green thing at the same time."



The team behind the aircraft celebrates their recent Guinness World Record. **Tier 1 Photo**

Rothblatt didn't find support for her concept from any of the major helicopter manufacturers, but Kaman referred her to Glen Dromgoole of Tier 1 Engineering in Santa Ana, California, who agreed to take on the project. And thus, over the past three years — while companies like Uber have been touting high-profile urban air mobility projects that could take a decade or more to come to fruition — Rothblatt's team at Tier 1 has been quietly developing an electric-powered version of a Robinson R44.

On Dec. 7, with test pilot Ric Webb of OC Helicopters at the controls, the aircraft set a Guinness World Record for the farthest distance traveled by an electric helicopter, flying 30 nautical miles around Los Alamitos Army Airfield in California. "Could we have gone further? Absolutely," said Webb, adding that the team expects to eclipse this record "dramatically" as early as this year.

Rothblatt and Dromgoole don't dispute that other electric vertical takeoff and landing (eVTOL) aircraft configurations would be more aerodynamically efficient. But getting eVTOL aircraft onto the market isn't simply a technological challenge; it's also a regulatory one. From that perspective, working with an already certified airframe makes a lot of sense, since it can cost tens of millions of dollars to certify an aircraft from scratch.

Moreover, it's still not clear what safety standards the Federal Aviation Administration (FAA) will use to certify the multicopter and tiltrotor eVTOL designs now in development — which, unlike the R44 and other conventional helicopters, are incapable of autorotation in the event of a power failure.

"We didn't want to invest resources in developing a new airframe," Dromgoole explained. Using the R44 "allowed us to really focus on the key technology, which is the electric power unit."

In fact, he said, the R44 is a surprisingly good fit for the project. It has a relatively efficient rotor system and a lightweight airframe that is normally paired with a very heavy Lycoming engine (an IO-540 with a wet installed weight of around 500 pounds/225 kilograms). In Tier 1's first prototype, this is replaced with custom Yasa twin electric motors and a Rinehart motor control system that weigh just 100 lb. (45 kg), helping to offset the 1,100-lb. (500-kg) weight of the Brammo lithium polymer batteries that are attached under the belly.

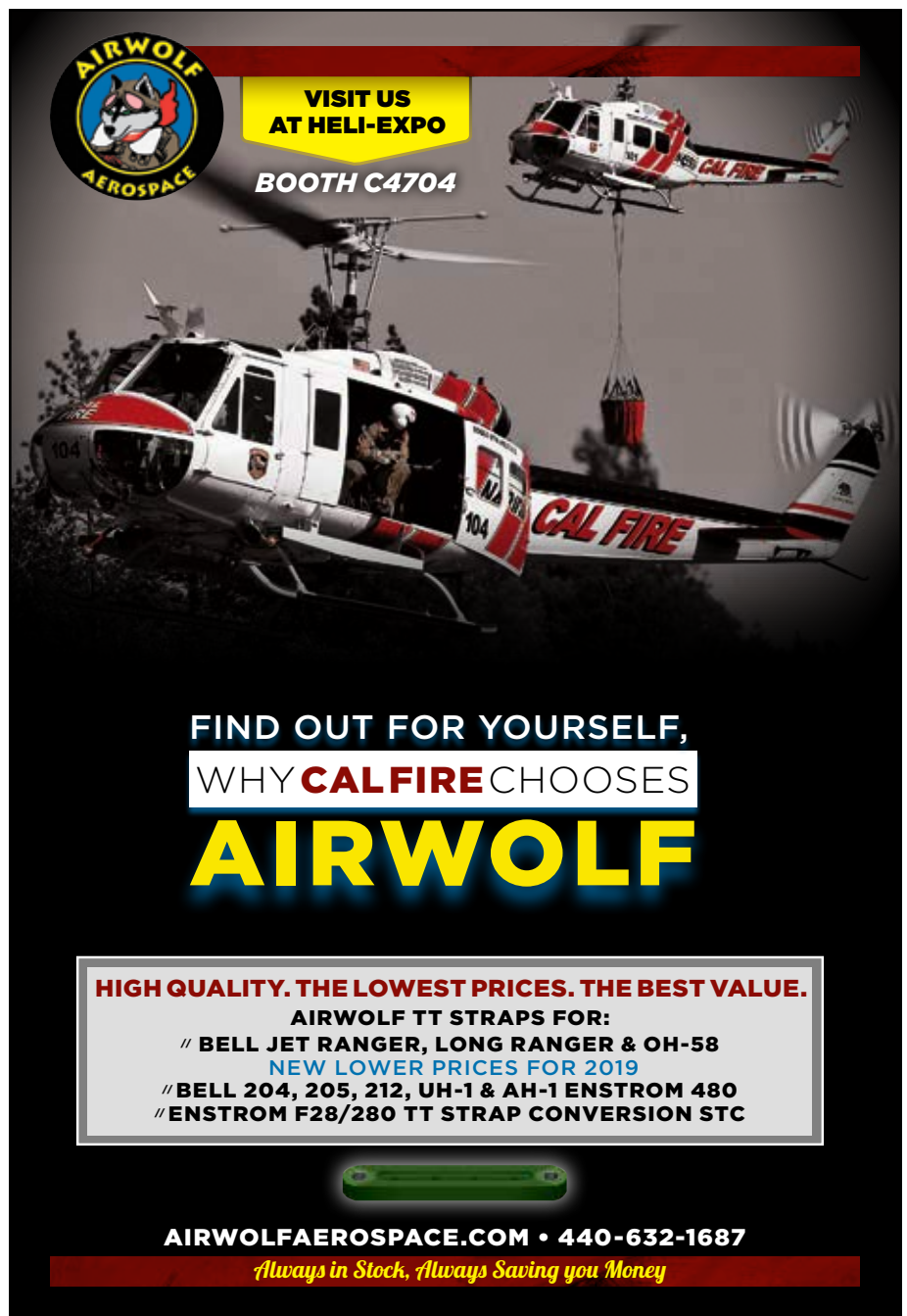
Tier 1's engineers were able to accomplish this retrofit without any modifications to the flight controls or drive system. "From an engineering perspective, I'm so impressed with the design, and the simplicity of the design. That's really what makes it such a great electric helicopter," Dromgoole said.

The fact that the R44 is the world's best-selling light helicopter is another bonus, as it means that used aircraft are plentiful. They're also relatively inexpensive, especially as they approach their mandatory

airframe and engine overhaul times.

"You have them constantly running out of hours on their Lycoming engines, and we just throw those out anyway," Rothblatt told *Vertical*. "We knew we would always have a large supply of cheap Robinsons."

The aircraft that flew on Dec. 7 is the same one that first took to the air in September 2016, and set other records in early 2017. Tier 1 then paused the flight program to work on improving the underlying battery and motor technology. Now, it's ready



AIRWOLF AEROSPACE

VISIT US AT HELI-EXPO
BOOTH C4704

FIND OUT FOR YOURSELF, WHY CAL FIRE CHOOSES
AIRWOLF

HIGH QUALITY. THE LOWEST PRICES. THE BEST VALUE.

AIRWOLF TT STRAPS FOR:
 // **BELL JET RANGER, LONG RANGER & OH-58**
NEW LOWER PRICES FOR 2019
 // **BELL 204, 205, 212, UH-1 & AH-1 ENSTROM 480**
 // **ENSTROM F28/280 TT STRAP CONVERSION STC**

AIRWOLFAEROSPACE.COM • 440-632-1687
Always in Stock, Always Saving you Money

to incorporate its improvements into a new prototype that will fly in 2019. The company intends to pursue a supplemental type certificate for this version, and according to Dromgoole has already submitted a certification plan to the FAA. So far, the FAA has been “extremely supportive and interested in this project,” he said.

With a new and improved electric helicopter on the near horizon, December’s record-setting flight was essentially house-keeping; a way to officialize the achievements of the first prototype before the second one proceeds to surpass them.

Dromgoole said that with its second version, Tier 1 is aiming for at least an hour of flight time with 600 lb. (270 kg) of useful payload, and “we feel it’s very achievable.”

These specifications would still limit the helicopter’s usefulness for many missions, which is probably why the wider industry has been dismissive of converting conventional helicopters to electric power. But what might be impractical for a charter operation could still be very viable for organ transfers. According to Rothblatt, the average distance covered by Lung Biotechnology’s helicopter flights is around

50 nautical miles, with some flights much shorter than that. And human organs make for comparatively lightweight cargo.

So while Tier 1’s modified R44 may not be the ultimate expression of the electric helicopter, it’s not without real-world applications. Crucially, it also appears to have a viable path toward certification.

“It proves that electric VTOL flight is possible . . . and it sets a baseline for the future,” Dromgoole said. “We’d like to be a leader in the technology. Hopefully other companies will follow.”



ACCESS.
Fly for our **TEAM.**
QUALITY.
Air Evac Life**TEAM!**
SAFETY.

SAFETY FEATURES SET US APART! Air Evac Lifeteam has a FAA-recognized Safety Management System and our entire fleet is equipped with Genesys HeliSAS, Autopilot, Glass Cockpit, ANVS 9 NVGs, HTAWS, ADS-B (In/Out) and FDMS. In addition, Air Evac Lifeteam has a highly competitive compensation package, base housing and career growth opportunities. Learn more at lifeteam.net/career-center/pilots.



RotorBits

SIKORSKY AUSTRALIA

MOVES FORWARD STOCKING

LOCATION TO PERTH

Sikorsky has relocated its forward stocking location (FSL) from Australia’s east coast in Brisbane to the west coast in Perth.

The Brisbane FSL opened in 2016 to better support the flow of parts to customers in Asia-Pacific’s remote region. Sikorsky anticipates that moving the FSL from Brisbane to Perth will further improve the availability of S-92 helicopters in the critical oil-and-gas regions in Western Australia and throughout the region. The company plans to increase stocking volumes at the FSL in Perth throughout the year.

AUSTIN PEAY UNVEILS FIRST

HELICOPTER IN FLEET

Officials at Austin Peay State University in Tennessee have unveiled the first of three helicopters in its new rotary-wing fleet.

Charlie Weigandt, the program’s director and chief helicopter pilot, circled the plaza beside the Art + Design building before landing the Guimbal Cabri G2 – named GOV 1 – on the lawn. The landing was GOV 1’s first on campus.

The helicopters will be keystones in Austin Peay’s aviation science degree with a concentration in rotary-wing (helicopters) program, which launched in the fall. The degree requires more than 175 hours of flight time. The first flight lab will be this spring, Weigandt said.

Visit us at
Heli-Expo 2019
Booth C3417

- AOG parts support
- New, used, and serviceable parts available
- On-shelf inventory ready-to-ship worldwide

It's not *what* we do.

It's *how* we do it.

heli-mart

Spare Parts. Exceptional Service.

+1 (714) 755-2999

Toll Free US/CAN 1-800-826-6899

helimart.com

RotorBits

HONEYWELL & PIPISTREL SIGN

URBAN AIR MOBILITY MoU

Honeywell and Pipistrel have signed a memorandum of understanding (MoU) that will bring the companies together to explore and develop solutions for the urban air mobility market. The companies will integrate Honeywell avionics, navigation, flight control systems, connectivity and other beneficial products and services onto a future Pipistrel vertical takeoff and landing (VTOL) air vehicle to support fully autonomous operations in the future.

Honeywell and Pipistrel will be using Honeywell's experience in avionics and flight controls along with Pipistrel's knowledge of aircraft design to support the initial phases of a demonstration program in early 2019. A schedule announcing flight demonstrations for the vehicle prototypes will be released later in the year.

AVIALTA INSTALLS FIRST

MPVK IN CANADA



Avialta Photo

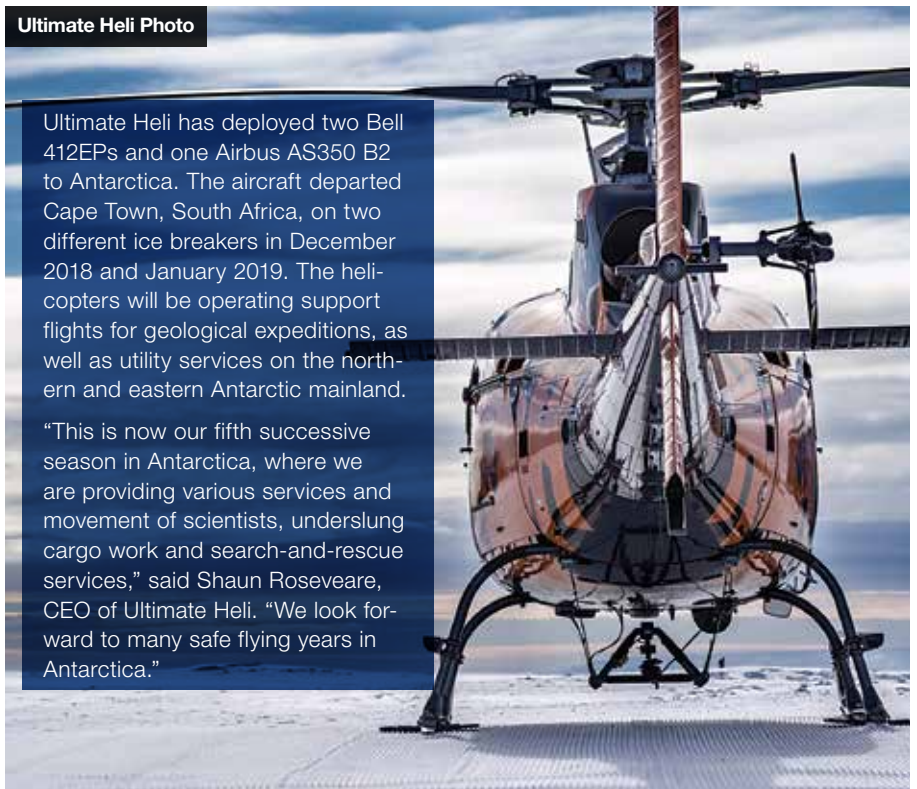
Avialta Helicopter Maintenance Ltd. has completed the installation and delivery of the first Maximum Pilot View Kit (MPVK) in Canada. The kit was installed, along with the BLR FastFin, on an L R Helicopters Airbus AS350 B3 at Avialta's Villeneuve Airport facility. L R will utilize the MPVK for longline work in the mountains in combination with Boost's Human External Cargo (HEC) system.

The company has also sold a second MPVK and FastFin in Canada to Horizon Helicopters, which is scheduled for installation in March. Horizon will use the MPVK for rescue operations in the Yukon.

Avialta will have an L R Helicopters AS350 B3 equipped with the MPVK on display at this year's HAI Heli-Expo in Atlanta, Georgia. The aircraft will also feature the BLR FastFin and Boost HEC transportation longline.

ULTIMATE HELI DEPLOYS AIRCRAFT TO ANTARCTICA

Ultimate Heli Photo



Ultimate Heli has deployed two Bell 412EPs and one Airbus AS350 B2 to Antarctica. The aircraft departed Cape Town, South Africa, on two different ice breakers in December 2018 and January 2019. The helicopters will be operating support flights for geological expeditions, as well as utility services on the northern and eastern Antarctic mainland.

"This is now our fifth successive season in Antarctica, where we are providing various services and movement of scientists, underslung cargo work and search-and-rescue services," said Shaun Roseveare, CEO of Ultimate Heli. "We look forward to many safe flying years in Antarctica."

CADORATH & ROLLS-ROYCE EXTEND M250 CONTRACT

Cadorath and Rolls-Royce have signed a nine-year contract extension continuing their partnership in support of the M250 First Network and operators of the turbine engine around the globe.


Cadorath currently offers more than 700 individual repairs for the engine line, and fixes approximately 7,500 M250 parts annually. Additionally, Cadorath maintains ARF approval for the RR300 turbine engine line.

"This continued partnership with Rolls-Royce is an important component of our growth strategy," stated Gerry Cadorath, president and CEO. "We would like to thank Rolls-Royce and our First Network partners for their continued support."

SOUTHEAST AEROSPACE OFFERS PART 29 ADS-B

Southeast Aerospace has announced its latest ADS-B solution for the part 29 market. The company has partnered with Peregrine and Air Methods to provide a panel and remote mount fully integrated ADS-B solution for a variety of part 29 airframes.

Utilizing a Gables G7614 Control Head and remote Garmin GTX-3X5R or panel mounted GTX3X5, Southeast Aerospace

is offering the supplemental type certificate data and right to use for customers who have legacy part 29 helicopters. A remote mount feature offers ease of installation for aircraft with existing transponder controllers installed. Weather and traffic can be displayed on existing Garmin displays or on a pilot's portable devices, increasing safety and situational awareness. 

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.

Six.

It's a **pretty simple** number.

But for *Vertical*, it represents excellence in our industry. **Six** is the number of times **our editors** and **contributors** have won HAI's Excellence in Communications award.

This year, we congratulate *Vertical* Editor-in-chief, **Oliver Johnson** for winning the award.

Six more reasons that readers and advertisers make us their *number one choice*.

Our Excellence in Communications award winners:



Mike & Linda Reyno,
Publishers
2006



Kenneth I. Swartz
2010



Guy R. Maher
2011



Shawn Coyle
2013



Elan Head
2014



Oliver Johnson
2019



Visit *Vertical* Magazine at Heli-Expo!

Booth B3818

verticalmag.com |

Vertical www.verticalmag.com
THE PULSE OF THE HELICOPTER INDUSTRY



MATT ZUCCARO

PRESIDENT AND CEO OF HELICOPTER ASSOCIATION INTERNATIONAL

VERTICAL: HOW DID YOU START OUT IN THE INDUSTRY?

MATT ZUCCARO: I went into the Army flight program after high school. I went through the normal Army flight training down at Mineral Wells in Texas, and then I went to Savannah, Georgia, Hunter Army Airfield. I did my year, like everyone else, in Vietnam, and flew helicopters there with the 7/17th Air Cav. Then when I got out, I just made a conscious decision that I wanted to go home and work in my home area, and my home is New York City.

I was very fortunate to get a job with a charter company flight school at the time. I was a flight instructor in the early 1970s and a charter pilot, and did classroom instruction as well. Then I got a job with the Port Authority in New York and New Jersey in their helicopter operating division, and was there for 11 years. One of the most interesting things I did there was the test landings on top of the World Trade Center for the heliports on top of the buildings. That was a thrill for me.

V: WHAT WERE YOU FLYING DURING THAT PERIOD?

M.Z.: I flew everything from Brantly B-2s,

Bell 47-Gs to Js, Sikorsky S-62s, S-55s, S-58s, Fairchild Hiller FH-1100s, and Bell JetRangers. With the Port Authority I flew JetRangers and Bo.105s. After I left the Port Authority, I went to the corporate side and flew for Union Carbide, and I flew S-76s there for several years. I started up a scheduled IFR [instrument flight rules] helicopter airline for Resorts International with Sikorsky S-61s. We did charters throughout the northeast. They were configured with 24-passenger airline seating, a lavatory, a service bar... it was neat!

V: AND YOU EVENTUALLY STARTED YOUR OWN BUSINESS?

M.Z.: After working for charter management companies, I started my own one-ship part 135 operation and an international consulting firm, which I did for 15 years before coming to HAI in 2005.

V: WHAT MADE YOU DECIDE TO MAKE THAT MOVE?

M.Z.: I had a longstanding relationship dating back to the late 1970s with HAI. I've always really wanted to give back to the industry, and I knew that was the prime focus of HAI. I was very motivated to serve the membership and the industry in any way I could to pay back all the good fortune I'd had.

V: HOW WOULD YOU DESCRIBE WHAT HAI DOES FOR THE INDUSTRY?

M.Z.: We like to say, "We keep the rotors turning." It's the epitome of what we do. It's from my days of being an operator, when I used to walk out in the hangar with a cup of coffee, and if it was empty I'd go, "This is a wonderful day. Everybody's out flying. The rotors are turning." Being on the other side of the table at the association after all these years, it's the same philosophy. Our main focus here is to help you keep those rotors turning. That's what our job is. It truly encapsulates everything we do: the regulatory, the safety, the operational side — it covers it all.

V: WHAT MAJOR CHANGES HAVE TAKEN PLACE OVER YOUR TIME AS PRESIDENT?

M.Z.: I think we've established safety as the first priority above anything else in this industry. It drives everything that we do. We go out of our way to educate the membership and address the major challenges.

The other aspect is we are overly sensitive to reducing the cost to the membership for how they operate helicopters. Our job is to protect them from overburdensome regulations and legislation, to make sure that they have an operationally efficient, safe, economically viable, and sustainable operating environment.

V: IN TERMS OF SAFETY, THE LAND AND LIVE PROGRAM IN PARTICULAR SEEMS TO HAVE REALLY CAUGHT ON IN THE INDUSTRY.

M.Z.: We run around the world telling everybody how great we are and how fantastic the ability is for us to land anywhere and maximize the vertical reference mode, and we do it every day for a living. And yet, in the situations where it's absolutely critical that we exercise that ability, we don't. We keep flying into bad weather. We run out of fuel. We let maintenance issues overtake us.

We realized that this is a psychological paradox that we had to deal with, as to why aren't the crews and why aren't the companies supporting this concept of just "land the damn helicopter"? It's staggering how many accidents you can prevent by just doing that one simple operation.

I am so thrilled that it's being embraced and put in practice around the world. Other regulatory agencies around the world and other associations have gotten onboard. It's been a great success.

V: WHAT OTHER MAJOR SUCCESSIONS STICK OUT TO YOU OVER THE PAST 14 YEARS?

M.Z.: That the industry has prioritized safety to a level that we've never seen before. The education initiatives that we've put in place at Heli-Expo continue to grow and expand, and I'm proud of the safety challenges at Heli-Expo, and the online courses that we now have where people can reach them from anywhere in the world.

I think we're getting excellent at recognizing what the challenges are ahead of us and putting programs into place to address them.

We're also doing a much better job at promoting the helicopter and it's many contributions to the greater good of society, in things like lifesaving, firefighting, law enforcement, or news reporting in emergency situations.

V: WHAT HAVE YOU FOUND MOST CHALLENGING IN YOUR ROLE?

M.Z.: Environmental issues and the issue of

sound associated with aircraft operations. It has constrained growth in the industry by a lack of heliports and restrictions to airspace.

V: HOW DO YOU FEEL ABOUT THE EMERGENCE OF UNMANNED AIRCRAFT?

M.Z.: It's a watershed moment and it's going to change the industry. I'm really proud of the helicopter industry in the sense that we had a major decision to make a number of years ago. How do we view drones and unmanned technology? But who better than the helicopter industry to operate unmanned vehicles? We view this as a really good, exciting, potential business opportunity for growth. That's exactly what our members are doing. They're becoming experts in unmanned vehicles. They're offering it to the customer base and answering that demand.

V: HOW DO YOU SEE THE FUTURE OF VERTICAL FLIGHT? WHAT IMPACT WILL eVTOLS HAVE?

M.Z.: There are some things you're always trying to improve. You want to go faster, farther, and carry more. Those desires are always going to be present, whether they're for drones or manned aircraft or whatever it is. In terms of eVTOL, they're subject to a lot of technological advances that are going to have to be accomplished. There's absolutely going to be a heavy reliance on training and operational protocols and technology to ensure the safe integration of unmanned vehicles into the existing airspace with the rest of the stakeholders. I think that will happen over the long haul.

With the urban air taxi concept, you're going to need extensive infrastructure with landing/takeoff sites in the urban environment, and that's a challenge — just like it is currently when we operate in those environments with helicopters.

V: WHAT ARE YOUR THOUGHTS ON THE INDUSTRY RIGHT NOW? WHAT ARE YOU HEARING FROM OPERATORS?

M.Z.: Well it's no secret that the offshore community has been through some rough years, and there is a domino effect from that, but we're such a versatile industry. If you have a helicopter and your primary mission has fallen off, in a lot of situations you can take that aircraft and the assets that are associated with it and do other mission profiles. I mean, conservatively, we've got somewhere in the neighborhood of 50 to 60 missions we do with helicopters around the world. I always take confidence from the fact that we are very diverse.

V: HOW ARE YOUR PREPARATIONS GOING FOR HELI-EXPO?

M.Z.: Really good. I mean, it's an exciting thing for us because it's the first time we've been to Atlanta with our show.

All the numbers and the advance information and our markers that we track our show with are excellent for Atlanta. In terms of square footage, we'll be taking up the whole show floor of the two halls that we're in. The hotel reservations are exceeding our past years. In terms of aircraft coming in, we're looking at probably 50 to 60 helicopters, most of them flying in.

In the show, we are increasing our unmanned drone presence. We've got some courses and a number of manufacturers and drone stakeholders will be joining us. We keep building up our heritage programs on the floor with our exhibit aircraft.

We also have some really great programs to help us attract the hearts and minds of young people to get into the helicopter industry. Then, safety — Land and Live is being promoted and developed through the Helicopter Foundation International. There's a lot of exciting stuff going on at the show. ✚

This interview has been edited and condensed.

SIMULATION
BEYOND EXPECTATIONS

FRASCA
FLIGHT SIMULATION



**SERVICE THAT DOESN'T
STOP AT INSTALLATION.**

Did you know that Frasca delivers state-of-the-art Full Flight Simulators, and backs them up with industry leading support and service?

We've built them for some of the biggest fleet operators in the world, and we can build one for you.

Visit us at **HAI Heli-Expo 2019 booth C823** to discuss your unique FFS needs.

217.344.9200 / FRASCA.com / info@frasca.com

40 YEARS

of The Official Helicopter Blue Book®

- HELICOPTER & PARTS APPRAISALS
- ONSITE ASSET VERIFICATIONS
- HELICOPTER RESALE DATA
- EXPERT WITNESS
- CONSULTING

Continuing to provide the most accurate and dependable Blue Book® resale values and appraisals to operators, lessors, and financial institutions worldwide.

[Read More >](#)

Check out our interactive blue book sample page at
www.helivalues.com/bb/sample



HeliValue\$, Inc.


The Official Helicopter Blue Book®

+1 847-487-8258 / info@helivalues.com

HELIVALUES.COM

INTRODUCING THE NEXUS





Bell unveiled a full-scale mockup of the Nexus at CES 2019 in Las Vegas, Nevada, in early January. The mockup will be shown off to the helicopter industry at HAI Heli-Expo 2019 in Atlanta, Georgia, in March.

Bell's ambitious plans to rethink air transport have come a long way in 12 months.

The full-scale mockup of its newly-named Nexus air taxi will take pride of place on the manufacturer's booth at HAI Heli-Expo as it gets set for a new era of flight.

STORY BY OLIVER JOHNSON
PHOTOS PROVIDED BY BELL

Bell has revealed a hybrid electric propulsion system utilizing six tilting ducted fans for its air taxi vehicle, which it has renamed the Bell Nexus.

The Nexus was unveiled early January in the form of a full-scale mockup at CES 2019 in Las Vegas, Nevada, where it was joined at Bell's booth by a "future flight controls" experience that the company has launched to help inform the design of the aircraft's pilot interface.

Bell's VP of innovation, Scott Drennan, said the development of the technologies behind the Nexus heralded "a new era of flight," and believes viable commercial operations for the type will be possible in the mid-2020s. First flight of a fully-autonomous technology demonstrator is planned for the early 2020s.

"The concept of air taxi is really nothing new to us — we've been moving people over urban obstacles for a long time," said

Drennan. "What is new is the emergence and development of technologies that enable safe, quiet, efficient, and perhaps most importantly, affordable urban air mobility operations at scale, using small heavily automated electric and hybrid electric vertical lift aircraft."

According to Bell, Nexus derives its name from sitting at the nexus of transport and technology, and of comfort and convenience. And while the Nexus is being developed in collaboration with Uber, Drennan stressed that Bell is not building the aircraft solely for the ride-sharing technology company.

It was the second year in a row that Bell had appeared at CES — a mecca for showcasing the latest technological developments and innovations from around the world — and follows the unveiling of the Nexus's fuselage at the event 12 months ago.

CES was carefully chosen by Bell as the perfect testing ground for the Nexus, with its "early adopter" attendees exactly the type of people likely to be the first users of this type of new urban air mobility project. And, given the promise of air taxis to bring vertical lift transport to the masses, early feedback from those outside traditional aviation circles is crucial.

It was the desire to enhance the "approachability" of the aircraft that helped inform the choice of ducted fans for the Nexus, said Drennan.

"We believe that [people] coming up to an air vehicle like this for the first time will appreciate the covered nature or the introverted nature of our rotor blades here," he said.

The aircraft has three four-bladed ducted fans, each spanning about eight feet in diameter, attached above door-level on each side of the fuselage. The front and rear ducts are close to the fuselage, while the middle ducts extend out at the end of short "wings," giving the aircraft a disc-shaped footprint that's very familiar to the vertical takeoff and landing (VTOL) community.

Three fans rotate clockwise and three counter clockwise to balance the torque the aircraft generates, and rpm control is separate to the engine, allowing it to continue running even when the blades are stopped. The blades in the fan will be able to start and stop extremely quickly, Bell said — which would prove extremely helpful in efficiently loading and unloading passengers.

The aircraft's rotors and ducts not only provide its thrust, but also serve to control the aircraft's pitch, roll and yaw.

In terms of the sheer size of the aircraft, the Nexus will fit in a 40-foot-by-40-foot box. "This is no toy," said Drennan. "I think our serious competitors across the board will show vehicles of similar size."

Bell believes this size of vehicle — with a gross weight of "about 6,000 pounds [2,725 kilograms]" and capable of carrying four passengers and a pilot — will hit the sweet spot of the potential air taxi market.

The aircraft's ducts have a crucial part to play in terms of allowing it to achieve the performance it needs to carry such loads, enhancing the power produced by the Nexus's hybrid electric propulsion system. (The ducts will also keep the noise the Nexus produces to a minimum — a crucial consideration for public acceptance of fleets of such aircraft in urban skies.)

A NEW APPROACH TO PROPULSION

In the "series hybrid electric propulsion system" used in the Nexus, a turbine engine, similar to that used in a traditional helicopter, is used to turn an electric generator, producing DC electricity. That electricity is then distributed through a redundant power control system to the aircraft's six fans.

Each fan has a direct drive electric motor, eliminating the need for a gearbox, and replacing the connecting shafts of a traditional helicopter with wires.

The Nexus also has a high-powered battery that provides extra power to the aircraft when it needs it (such as during takeoff or to hover), and serves as a redundant power source for the overall system if the engine fails, allowing the aircraft to land safely under its own power.

This is a key safety feature for the aircraft, said Drennan.

"You'll see some of our competitors out there using parachutes and so forth [in the event of an engine failure], and Bell will not be doing that in the urban environment that we're talking about," he said. "We believe in controlled descent to the ground under power."

Simplicity is at the core of the system, according to Kyle Heironimus, propulsion manager on the Nexus.

"Obviously with that simplicity comes reliability, comes reduced maintenance costs, [and] comes lower purchase price," he said.

Heironimus said Bell decided to go with a hybrid electric propulsion system for the aircraft (rather than a fully-electric system) after consulting with various stakeholders and identifying the target performance metrics for the aircraft.

"We recognized that with the current technology available — even tomorrow's technology in the near term — a hybrid electric solution was the best option to meet that range of [operational] flexibility," he said.

The engine is integrated into the vehicle's roof at the rear.

However, while Heironimus stressed that Bell has not ruled out using all-electric or other propulsion sources in the future, such a switch is clearly not in the company's near-term thinking.

He said Safran, one of Bell's partners in the Nexus program, was one of only a few companies in the world that has all the capabilities under one roof to create an "aerospace grade" hybrid electric propulsion system.

The Nexus has six tilting ducted fans. Each one is eight feet in diameter.



WATCH VIDEO



INADVERTENT IMC IS A MATTER OF LIFE OR DEATH.

LIVE TO TELL ABOUT IT WITH THE **GENESYS HELISAS®** AUTOPILOT.



GET LIFESAVING TECHNOLOGY WITH THE **HELISAS®** STABILITY AUGMENTATION SYSTEM



When you find yourself with a sudden loss of all visual reference, it's absolutely critical to maintain a safe and stable attitude. The HeliSAS autopilot and stability augmentation system provides lifesaving technology specifically engineered for light and medium helicopters. This lightweight autopilot also features heading, navigation, altitude and ILS glideslope capabilities.



Dramatically reduce pilot workload while providing precise control during all modes of flight with HeliSAS from Genesys Aerosystems.

Sign up for the latest News & Updates at genesys-aerosystems.com

Visit us at Booth **B8017** at
HAI HeliExpo 2019 in Atlanta



HELISAS®
PRECISE PERFORMANCE.
PROVEN EXPERIENCE.
PERSONALIZED ATTENTION.

"That includes turbine engines, high power electrical machines, high voltage distribution, and then critically important, of course, is the integration and control of all that," he said.

In July 2018, Safran completed its first ground test of a hybrid electric distributed propulsion system on purpose-built rig at its facility near Pau-Pyrenees Airport, in France. "This test marks a major step forward in demonstrating our ability to offer hybrid propulsive solutions for tomorrow's aircraft," said Jean-Baptiste Jarin, vice president of Safran Helicopter Engines' hybrid propulsion system program, in a press release issued at the time.

The system on Safran's test bench is "a very similar configuration" to that used in the Nexus, said Heironimus.

The battery in the Nexus, produced by Electrical Power Systems, is being built with lithium-ion based cells that are contained in a pack with a battery management system. This monitors the cells and can shut the pack down if they're not operating safely, said Heironimus. The chemical composition of the cells may change by the time the aircraft enters the market in the mid-2020s, he added.

The Nexus is being designed as a piloted aircraft to begin with for greater customer acceptance, but Bell has complete autonomous flight in mind for the aircraft's wide-scale operation. "We'll need to transition into autonomous flight in order to make the business case [for the Nexus] really hum and make sense," said Drennan.

RETHINKING FLIGHT CONTROLS

Jeff Epp, the flight control systems lead for the Nexus, said the setup is "different from anything in the past," with a distributed flight control system with all-electric actuators — meaning no hydraulics.

The fly-by-wire nature of the system allows the flexibility of piloted or autonomous operations, and provides the opportunity for "non-conventional" controls in the cockpit, said Epp. Bell is working with Thales's flight controls systems group, which is based in Montreal,

Quebec, on the controls for the Nexus, while Moog is a partner on the aircraft's actuation systems.

The brains of the Nexus is the vehicle management computer (VMC), which can manage or control the aircraft's systems. This is being developed in partnership with Garmin.

"The goal of the VMC is to be the ultimate pilot assistant, reducing pilot workload, enhancing situational awareness, and increasing safety," said Frankie Mazzei, avionics lead for the Nexus. Bell wants the VMC to have communication and navigation functions, serve as a flight director for the flight control system, and have the capability to perform flight management — uploading and storing flight plans to use in the airspace in which it operates. Finally, it will interface with existing aircraft sensors and future sensed technology.

The exact nature of the pilot interface — the controls the pilot will use to actually fly the aircraft — is still being determined.

"Up until now, when we've built any kind of vehicle, we've always had a very known quantity of what the operator was going to be. Now, we don't," said Jim Gibson, an experimental test pilot at Bell. "The industry is advertising that air mobility is going to be for the masses, and certainly Bell hopes that it is for the masses, but the design challenge is we now have to design the controls and the aircraft for the masses."

To help it do this, Bell is starting from scratch, looking at how a non-piloting member of the public would interact with flight controls. The company has created "Future Flight Controls" simulators to collect the data it needs from potential operators to understand what designs will be most intuitive to those who don't have a background in aviation, but who could potentially be flying air taxi aircraft like the Nexus.

It hopes the fixed-base simulators — which include both single and dual controls, as well as traditional helicopter controls — will show it what actions and interfaces will be easiest for non-pilots to use to control a vertical-lift aircraft. A brief survey completed by participants

Beautifully **simple.**



Easy to install and operate - yet amazingly powerful. Spidertracks provides your fleet with satellite flight tracking & two-way messaging for as little as US\$249/year.

Try an interactive demo at spidertracks.com/demo

spidertracks
time to save lives

Visit us at HAI Heli-Expo 2019 to experience our new features.



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.



Honeywell

Ready to get connected? Please visit aerospace.honeywell.com/MASCO or visit **MASCO Services at HAI, booth B6327.**

© 2019 Honeywell International Inc.



The Nexus is being designed to have a gross weight of about 6,000 pounds, and a small enough footprint to fit within a 40-foot-by-40-foot area.



The mockup contains seating for five people: one pilot and four passengers.



The Nexus was joined at Bell's booth at CES 2019 by a "future flight controls" virtual reality experience. Bell is using data collected from this to help inform the design of the pilot interface in the Nexus.



Bell chose the technology show CES for the mockup's debut to get feedback from its "early adopter" attendees, who also provide a perspective from outside aviation.

prior to each flight will show what (if any) prior experiences and abilities contributed to each participant's actions.

In addition to being taken to CES and Heli-Expo, the simulators will go to other events, and Bell even plans to take them to schools and colleges to hit the future demographic of potential "pilots."

BUILDING AN eVTOL STRATEGY

Bell's eVTOL strategy is built around four integrated frameworks: operational, regulatory, manufacturing, and technology.

The company's operational framework is helping it to define the requirements for an on-demand urban air mobility network — spanning community engagement, infrastructure development, safety and acoustic considerations, and the crucial need to develop an end product that's actually affordable.

The regulatory piece of the puzzle involves ongoing discussions with the Federal Aviation Administration (FAA), the European Aviation Safety Agency (EASA), and other regulatory stakeholders to establish an integrated approach across vehicle, operational and air traffic requirements.

"We firmly believe that current aviation safety expectations should be met and even exceeded by these new vehicles [and] by their operational models, and the operational infrastructure itself must also mitigate risks along the way," said Drennan. "A holistic regulatory approach will help provide clear passage to compliance and permission to operate for urban air mobility concepts."

The manufacturing framework reflects the importance of having a "dependable and repeatable" fabrication and assembly process for the Nexus.

"Quality and safety are baseline expectations for all of us, so the primary efforts here focus on cost, weight and environmental impact," said Drennan.

Finally, the technology framework is informed by the needs created

by the other three frameworks. Within it, Bell believes it is creating the foundation for a new era of flight through the technologies being developed by the company and its partners.

Drennan believes the development of the technology is perhaps the easiest aspect of bringing aircraft like the Nexus to market.

"It's so easy for everybody to talk about the technology — it excites everybody and it's kind of what the engineers on the team do anyway," he said. "But we think the operational model — that first framework — is going to be a challenge. How does the airspace get managed? How do the vehicles not only speak to each other, but the infrastructure they have to interact with, and then back to the main air traffic control system as well? So I think that's going to be a pretty good challenge."

Following its unveiling at CES, the Nexus will be on public display at Helicopter Association International (HAI) Heli-Expo 2019 in Atlanta, Georgia, which runs from March 5 to 7.

Bell brought a mockup of the Nexus's fuselage to CES and Heli-Expo last year, with the former serving as an opportunity to introduce the concept of urban air mobility to a new set of customers. This year, the full-scale mockup (in a one-two-two passenger configuration) will be joined at Heli-Expo by the future flight controls simulators and the APT multicopter the company is developing.

"The [urban mobility] challenges facing our population centers aren't going away and won't be solved through conventional means," said Drennan. "There is still a lot of work to be done to create a viable urban air mobility network, but we believe the future is real, possible and coming to a city near you." 🚀



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 @orjohnson_



2019 HELICOPTER FLEET POSTER

\$24.99
+ SHIPPING & HANDLING

This beautiful 24" x 36" poster has 71 stunning photos of current and next generation helicopters from around the world. Don't wait to purchase yours, as quantities are limited! This poster is a great addition to any helicopter lover's collection.

PROUDLY SPONSORED BY

PHP
PRECISION HELIPARTS
A **PAG** Company

Vertical
THE PULSE OF THE HELICOPTER INDUSTRY
www.verticalmag.com

shopcanada.mhmpub.com shopinternational.mhmpub.com



Vert

THE PULSE OF THE F



AIRBUS H160



AIRBUS AS365



AIRBUS H155



AIRBUS H175



AIRBUS AS355
TWINSTAR



AIRBUS AS350/H125



AIRBUS H120



AIRBUS H135



AIRBUS H145



AIRBUS EC130/H130



BELL 47



AIRBUS EC145



AIRBUS BK117



BELL UH-1 HU



AIRBUS SA
315B LAMA



AIRBUS
BO.105



AIRBUS AS332



BOEING CH-47D CHINOOK/
COLUMBIA 234



ENSTROM F28



AIRBUS H225



COLUMBIA 107-II



LEONARDO
AWO09



ENSTROM TH180



ENSTROM 280FX



LEONARDO AW109



LEONARDO AW109
TREKKER



LEONARDO
AW119



LEONARDO AW139



LEONARDO AW169



SIKO
BL



LEONARDO AW189



LEONARDO AW609



MD HELICOPTERS
MD 900/902



MD HELICOPTERS
MD 600N



MD HELICOPTERS
MD 520N



MD HELICOPTERS
MD 500E/MD 530F



MD HELICOPTERS
MD 500

PROUDLY
PA
PRECISION HELIP
A PA



SPONSORED BY



DOWNLOAD THE WALLPAPER!

Protecting the **KRUGER**

FROM ANTI-POACHING TO CONSERVATION MISSIONS, THE SOUTH AFRICAN NATIONAL PARKS AIR WING PLAYS A CRITICAL ROLE IN PROTECTING WILDLIFE IN KRUGER NATIONAL PARK.

STORY BY ELAN HEAD // PHOTOS BY LLOYD HORGAN

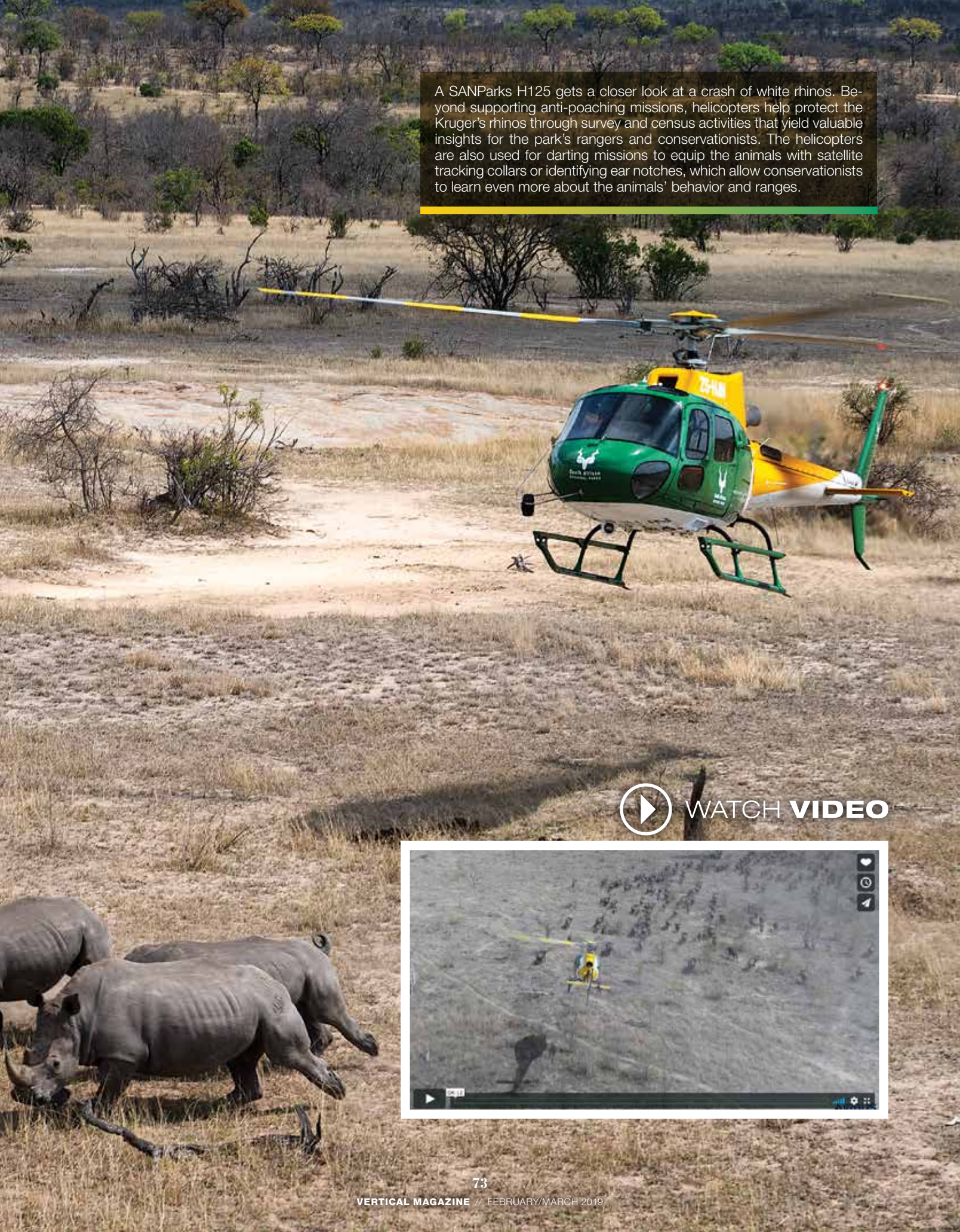
Located in the northeast corner of South Africa on the border with Mozambique, Kruger National Park is not only a South African but an international treasure — a vast wild area that is home to some of the world's largest surviving populations of big game. Unfortunately, the animals that attract tourists from around the globe have also made the park a magnet for poachers, particularly when it comes to rhinos, whose horns are valued in Asia as both a status symbol and traditional medicine. The current wave of rhino poaching began around 2008 and hasn't let up, its intensity sustained by the widespread involvement of organized criminal networks.

For the South African National Parks (SANParks) rangers tasked with protecting the Kruger, anti-poaching activities have become an all-consuming part of the job. They are supported in these risky missions by the SANParks Air Wing, which operates four Airbus H125/AS350 helicopters, all based in Kruger National Park. The park's four full-time helicopter pilots are dispatched virtually every day, and often multiple times each day, to provide cover and airlift support to rangers as they track and apprehend poachers. The Air Wing also supports a wide range of conservation activities throughout the park, from surveys to darting missions. As SANParks pilot Jaco Mol put it, "Anything you can think [to] do with helicopters, we do it here in the park."

In October 2018, *Vertical* traveled to Kruger National Park to witness the SANParks Air Wing in action. In this photo essay, we've highlighted some of the valuable work being done by the Air Wing day in and day out. To learn more, find our in-depth series online at verticalmag.com/kruger.



A SANParks H125 gets a closer look at a crash of white rhinos. Beyond supporting anti-poaching missions, helicopters help protect the Kruger's rhinos through survey and census activities that yield valuable insights for the park's rangers and conservationists. The helicopters are also used for darting missions to equip the animals with satellite tracking collars or identifying ear notches, which allow conservationists to learn even more about the animals' behavior and ranges.



 WATCH VIDEO





Cathy Dreyer is the black rhino surveillance and monitoring coordinator for Kruger National Park. Reflecting on the protracted fight against rhino poaching, she remarked, "It's eight, 10 years down the line now, so a lot of people have just moved on. But it's important for people to know [that] rhinos do get shot daily in Kruger, and there are tons of orphans — tons of orphans — that are sometimes hacked with machetes when they're tiny things, like days old, because they come and try and protect mom when the poachers are busy. So there [are] gory and horrific things, and people still need to know what's happening."



SANParks chief pilot Grant Knight, in body armor, prepares to depart on an anti-poaching mission. As international crime syndicates have pumped more money into the poaching business, gunfights have become more common during contacts between poachers and rangers. According to pilot Jaco Mol, when it comes to anti-poaching operations, “the whole mission is fraught with hazards. We have been shot at. We haven’t been hit — yet.”

This female black rhino was shot in the foot during an unsuccessful poaching attempt in Kruger National Park. By the time she was discovered by rangers and recovered to a secure boma, or corral, she had worn completely through her sole. The park’s wildlife veterinarians typically focus on understanding populations, not treating individual animals. But with only around 5,000 black rhinos remaining worldwide, 500 of them in the Kruger, this injured female merited extraordinary treatment efforts.



A DECADE-LONG FIGHT

Looking back on the surge of rhino poaching that began around 2008, SANParks helicopter pilot Charles Thompson recalled, “We were caught completely by surprise when it started happening. We were just putting out fires.”

Like two of his colleagues in the SANParks Air Wing, pilots Jaco Mol and Grant Knight, Thompson came to flying from a conservation background, not a law enforcement one. “We were game capture pilots — we were really good at catching animals,” he said. When it came to anti-poaching, “we had to quickly learn, and it was trial-and-error.”

In 2008, SANParks was flying two Airbus (formerly Eurocopter) AS350 B3 helicopters, having upgraded from the Eurocopter EC120 in 2006. In 2014 and 2015, funding from the Howard G. Buffett Foundation allowed SANParks to acquire two additional AS350 B3e (now called H125) models to expand its anti-poaching operations.

Before 2008, SANParks’ helicopters supported conservation projects across South Africa, but in recent years, the scale of poaching in the Kruger has necessitated that all four aircraft be based in the park full-time. Between them, they log around 2,000 flight hours per year and could easily fly more, if SANParks had more than four full-time helicopter pilots.

“For four aircraft, to operate them 24 hours a day, we would require triple the amount of pilots,” explained Mol. “One of our biggest problems is crew availability.”

The helicopters support anti-poaching operations in a number of ways across the Kruger’s 7,500 square miles or 2 million hectares (an area larger than Connecticut). The park relies on rangers to identify incursions and begin tracking suspects; then, helicopters are used to fly in K-9 units and provide top cover when contact is imminent.

“Suspects tend to hide from aircraft, and because they’re hiding, they can’t run,” Mol said.

The flying can be dangerous. Arrests are sometimes preceded by shootouts, and SANParks helicopters have been targeted on multiple occasions. The Air Wing has consequently installed ballistic measures in its helicopters, a highly unusual modification in a civilian aircraft. The armor provides protection, but comes with an increased weight penalty.

“Experienced [poachers], they get to know what our limitations are in the aircraft,” Mol observed. “You see a constant adaptation and change in tactics.”

“It’s a cat-and-mouse game all the time,” echoed Thompson, noting that while poachers may be drawn to the work from poverty, they are formidable adversaries: extremely fit, used to their conditions, and highly driven. “You have to have respect for them,” he said. “If you don’t have respect for them, you will underestimate your enemy, and you will fail.”





▲ K-9 assets are used on anti-poaching missions in Kruger National Park, but like the park's helicopters, they're a limited resource. Because different groups of rangers are often simultaneously engaged in tracking poaching suspects through different areas of the park, decisions about how to allocate K-9 units and helicopters are made from a centralized operations center at the Skukuza Airport.

▼ The intense poaching pressure that began in 2008 is unlikely to let up anytime soon. According to Kobus de Wet, SANParks national head of environmental crime investigations, his Vietnamese informers tell him, "You know when it will stop? When we poach the last rhino." But SANParks rangers aren't ready to give up the fight. "They're passionate about it," said Mbongeni Tukela, who directs the park's operations center. "They say, 'Not in my lifetime.' If the poaching will stop, the rhinos will respond positively."

ATU READY

FOCUS ON THE MISSION. WE'LL HANDLE THE REST.



One box, endless possibilities

Complying with ATU is easy. Guardian Mobility is the only solution operators need to meet ATU/AFF requirements, so you can continue to focus on the mission at hand.

The G4MX provides global, real-time tracking, data capture and two-way messaging in just one small device.



GuardianMobility
A METRO AVIATION COMPANY

guardianmobility.com
sales@guardianmobility.com

FIND US AT HELI-EXPO ON THE
METRO AVIATION BOOTH, C1023

GUARDIAN MOBILITY IS NOW A METRO AVIATION COMPANY



Peter Buss, veterinary senior manager for Kruger National Park, is shown here having just fired a tranquilizer dart into an elephant from the back seat of a SANParks H125. Chemical immobilization is a vital tool for SANParks' conservation missions, and one that is used regularly in Kruger National Park for a variety of large mammals. "The big thing about darting wildlife is it looks fairly simple and straightforward, but it's got multifactorial components to it to make sure that it's successful," said Buss.

After an elephant is darted, it is usually around 10 minutes before the drugs take effect. During that time the helicopter pilot must manage the animal to keep it safe, while remaining aware of all of the hazards associated with low flying. Although the goal is to herd the animal toward a clear area that provides easy access for ground crews, the pilot can't become so fixated on this goal as to lose situational awareness. "You've always got to take a step back and realize you've got a tasking that's flying safe; keeping the aircraft, the crew safe, and the guys on the ground safe," said SANParks chief pilot Grant Knight.

[▶ WATCH VIDEO](#)



AERO DYNAMIX

COME SEE US AT **HELI-EXPO BOOTH #C2235**



THE LEADER IN
**NIGHT
VISION**
SOLUTIONS

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

📍 3227 W. Euless Blvd., Euless, TX 76040 📞 817.571.0729 📠 817.283.5432 ✉ sales@aerodynamix.com

www.aerodynamix.com

AUTHORIZED DEALER/DISTRIBUTOR AND OEM APPROVED INTERNAL LIGHTING MODIFICATIONS FOR





Once a darted animal falls asleep, the ground team moves in and gets to work. Researchers try to collect as much information as possible to maximize the value of the opportunity. This elephant was the subject of several previously approved research projects, one of which was a study to determine how the sedative drugs affect the elephants physiologically. Another was a survey to estimate the prevalence of tuberculosis in elephants within Kruger National Park.



The helicopters of the SANParks Air Wing fly down the Sabie River alongside a parade of elephants. As Kruger veterinary senior manager Peter Buss remarked, "We are very fortunate that we do have helicopters to support us, so you get this totally unique perspective on the Kruger park, and the national parks that we work in. . . . It's fantastic to be out there in that sort of environment."





PNG

The Mission Wireless Intercom

Axnes

Axnes Inc. - USA

719-722-1770

Axnes AS - Norway

+47 37 04 08 00

For product inquiries:

post@axnes.com

axnes.com



▲ All four SANParks H125 and AS350 helicopters are captured in a rare formation shot before splitting off on separate taskings. The Air Wing upgraded to the H125/AS350 model from the Airbus EC120, and has taken full advantage of its increased performance and versatility. “I was here before we got these aircraft, and since operating and implementing them in 2006, it’s a dream come true,” said SANParks chief pilot Grant Knight. “It’s a platform that meets our requirements in all the different missions and aircraft configurations, and it’s a friendly aircraft for what we do.”

For SANParks pilot Jaco Mol, “just the opportunity to be able to fly in a place like this, it beats everything. No two days are the same, no two missions are the same, and flying through this park and every time you’re realizing how big it is, how vast it is, how wild and untamed it is — it’s brilliant.”



▲ Agnesia Makgotla works with maintenance manager Byron Sclanders to keep all four of the Air Wing’s helicopters serviceable and ready for anti-poaching missions. “We have to be sure [that] should the choppers be needed, the pilots always have some aircraft to go with,” Makgotla said during *Vertical*’s visit in October. “For example, just yesterday, eight poachers were caught, because we had all four [helicopters] working.”

Built for Quiet. Built for Comfort. Built to Last.



Model H10-13H



Model DC ONE-XH



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.

Visit Booth **#B3526** at **HAI**. Enter to **WIN** a **DC ONE-XH** Headset!



WWW.DAVIDCLARK.COM



An Employee Owned
American Company



▲ A ranger clears the tail of a SANParks AS350 during an off-airport landing. The vast majority of the Air Wing's landings are on unprepared surfaces. "We're not operating from tarred airstrips and those kinds of things," said pilot Jaco Mol. "So it's landings in the bush with the associated trees, dust, brownouts, [and] wind."



▲ The sheer vastness of the Kruger poses significant operating challenges. Because missions may require extended time on station, the Air Wing has had to cache fuel in 200-liter drums throughout the park. If something breaks in the field, the Air Wing can't immediately count on outside organizations for help. "We are literally in the middle of the bush, operating sort of on our own here," said SANParks chief pilot Grant Knight.

Knowing that they're making a difference helps sustain the passion of the Air Wing's pilots and support personnel. For Grant Knight, one of the greatest privileges of the job is in helping to protect the Kruger for future generations, while also raising his own children here. "I hope that as adults, they'll be able to say that their dad was the reason why there are still rhinos around," he said.



TECHNISONIC COMMUNICATIONS



THE FUTURE OF COMMUNICATION IS ALREADY BUILT IN.

The TDFM-9000 series radios offer technology built for today's most demanding operations. 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 #B5832 • Visit us at AEA, Booth #505



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

Having been largely sidelined for two years as a people mover in the offshore oil-and-gas sector, Texas-based Air Center Helicopters is breathing new life into the Airbus H225, returning them to service as a multi-mission utility heavy lifter.

ALL IN

With its recent acquisition of 17 Airbus H225s for utility work, Air Center Helicopters is betting big that opportunity lies in taking the road less traveled.

STORY & PHOTOS BY DAN MEGNA



[WATCH VIDEO](#)

[DOWNLOAD THE WALLPAPER!](#)

I first became acquainted with Air Center Helicopters in the summer of 2004, when I had a chance meeting with Rod Tinney, the company's owner, at an airport in San Diego, California. Air Center was in town with a couple of Bell 412s and 407s — each painted in a distinctive shade of blue — and was supporting a military contract during sea trials of new Aegis class destroyers.

At the time, Air Center had just been awarded its third long-term contract for helicopter support to the U.S. Navy. Its machines were specially configured to meet the Navy's strict requirements for offshore flying, tactical navigation, and communications. They were used for personnel and cargo transfers between ships, took part in radar tracking exercises, and recovered aerial gunnery targets.

The success of the Navy contracts put Air Center in high demand among other U.S. military operators, NASA, NATO and foreign navies. By the end of 2007, Air Center had flown over 13,000 hours on these various government contracts, completing over 12,000 landings aboard naval vessels and training platforms, and moving over 30,000 passengers and 152 tons of cargo.

The evolution of Air Center to that point from its humble beginnings is worth reflection.

At the start of his career in the early 1980s, Tinney flew for a small helicopter and seaplane operator in Alaska. After flights with directors from cruise ships aboard the company Hiller 12E, Tinney recognized a lucrative untapped revenue opportunity: shuttling tourists to nearby glaciers. He and his boss joined forces, each purchasing one Bell 206 and together they leased a third aircraft. In the two seasons that followed, the operation proved quite successful, turning nearly 4,000 hours.

Following the success of the Alaska operation, Tinney and his partner launched Air Center, and turned their attention to the warm Caribbean and the island of Saint Thomas. While the opportunity to fly in a tropical climate was a lure in itself, the pair believed the higher volume of cruise ships in the Caribbean waters would translate into big profits. Those plans, however, were derailed after a series of setbacks, culminating with the ending of the partnership on acrimonious terms.

“
While the opportunity to fly in
a tropical climate was a lure
in itself, the pair believed the
higher volume of cruise ships
in the Caribbean waters would
translate into big profits.
”

1 // Today, Air Center founder Rod Tinney remains hands-on in every aspect of the business and the operation of his fleet, including serving as the check airman for the H225. 2 // Air Center has adapted the H225 for Personnel Recovery and Casualty Evacuation (PR/CASEVAC) missions in support of military operators overseas. **ACHI Photo** 3 // The H225 has a useful load of nearly 11,000 pounds, cruises at 140 knots, and has a range of 650 nautical miles. 3 // The standard H225 cargo hook is rated for 8,375 pounds. The optional “sling boom” heavy lift hook provides 10,470 pounds and transfers the weight of the load from the airframe directly to the aircraft's main gearbox.



1



2



3



Beat down but not broken, Tinney returned two of the 206s to their respective bank/leasing companies, keeping one for himself. He scratched together \$3,600 to rebuild the company, flying tours from a remote portion of an island golf course.

After a thorough pummeling by Hurricane Hugo in September 1989, Tinney recognized that reliance on the tourism industry was not a recipe for long-term success. When he saw a civilian Bell 212 flying out of Roosevelt Roads Naval Air Station in Puerto Rico, he began investigating a somewhat obscure U.S. Navy program — Commercial Air Services (CAS). This program, which had just begun, saw the Navy outsource some specialized support functions to commercial operators. Tinney saw an opportunity for more predictable year-round work that wasn't as affected by swings in the economy or natural disasters and by the end of the year, won his first Navy contract supporting the Caribbean region.

As CAS contract requirements became increasingly stringent and complex over the following years, other operators responsible for CAS contracts in different regions failed their Commercial Airlift Review Board (CARB) inspection by the Air Force. Tinney, however, adapted, and by the mid-1990s had become the sole helicopter operator participating in the program.

In 1997, Tinney moved his operation to Fort Worth, Texas. Over the next decade and a half, Air Center expanded and matured



4

1 // After operating the high-time legacy AS330J and AS332L overseas, Air Center leased two H215s, which offered some of the new technology found in the H225. Ultimately, however, it was determined to not have the range needed for the mission. **Skip Robinson Photo** **2** // The Bell 412 has long been an Air Center workhorse in offshore missions in support of a variety of military ship-based contracts. **3** // The Bell 407 also has a long history with the company, due to its adaptability to missions in austere environments — such as supporting research projects in Antarctica. **ACHI photo**



with a growing fleet of Bell 412s, 407s and 206s, eventually becoming the largest helicopter operator in the Dallas-Fort Worth metroplex. While it offers many of the traditional part 135 operations, such as air charter, external lift, and aerial filming, it has remained laser focused on the unique specialty it developed in CAS and Department of Defense contracting.

MOVING TO A LARGER TYPE

In 2014, Air Center bid on — and was awarded — contracts to provide helicopter support for military personnel in conflict zones in Afghanistan. These contracts, however, required more capabilities than the company's existing fleet of light and medium Bell machines could provide.

As such, Air Center leased six relatively high-time Airbus Puma and Super Puma helicopters (AS330J and AS332L models). These aircraft were well-suited for missions in austere environments — they were rugged, versatile, and able to carry relatively large loads of passengers and cargo. But as older aircraft, they had high component times, and Air Center found that spare parts were scarce.



EXCELLENCE IN HELICOPTER MAINTENANCE SERVICES

We offer maintenance, repair, and overhaul services for the Airbus H225 including:

- Airframe
- Dynamic & Small Components
- Avionics
- Rotor Blades
- Rescue Equipment

Our complementary H225 services also include:

- Design & Engineering
(Major/Minor/Repair Modifications)
- Mission Reconfiguration
- Return to Service



VIEW MORE
PHOTOS



“

We started doing our research to determine if this was going to be a good gamble. If we could change the equation with these new modern aircraft, and if we could buy enough of them fast enough before anyone else realized what we know, we could establish a new paradigm for the military.

”



The company decided to cannibalize two of the aircraft to make the remaining four mission-ready. By December 2016, the aircraft were operational in Afghanistan, where they flew personnel and cargo for the U.S. Army LOGCAP IV contract, operated by Fluor International Corporation. Despite limited spare parts, each of the four Air Center aircraft flew an average of 100 hours each month. The company later acquired an AS332 C1E, which it put on a contract in the west African nation of Niger, flying personnel recovery (PR) and casualty evacuation (CASEVAC) missions for the U.S. African Command (AFRICOM).

Leading up to this, Air Center had begun to feel the effects of a U.S. government sequestration that was squeezing off some of the CAS contracting work. “We needed to restructure the business,” said John Bean, who joined Air Center in 2015 as COO. “[Tinney] had already begun working with these larger aircraft, but it was clear, as I analyzed things, that it was going to be dog-

eat-dog as long as we stayed in the small and medium helicopter world. There’s just a lot of competition and a lot of hungry operators and not a lot of government spending in that market. We wanted to stabilize the business for long-term security and we needed to move into the heavier aircraft.”

Tinney and Bean understood the older Puma and Super Puma were likely not long for the overseas contracts. Besides the aircraft’s age and the limited availability of spare parts, they lacked the endurance for some of the extended legs required in remote locations. So the pair began quietly assessing the availability of other aircraft that would help them to stand out from the competition. They identified the Airbus H225 as the ideal candidate. It was a larger, modern, all-weather aircraft with the latest avionics and technology, and provided greater speed, payload and range.

But, at the time, the type was enduring a challenging period in its history. First entering service in 2004, it became the subject of much scrutiny after several high-profile incidents and accidents in the offshore oil-and-gas sector — particularly in the North Sea. In two instances, investigators focused their attention on failures of systems associated within the aircraft’s main gear box.

“There was nothing inherently wrong with the design and capability of [the H225],” said Bean, who spent most of his career in aviation engineering (30 years with Lockheed Martin and five years at Bell). “There was a manufacturing flaw and a couple design elements that combined to allow these accidents to occur. But once they were corrected, it was probably the safest, most modern heavy-lift helicopter out there.”

Despite Airbus focusing a great deal of time and energy on engineering and implementing fixes, the H225 has subsequently struggled to find widespread work among offshore operators, with many choosing to park the type.

“
The pair began quietly assessing the availability of other aircraft that would help them to stand out from the competition. They identified the Airbus H225 as the ideal candidate. It was a larger, modern, all-weather aircraft with the latest avionics and technology, and provided greater speed, payload and range.
”



The H225 is the latest offering of Airbus’s Super Puma family, and has accrued more than five million flight hours working in some of the most harsh and demanding conditions on the planet.



The H225's CMA-9000 avionics package is a complete flight management system with four-axis, dual duplex autopilot, with a programmable flight control system for flying approaches, patterns and automatic hovering. Other integrated systems monitor and record a wide range of maintenance and flight data.

"We saw the [H225] market was terribly depreciated because they had been grounded [by many operators] for two years," said Bean. "And oil-and-gas said they were not going to have anything to do with them. So we started doing our research to determine if this was going to be a good gamble. If we could change the equation with these new modern aircraft, and if we could buy enough of them fast enough before anyone else realized what we know, we could establish a new paradigm for the military."

Air Center seized the opportunity. It approached U.S.-based Era Helicopters, the largest domestic operator of the H225, and made an offer to acquire its fleet. All of the aircraft were less than 10 years old and most had less than 5,000 hours total time on the airframe.

"I did an exhaustive study on the history of 225 operations, as well what were the most consumed parts and unforecast maintenance issues," said Tinney. "I compared the list of most purchased parts from the operator I studied to the currently available offered Power by the Hour programs, and determined none were sufficient. So I negotiated a customized support program covering the parts the study found were needed." By the spring of 2018, Air Center had acquired eight of Era's H225s, as well as its parts inventory. "Era was instrumental in making it possible for me to

do this," said Tinney. "They really worked with me. In the deal, we got the spares, we got the tooling... we got everything we needed to start the program and stand up my MRO shops. I don't think there's any way I could have got cranked up with the 225s if I hadn't done the deal with Era."

CREATING A NEW MARKET

With the aircraft in hand, Air Center faced the daunting chore of converting them from an offshore people-mover into a utility aircraft. Due to the novelty of the task, there were no applicable service bulletins or documentation to help it. But in the many months leading up to the acquisition, Air Center engineers and MRO teams conducted extensive research to develop plans for making the conversions.

Like most offshore H225s, the Era machines were set up with airline-style seating and large flotation systems and life rafts for extended overwater operations. As such, there was a lot of equipment and weight that needed to be removed. Then, the interiors needed to be adapted for the PR and CASEVAC mission with troop seating, medical litters and equipment, rescue hoist and ballistic flooring.

FAA records indicate the two H215s operated by Air Center were the only two ever flown by a U.S. operator.

Joe Copalman Photo



Keep Your AS350 Flying Instead of in Maintenance

See Our New Tail Rotor Bearing in Booth B4006 at Heli-Expo

- ▶ Lower Direct Operating and Maintenance Costs
- ▶ Extended Part Life
- ▶ Pending FAA Certification

LORID
MRO SERVICES

All of the Savings, *None of the Risk™*

**2019
HAI HELI-EXPO**
BY HELICOPTER ASSOCIATION INTERNATIONAL
March 4-7 • Atlanta
Exhibits Open March 5-7



NEW FOR BELL 412 & 214ST



Luma Technologies LLC
Partners in Quality & Innovation

Modernize Your Cockpit for Improved Performance & Reliability LED Solutions for Bell 206, 412 & 214ST, BK-117, CH-47D & more!

STC INSTALLATION
AT A FRACTION OF
OEM COSTS

IN STOCK
& READY TO SHIP

**CALL TODAY
& SAVE**

VISIT US AT
HELI-EXPO
BOOTH #B4727

- LED Reliability and Low Temperature Operation
- Superior Lighting Performance with True Sunlight Readability
- Comes Standard with FAA Approved Goggle Friendly Aviation Colors
- Quick & Easy Installation with Drop-in Plug & Play Functionality
- Five Year Warranty

*Never Replace Another Lamp
or Broken Cap Assembly Again!*

lumatech.com
13226 SE 30th Street | Bellevue, WA 98005
P 425.643.4000 Ext#305 | F 425.643.4001



Terry Danton is the lead H225 engineer associated with Air Center's part 145 repair station for MRO work.



An Antonov An-124 operated by Volga-Dnepr Airlines on the ground at Fort Worth Alliance Airport preparing to load four Air Center H225s for a flight to Afghanistan. **Lana Gibson Photo**



Air Center's base of operations at the Spinks Airport in Burleson, Texas, just south of Fort Worth, encompasses six large hangars for housing aircraft, MRO and aircraft paint.



The conversion of the first four H225s was not without challenges. For instance, all the gearboxes had to be sent back for overhaul, which wasn't expected or in the budget. And, after the conversions had been finished, Air Center discovered the Federal Aviation Administration (FAA) had no personnel qualified in the H225, so the Air Center pilots had to be sent to France to get their type ratings in the factory simulator. But, despite the hurdles, the four aircraft were completed, certified and pressed into service in Afghanistan by the end of August that year.

In addition to the PR/CASEVAC missions overseas, Air Center has two H225s dedicated to shipboard vertical replenishment (VERTREP) missions with the U.S. Navy. A new requirement for the mission involves lifting the 9,600-pound (4,355-kilogram) spare engine package for the Lockheed Martin F-35C Lightning II, the Navy's newest stealth strike fighter. The H225 has a 10,470-pound (4,750-kilogram) external load limit, and is also configured with a folding main rotor blade package, allowing for the H225 to be hangared aboard ships.



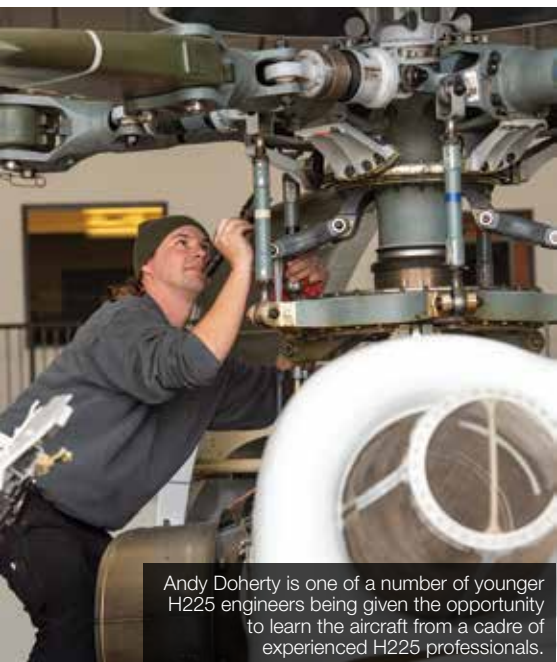


H225 engineer Bobby Junge finalizes the installation of a Goodrich external rescue hoist.

Beyond the military contracting, Air Center sees great potential for the H225 in domestic firefighting. Tinney believes the aircraft, configured with a Simplex Model 316 belly-mounted fire attack system and EO/IR sensor, would become a formidable day/night multi-mission workhorse.

To meet the growing need for qualified H225 pilots, Air Center developed its own pilot training academy. Candidates are sourced via word of mouth from an elite cadre of former special operations and combat search-and-rescue pilots that Tinney assembled at the outset. They must personally vouch for the character and integrity of any candidate.

Once into the program, Tinney estimates it takes \$70,000 to \$100,000 to develop a capable H225 pilot. To support the training program, Air Center is awaiting delivery of its own level D full-flight training simulator. Tinney believes the hardest thing for his pilots



Andy Doherty is one of a number of younger H225 engineers being given the opportunity to learn the aircraft from a cadre of experienced H225 professionals.



W H E N
Y O U ' R E
N E E D E D

ON THE MOST IMPORTANT
DAY OF SOMEONE'S LIFE,

WE'LL HELP
YOU GET THERE.



Air Center's first mission-ready H225s pass in review before being loaded in the Antonov for their flight overseas. **Lana Gibson Photo**



United Rotorcraft®
An Air Methods Division

UNITEDROTORCRAFT.COM

One of two H225s earmarked for a multi-year contract providing VERTREP (vertical replenishment) for U.S. Naval war ships throughout the western Pacific.



to get used to is having to fly with him as the H225 check airman. “Most never met the boss in their previous jobs, but here they have to fly with him to qualify,” he said.

Today, Air Center is headquartered in Burleson, Texas, just outside Fort Worth. It currently has 17 H225s in its fleet — owned and leased — with seven of those in various stages of the conversion process. The balance of the company’s helicopter fleet include two AS332 L1 Super Pumas, and seven light and medium Bell and Airbus helicopters.

The company’s MRO facility is an FAA part 145 maintenance facility and an approved Bell service center, providing full component repair and overhaul services, non-destructive testing and aircraft paint services.

Since the beginning, Tinney has earned his success by taking the road less traveled. Skeptics and setbacks have served only

to inspire him to accomplish what others viewed as too hard or unattainable. “If you look at when I started with the Navy stuff, no one thought any civilian would ever fly for the Navy and land on ships,” he said. “And now, with the 225s, no one thought these could ever be resurrected and successfully operated after being converted to a utility configuration. I tell my people, when you do what everyone else says is impossible, it takes a long time before you have any competition.” 🚁



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.

ALPHA

BRAVO

COLLINS

DELTA

ECHO

FOXTROT

GOLF

HOTEL

INDIA

JULIET



collinsaerospace.com

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

From the smallest details to the highest pursuits, we are redefining aerospace. With our customers, we relentlessly tackle the toughest challenges in our industry. And, every day, we **imagine** ways to make the skies and the spaces we touch smarter, safer and more amazing than ever. Together, we chart new journeys and reunite families. We protect nations and save lives. And we explore the unknown. We believe in the power of intelligence and partnership to guide our customers on journeys toward the future. The paths we pave together lead to **limitless** possibility. And the bonds we form propel us all higher again and again. We are constant in our **evolution**. We are connected to our customers—always. We are compelling as we boldly step forward.

UTC Aerospace Systems and Rockwell Collins
are now Collins Aerospace.

TOGETHER, WE ARE REDEFINING AEROSPACE



Collins Aerospace

Almost five years after oil prices crashed, the offshore transport sector continues to adapt to the impact.

Will 2019 finally provide a measure of stability after another turbulent year?

BY KENNETH I. SWARTZ

TREADING WATER

The offshore helicopter support industry has been treading water since world oil prices collapsed in 2014. For the past five years, helicopter operators have taken a beating as offshore oil-and-gas companies reduced exploration drilling, deferred production developments, extended crew rotations, consolidated flights, closed support bases, cut helicopters on hire, and retendered contracts to reduce monthly helicopter rates.

Helicopters have been supporting the offshore oil-and-gas industry since 1947, when Bell 47s transported exploration crews in the wetlands of southern Louisiana and later offshore. Since then, operators have weathered many boom and bust business cycles in the oil industry that have left lots of aircraft without work, but this time the downturn has cut a lot deeper.

In the early 2000s, the helicopter industry made a major investment in new technology helicopters that had the payload, range, speed, safety features, and economics required to support deepwater exploration and development much further offshore. The Airbus EC225 (now known as the H225), Sikorsky S-92 and Leonardo AW139 entered offshore service in 2004 and 2005; and they were joined by the super medium Leonardo AW189 and Airbus H175 in 2014.

When oil prices collapsed, the oil companies reduced exploration and development activity — and the number of offshore workers and helidecks requiring service steadily declined.

The most turbulent week in the offshore market's history began on April 29, 2016, with the fatal crash of an H225 in Norway, and the subsequent temporary worldwide grounding of the fleet. On May 5, 2016, rising debt forced CHC to enter Chapter 11 restructuring. Ten months later, the operator emerged from Chapter 11 after restructuring its debt and dumping almost 100 helicopters (including most of its H225s) from its fleet.





Since oil prices crashed in 2014, oil-and-gas companies have generally been scaling back their exploration and development activity – and reducing their use of helicopters to transport workers offshore. **Leo Francini Photo**



A Bristow Sikorsky S-92 completes a crew change flight at the Tern platform in the North Sea. The region is still the largest offshore market in the world. **Paul Bock Photo**

Historically, offshore exploration and development activity increases when oil prices rise, but the forecast rebound in offshore drilling has failed to occur at the scale expected, even though energy companies need to replenish their hydrocarbon reserves. The continuing downturn has put a burden on helicopter operators and lessors saddled with high debt and idle aircraft, precipitating changes in ownership and senior management ranks.

In November 2018, Waypoint Leasing — the world's second largest helicopter lessor — itself entered Chapter 11, and was subsequently purchased by a unit of investment bank Macquarie Group for \$650 million.

Then, in late December 2018, the shares in both PHI, Inc. and Bristow Group — the world's oldest and largest offshore operators — crashed to record low prices.

"The market capitalization [of] PHI and Bristow . . . has now dropped to the list price of two and five Sikorsky S-92s, respectively, which is a huge challenge," observed one senior helicopter industry executive.

Looking ahead to 2019, it continues to be a challenging time for offshore oil-and-gas, but as a truly global industry, it has more than one story to tell.

Even though offshore exploration budgets were at a 10-year low in 2018, there were major discoveries found offshore in Guyana, the U.S., Cyprus, and Norway.

Baker Hughes reports that 260 jack-up rigs, semi-submersibles and drillships were actively drilling exploration or production wells in December 2018, which was an increase of 49 units from 211 rigs in December 2017. The fleet included 26 active drilling rigs in North America (an increase of six from 2017), 27 in Latin America (up one from 2017), 38 in Europe (up from 30 in 2017), 15 in Africa (five more than 2017), 56 in the Middle East (up 14 from 2017), and 98 rigs in Asia Pacific (up 15 from 2017).

However, Westwood Energy consultancy says helicopter utilization rates remain a challenge at 68 percent and 63 percent for medium and large offshore helicopters respectively.

THE NORTH SEA

The North Sea is the largest offshore market in the world for helicopter operators, with almost two million passengers a year flying offshore from about 16 bases in the U.K., the Netherlands, Denmark and Norway. About 25 percent of those passengers pass through Aberdeen International Airport.

The North Sea is a very important source of revenue for three of the world's largest helicopter consortiums: Bristow Group, CHC Group and Babcock Mission Critical Services. NHV Group of Belgium and Bel Air in Denmark are also important players in the region.

The past five years has seen a lot of changes in crew change scheduling, market share and fleet utilization in the North Sea.

A few years ago, major oil companies in the U.K. extended the rotation schedule for energy workers (from two weeks on and two weeks off, to three weeks on and three weeks off) as a cost cutting measure — trimming helicopter flights. The longer crew rotations have been vigorously opposed by the U.K. unions representing offshore workers, with Apache one of the first oil companies to pledge a return to a "two and two" schedule in early 2019.

In 2015, CHC had the largest share of the Norwegian offshore market, and Bristow was stronger in the U.K., but these market shares have changed as major contracts have changed hands.

The grounding of the H225 in May 2014 was followed by the type's elimination from offshore crew change and many search-and-rescue (SAR) contracts in the North Sea. The S-92 picked up most of the initial slack, but the new technology super medium H175 and AW189 have also been able to replace larger aircraft on a

FlightSafety is Here For YOU



Your Success

Relax. Our instructors work to ensure YOU have an exceptional training experience with a positive outcome.

Your Proficiency

Be the very best. We are committed to helping YOU achieve and maintain the highest level of skills and safety.

Your Satisfaction

Count on us. We all have the same goal: providing YOU with the highest-quality training and outstanding service.



Train with FlightSafety and benefit from our unequaled experience, team of master instructors and safety-focused programs using state-of-the-art simulation technology. Trust that we'll always go above and beyond for you and your flight department and deliver the value you deserve and expect. It's all about you.

FlightSafety
international

flightsafety.com • 314.785.7815



Era is one of the major players in the Gulf of Mexico, making a major investment in infrastructure in the region. Here, one of the operator's Leonardo AW189s flies over the Gulf. **Dan Megna Photo**



A Babcock Airbus H175 lands on the Golden Eagle platform in the North Sea. The type has proved a success in its work for offshore operators in the region, and the global fleet of H175s has now passed 40,000 flight hours. **Babcock Photo**



A PHI-operated S-92 departs for an offshore rig in the Gulf of Mexico. As oil production has moved further from shore, heavy helicopters have played an increasingly large role in the region. **PHI Photo**



The geographic diversity of the offshore industry continue to grow. Here, a Vietnam Helicopters AW189 lands at a rig off the Southeast Asian country's coast. **Vietnam Helicopters Photo**

very cost-efficient basis. For example, on Jan. 24, 2019, there were 37 different helicopters operating offshore from Aberdeen, including 27 S-92s, eight H175s, one AW189, and one AW139.

The H175's launch customer, NHV Group, now has a fleet of 11 H175s flying in the North Sea, which have collectively flown 30,000 hours — three quarters of the global H175 fleet total of 40,000 hours.

OFF THE AMERICAS

PHI, Bristow, Era, Chevron, RLC, and a handful of independent operators dominate the offshore helicopter business in the Gulf of Mexico. The big four operators — PHI, Bristow, Era and Chevron — have all made major investments in onshore infrastructure in the region, including passenger terminals, hangars, and flight strips optimized for heavy helicopters.

The Gulf of Mexico has been in transition for decades, as oil production from shallow water fields, easily served by light aircraft, has been replaced by deepwater oil discoveries located further offshore that require the payload and range of larger medium and heavy helicopters.

In 2013, the Helicopter Safety Advisory Conference reported that there were 458 helicopters active in the Gulf, including 34 heavies. By 2017, the overall fleet had shrunk in number by 28 percent, but the number of heavy aircraft had grown to 43.

Across the southern border in Mexico, international oil companies are drilling in deepwater never explored by Pemex, the national oil company. This has stimulated the introduction of the H175 at Pegaso, four AW139s at ASES, and in late January 2019, it was revealed that an unnamed oil company would be using three PHI

S-92s leased to ASES to support deepwater exploration off Mexico.

Up in Canada, there are four production facilities off the coast of Newfoundland and Labrador, and a fifth is on its way. Husky Energy's C\$1.6-billion West White Rose project, located 217 miles (350 kilometers) offshore, is scheduled to produce first oil in 2022.

Last year, Equinor Canada (formerly Statoil) announced plans to develop the Bay du Nord oil project some 300 miles (500 kilometers) offshore, with first oil expected in 2025. This will be supported by some of the longest offshore flights in the world.

Cougar Helicopters supports the Hibernia, Terra Nova, White Rose and Hebron activity with eight Sikorsky S-92s based in St. John's, including a dedicated SAR aircraft.

Meanwhile, Canadian Helicopters flies S-92s from Halifax, Nova Scotia, in support of the Sable Offshore Energy Project, operated by ExxonMobil, and Deep Panuke, operated by Encana Corporation.

In 2018, Sikorsky obtained Transport Canada certification for the expanded gross weight (EGW) capability option for new S-92 helicopters. This increases the maximum takeoff weight from 26,500 to 27,700 pounds (12,020 to 12,565 kilograms), allowing operators to carry an additional 1,200 pounds (545 kilograms) of payload.

In South America, deepwater exploration off Guyana has resulted in some exciting oil discoveries, and new gas fields have been found off Trinidad and Tobago. This has stimulated exploration interest in other Caribbean nations, and created new flying opportunities for companies like Bristow, which has operated offshore in the region for about 60 years and recently marked the milestone of 30,000 hours on Caribbean AW139 operations.



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



Further south, offshore exploration off Brazil has slowed in recent years as a result of falling oil prices, a brake on development plans, and a major corruption crisis that hit the senior ranks of Petrobras, the national oil company.

Five years ago, there were 154 helicopters flying to Brazil's oil fields, including 122 on contract with Petrobras, 18 with international oil companies, and 14 aircraft operated by five companies flying ad hoc "spot charters" for service providers.

Today, Brazil's active offshore fleet likely numbers less than 100 helicopters. Omni Táxi Aéreo Ltda now has the largest market share, with smaller fleets flown by Lider TáxiAéreo S/A (partnered with Bristow Group), Brazilian Helicopter Services Táxi Aéreo Ltda (affiliated with CHC Group), and Aeróleo Táxi Aéreo S/A (partnered with Era Helicopters).

The biggest gains have been made by the AW139, which has displaced a large number of H225s and S-92s, since many of these large aircraft were employed for their passenger capacity at slot restricted airports rather than for their range capability. In 2017, Aeróleo introduced the first AW189 for offshore use to the country.

OFFSHORE CHINA

Development of the offshore sector laid the foundation for China's civil helicopter renaissance. China needed oil to power its economy, and the western oil industry had the money and technology to find new energy reserves off the country's coastline.

The China National Offshore Oil Company (CNOOC) was formed in 1980 to develop the offshore oil industry, and it acquired Bell 212s and Airbus AS365N Dauphins in 1980 to support offshore drilling.

Today, three companies own a fleet of about 90 turbine helicopters, with about 60 primarily used to fly to drilling and production platforms off China's lengthy coast: CITIC Offshore Helicopter Company Ltd (COHC); China Southern Airline's Zhuhai Helicopter Company (ZHC), based in Zhuhai; and China Eastern General Aviation Company (EGAC), based in Tianjin.

Most offshore drilling and development is focused in Bohai Bay off the northeast coast, East China Sea off Zhejiang province, the South China Sea in the Pearl River Basin off Hong Kong and Guangzhou province, and in the southeast off Zhanjiang and Hainan Island.

COHC, founded in 1983, is the largest offshore operator in China with a fleet of about 57 helicopters, including eight for onshore business (one Kamov Ka-32, two Harbin Z-9s, two Harbin Z-11s and three AS350 B3s) and 49 for offshore (two Leonardo AW109SP Grand News, four Airbus AS365Ns, 15 H155s, seven AS332 L1/L2s, nine EC225s and three S-92s).

Headquartered at Shenzhen – Nantou heliport (ZGNT) in Guangdong province, COHC has regional bases in Sanya, Hainan province, Zhanjiang, Guangdong province, Dachang airbase in Shanghai and Tangu airport in Tianjin.

ZHC was established as Guangzho Helicopter Company in 1976, and today has a fleet of about 22 aircraft, consisting of 13 S-76s and nine S-92s. ZHC is Sikorsky's largest civil operator in Asia. In addition to Zhuhai Jiuzhou heliport, ZHC has bases in Xingcheng, Liaoning province, Sanya, Hainan province, and Zhanjiang, Guangdong province.

EGAC is a subsidiary of China Eastern Airlines, China's second largest airline. The helicopter division started flying Bell 212s to the Bohai Sea offshore fields in the early 1970s.

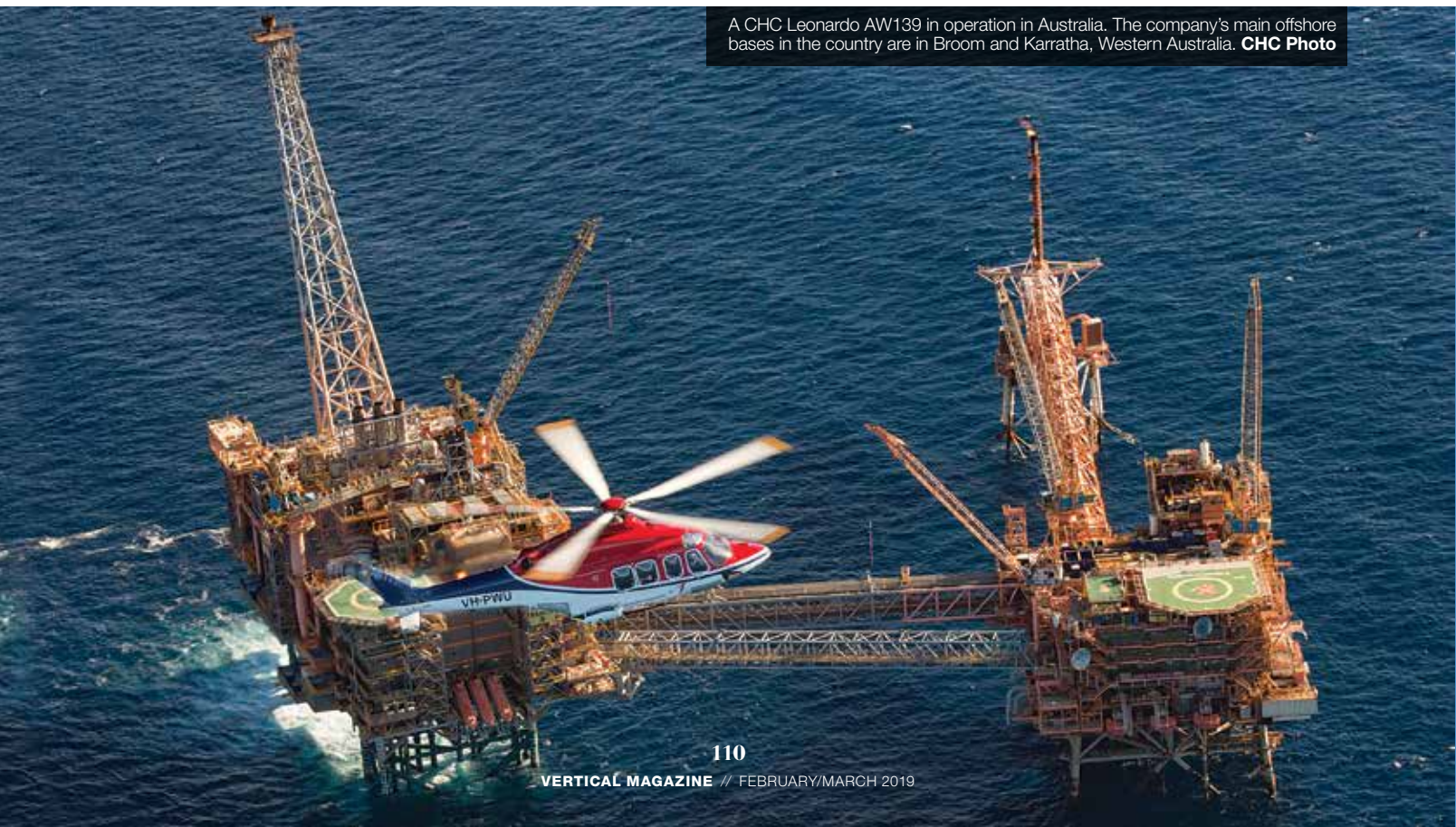
EGAC's helicopter fleet includes two Bell 212s, eight S-76s (S-76A, S-76A++ and S-76C++), one S-92 and three Schweizer S-300CBis for flight training. The offshore aircraft are based at Tangu airport, Tianjin, and Penglai, Shandong, to serve different platforms in the Bohai Sea.

THE MEDITERRANEAN, MIDDLE EAST & AFRICA

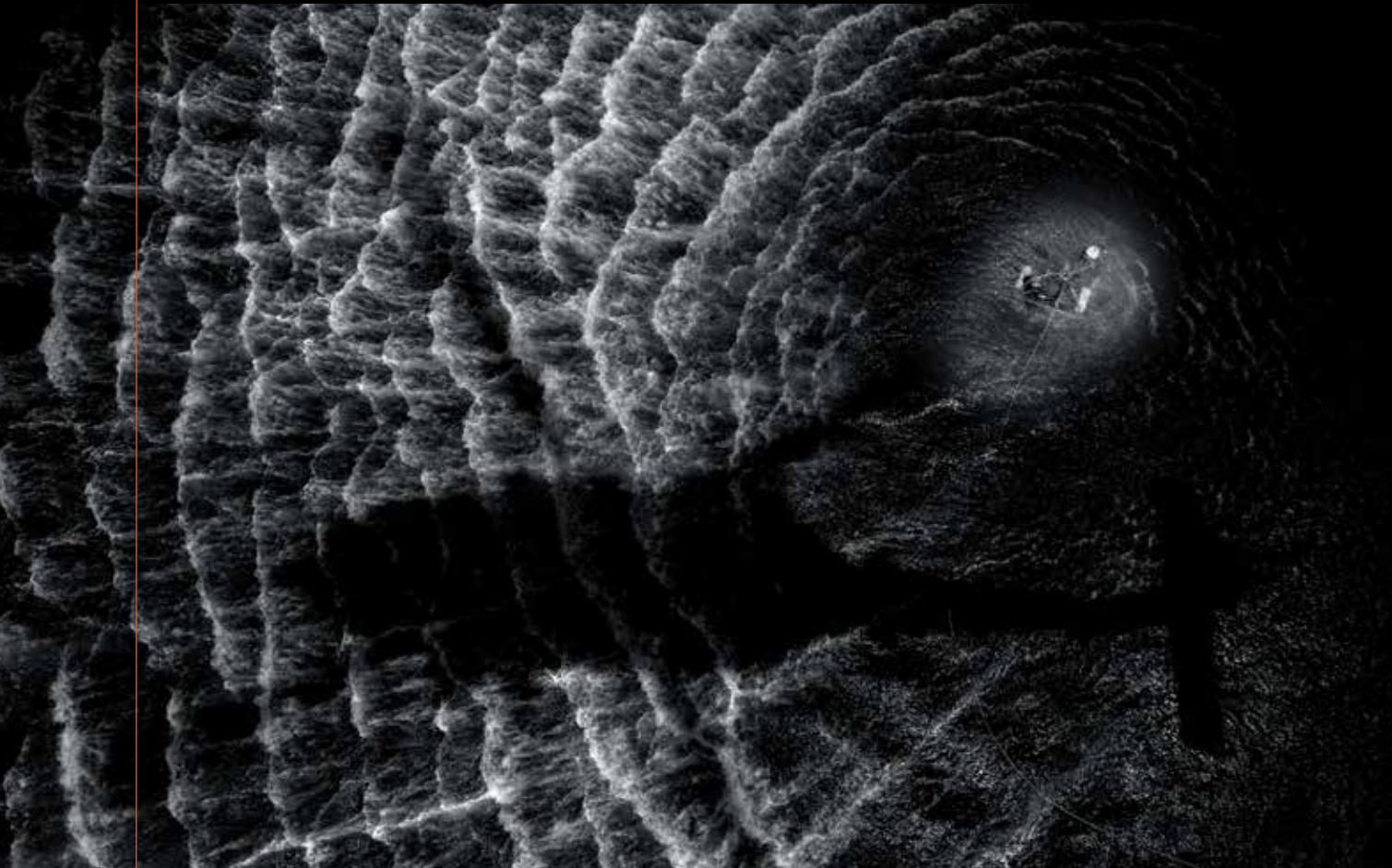
The discovery of large gas fields in the Eastern Mediterranean has stimulated offshore flying off Israel, Cyprus and Egypt.

In 2016, Lahak Aviation of Israel took delivery of two S-76C++ from PHI to replace Bell 412s supporting development of the

A CHC Leonardo AW139 in operation in Australia. The company's main offshore bases in the country are in Broom and Karatha, Western Australia. **CHC Photo**



A REVOLUTION IN RESCUE



Pegasus® rescue hoist – setting the new standard

For decades, rescue crews have relied on our Goodrich® rescue hoists to help them save lives. Our new Goodrich Pegasus® rescue hoist brings enhanced performance and a reimagined, modular architecture designed to simplify and reduce maintenance. A single-point payout minimizes load swings, and the new DASH data acquisition system provides detailed insight into mission profile. Those in peril rely on you. You can rely on us.

GOODRICH® PEGASUS RESCUE HOIST

- Builds on legacy of unparalleled reliability
- Introducing the DASH™ data acquisition system for advanced mission insight
- Easily field-serviceable components
- Retrofits to existing helicopter platforms

collinsaerospace.com/pegasus



Collins Aerospace

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

UTC Aerospace Systems and Rockwell Collins are now Collins Aerospace.



Canadian Helicopters operates S-92s from Halifax, Nova Scotia, supporting the Sable Offshore Energy Project and Deep Panuke. **Mike Reyno Photo**



Offshore development is increasing across the Middle East. Here, a Gulf Helicopters AW139 works to support a platform. **Leonardo Photo**



**VISIT US
AT HELI-EXPO**

BOOTH C4704



DO YOU RECOGNIZE
THESE PARTS?



AIRWOLF REDUCES YOUR D.O.C'S
AND SAVES YOU MONEY.

PMA ELASTOMERICS FOR BELL 407 HELICOPTERS.

Dampers, Shear Bearings, Lead Lag Bearings

AIRWOLFAEROSPACE.COM • 440-632-1687

ADD **AIRWOLF** TO YOUR TRUSTED SUPPLIER LIST

massive Tamar and Leviathan gas fields some 50 and 80 miles (80 and 130 kilometers), respectively, west of Haifa.

Off Cyprus, AW139s flown by PHI's HNZ Group and Babcock have been supporting exploration and the development of the Aphrodite gas field, 21 miles (35 kilometers) west of Israel's Leviathan gas field.

The Italian firm Eni discovered the massive Zohr gas field off Egypt in 2015. Petroleum Air Services (25 percent owned by Bristow) operates 41 helicopters and has five bases on the Mediterranean coast supporting oil-and-gas customers primarily with Bell 412s, EC135s and AW139s.

Turkey launched its first ever well-drilling operations in the Mediterranean in late October 2018 following the launch of its first drillship. A consortium of France's Total, Italy's Eni and Russia's Novatek are also expected to drill Lebanon's first offshore oil-and-gas reserves in 2019, utilizing two helicopters based at Beirut Airport.

To the east, Falcon Aviation Services commenced a five-year contract in December 2018, flying three new Leonardo AW169s offshore for the Kuwait Oil Company.

To the west, offshore drilling off Libya is now supported by Gulf Helicopters' AW189s based in Luqa, Malta.

The largest energy exporters in Sub-Saharan Africa have historically been Nigeria and Angola. Exploration along the Atlantic Margin of Africa from Morocco to Namibia has recently resulted in numerous deep-water oil-and-gas discoveries, with the Jubilee field of Ghana hailed as the fastest ever deepwater development, taking just 24 months from development to production.

Nigeria has the largest offshore helicopter fleet in the region, which supports production from oil rich swamps and the shallow waters of the Niger Delta. Bristow established a local oil-and-gas subsidiary in 1969 and maintains six bases. It competes against Caverton Helicopters, which

ASTRONICS

Rugged. Responsive. Ready for Rotorcraft.



Electrical Power Systems



Enhanced Vision Systems



Lighting Systems

Fog, smoke, wind and dust. Degraded environments require upgraded solutions to get crew and passengers through it. When leading rotorcraft manufacturers seek safety and performance improvements, they count on the innovation of Astronics. Unsurpassed enhanced vision technologies, power, and lighting solutions are all available from a single collaborative partner, experienced with military and commercial rotorcraft programs. Proven, rugged and ready right now.

Heli-Expo Booth C2810 | Whitepaper: astronics.com/Heli-Solutions

ELEVATING *innovation*

POWER | LIGHTING & SAFETY

in mid-2018 acquired 12 new Bell 407 GXPs and Bell 412 EPs to boost its offshore fleet in Nigeria.

Angola has the second largest offshore fleet in the region. In 2018, Heli-Union consolidated its position in Angola by partnering with Bestfly, a local aviation services company. Bestfly made its first offshore AW139 flight in November 2018. Heli-Union also flies offshore from Gabon and Cameroon.

Heliconia is an up-and-coming offshore operator flying AW139s off Morocco.

Belgium-based operator NHV previously operated two H175s — the first in Africa — in Ghana for Tullow Oil, and is now flying two H155s for Australian-owned FAR from Banjul, Gambia.

The Titan Helicopter Group of South Africa and subsidiary Indwe Aviation fly offshore in several nations, including Namibia, where its AW139s support six offshore vessels dredging for diamonds 400 feet below the surface on the seafloor.

In 2010 and 2011, Anadarko and Eni made a series of massive gas discoveries off Mozambique, and the country is on track to become the fourth-largest liquid natural gas exporter.

DRILLING DOWN UNDER

Australia has the largest offshore helicopter market in the Asia-Pacific region with a fleet of about 85 helicopters (including idle H225s) from numerous bases.

The major offshore regions in Australia are located off the coasts of the states of Western Australia (North West Shelf, and Carnarvon and Browse basins), the Northern Territory and Victoria (the Bass Strait).

In 2016, ESSO began replacing six S-76C helicopters supporting its 23 offshore installations in the Bass Strait with four AW139s. These fly 300 workers offshore a week from a heliport at Longford near Sale, 136 miles (220 kilometers) east of Melbourne.

The Carnarvon basin and the Bonaparte basin off the coast of northwestern Australia remain the busiest areas for overall oil drilling activity in Australia, and the North West Shelf Project in the Carnarvon Basin is also one of the world's largest liquefied natural gas projects. Frontier oil exploration is taking place in the deep waters of the Timor Sea off the Northern Territory.

Bristow Helicopters Australia maintains three bases in Western Australia, one in Victoria, and one in the Northern Territory.

CHC has its main offshore bases in Broom and Karratha, Western Australia. It introduced the first S-92s offshore in Australia in 2013. CHC also introduced the first super medium helicopters in Australia, when three 16-passenger AW189s commenced service from Karratha in November 2017 supporting Woodside's operations on the North West Shelf.

Babcock International took delivery of two H175s at a ceremony in Darwin, Australia, in late 2017, to transport personnel and provide search-and-rescue and medevac support to frontier drilling in the Timor Sea. The helicopters are based in Dili, Timor Leste, which is 300 miles (500 kilometers) northwest of Darwin.

On April 3, 2017, PHI HNZ Australia PTY Limited performed its first S-92 flight from Broom, Western Australia, for the Inpex-led Ichthys LNG Project that would employ five S-92s, including a dedicated SAR aircraft.

PHI, Inc. subsequently bought all of HNZ's offshore business conducted in New Zealand, Australia, the Philippines and Papua New Guinea in early 2018.

Across the Tasman Sea, New Zealand employs about eight offshore helicopters supporting oil-and-gas fields in the Taranaki basin. This will become a sunset market since New Zealand's Labour coalition government announced plans in early 2018 to stop issuing new offshore exploration permits as part of the country's transition to "clean energy." The ban applies to new permits, but won't affect 22 existing permits.

The last 12 months have certainly been a transitional period for the offshore transport industry, and while the turbulence in the sector is likely to continue for a while yet, a measure of stability has at least begun to return to the industry in many parts of the world. However, the continued spread of exploration into new regions and waters around the world, and dramatic changes at the companies that have dominated the sector for so long, mean that the offshore landscape may look very different in the future. 🌐



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

A Bel Air AW189 sits on a rig in the North Sea. The company is the only Danish-owned offshore helicopter company, and has its main base at Esbjerg Airport on the west coast of Denmark. **Bel Air Photo**



OUR COMMITMENT TO YOU



This is our commitment to you: we will maintain the highest safety standards; every day and at all times. We will foster an open and honest relationship built on trust and integrity. We will work hard every day to develop and deliver efficient end-to-end solutions that help you achieve your business objectives; and more importantly, safely bring you home. Whether you are boarding our aircraft for the first time or have placed your trust in us for more than 60 years, THANK YOU.





 WATCH VIDEO





THE LITTLE COPTER THAT COULD

As the Robinson R22 turns 40, we look back on its evolution — and its revolutionary impact on the helicopter industry.

**STORY BY GUY R. MAHER
PHOTOS BY SKIP ROBINSON**

In the spring of 2006, my chance to live a long-held dream of living with a helicopter on my property came true with the purchase of a low-time, one-owner 2000-model R22. The aircraft was to reside in a 24-foot-by-40-foot hangar alongside a new home my wife and I had built within 25 acres of North Carolinian countryside. Dream fulfilled.

Those with a keen eye may have noticed from the dimensions of the hangar that I built it to ultimately accommodate an R44. My master plan was to gain experience operating the little Robbie before I traded up to an R44 Raven I.

I never tasked the R22 with being 100 percent self-sufficient, but it sure proved its worth for my personal and business transportation needs, as well as some light commercial work. In my chats with Frank Robinson, founder of the Robinson Helicopter Company (RHC), he told me that my mission plans for the R22 were exactly what he had in mind when he designed the little aircraft.

And that's where this story really begins. Starting in 1957, Robinson worked as an engineer in helicopter design for a multitude of manufacturers, including Cessna, Umbaugh, McCulloch, Kaman, Bell, and eventually, Hughes Helicopters. The last of

This year, the Robinson R22 celebrates 40 years of continuous production, with 4,800 produced so far. To commemorate this event, Robinson painted one of its new R22s in a retro paint scheme from 1979.



1

these companies told Robinson his concept for a small, low-cost personal helicopter couldn't be done, and that they weren't interested in doing it, anyway.

So, in June 1973, he had had enough of the naysayers and left Hughes to form his own company, RHC, based out of his California home south of Los Angeles. The first prototype took shape in a small tin hangar at the Torrance Airport, and in August 1975, Robinson piloted the R22 on its first flight.

Roughly three and a half years later, in March 1979, the Federal Aviation Administration (FAA) issued RHC the type certificate for the R22. (The FAA certification test ship, S/N 002 now resides in the Smithsonian National Air and Space Museum.) The company then announced the aircraft with a base price of \$40,000. Consider that a new Hughes 300C was rolling out of the factory at that time with an average list price of \$85,000. And to fly away with a new Enstrom, you'd have to part with \$95,000 to \$103,000 depending on which model you selected.

But to me, what was even more impressive was that new 1979 Cessna 152s and 172s were being delivered at \$26,000 and \$35,000, respectively. For the first time, a newly produced helicopter was encroaching on the pricing turf of the fixed-wing set. It's no wonder that in October 1979, when RHC handed over the keys to the first R22 customer, the company already had a backlog of 587 orders. (That first production R22, S/N 003, was purchased by Tim Tucker — who would later become a Robinson training guru.)

However, while Robinson had hoped the aircraft would prove popular with private owners, it was flight schools that represented the bulk of his fledgling company's order backlog. Indeed, the first time I personally had an opportunity to fly an R22 (for an aviation magazine pilot report in 1981) it was in an aircraft that was owned and operated by a helicopter flight school in Tennessee. By that time, RHC had already delivered more than 100 R22s.

1 // While the R22 appears small from the outside, there is plenty of cabin space inside, and the helicopter gives a solid ride — even in turbulence. 2 // The nimble R22 requires a light touch on the controls, with flight characteristics that help prepare students for flying other helicopters. 3 // Tip weights were added to the main rotor system early in the R22's production run to help improve autorotational characteristics.



“

I was to hold the cyclic stick as I would in the 300C, and imagine that the stick protruded from the floor. Simple! And it really was — the technique worked perfectly from the first liftoff.

”

FIRST IMPRESSIONS

I recall my first impression as I walked up to the diminutive aircraft. The helicopter sat much lower to the ground than the Hughes 300C I had most of my experience in. The cabin was also smaller and appeared less substantial. I remember saying that I felt like if there were cut-outs on the cabin floor, I could strap into the R22, then stand up and carry it around.

Then, of course, there was Robinson's unique T-Bar cyclic. Instead of a cyclic stick coming up out of the cabin floor in between the legs of each pilot, the T-bar consists of a single vertical shaft that comes up from the center console between the pilots, topped by a pivoting control bar. The pistol grips found at the end of a conventional cyclic hang from either end of the control bar.

The CFI who would be the demo pilot for my first ever flight in an R22 got me straightened out immediately on how to react to the new controls. Essentially, the trick was to avoid trying to compensate for the odd assembly. I was to hold the cyclic stick as I would in the 300C, and imagine that the stick protruded from the floor. Simple! And it really was — the technique worked perfectly from the first liftoff.

I wasn't surprised that the R22 required a deft touch to keep it stable. After all, it was a 1,300-pound (590-kilogram) gross weight helicopter with light, low inertia main rotor blades. What did surprise me is that once I spent a little time flying the machine, the R22 didn't feel nearly as small as it looked. I quickly forgot about the size of the machine and concentrated on how nice of a ride it gave.

However, I found it a challenge to keep the rotor and engine needles in their narrow acceptable range on the tachometer.



The unique T-Bar cyclic is just one of the many innovative design features Frank Robinson incorporated into his clean-sheet helicopter design. In this shot, the left side of the T-bar is removed, which is normal when carrying a non-helicopter rated passenger.



The modern instrument panel allows for a multitude of choices, from basic instruments to the latest in digital navigators and displays. Also note the iPad, mounted on the "pilot bar," receiving wireless input from an Avidyne 400 series navigator (not shown).



The autorotation work was also a bit of an eye-opener. With the low inertia rotor system, once you cut the throttle, you needed to be extra fast to lower the collective, or the rotor droop was quick and substantial. It was then critical to manage the collective, keeping a close eye on the rotor RPM, lest you cause an over-speed – especially in turns and the flare.

Overall, that initial and comprehensive flight in the R22 was quite impressive to me. I understood why the ship had become almost instantly popular. And the flight school I visited for the report also reported very satisfying dispatch reliability and the need for minimal servicing between 100-hour inspections.

But it wasn't all smooth sailing in those early years. "By far our lowest point was in that 1981 and 1982 period when we had a couple of blade delaminations, which caused fatal crashes," said current RHC president (and Frank's son) Kurt Robinson. "One of those crashes involved friends of ours." But RHC powered through that tough period, made necessary changes to the blades and continued to fill the order books.

AN EVOLVING DESIGN

The original R22 was powered by a 150-horsepower Lycoming O-320 engine, derated to 124-horsepower to ensure reliability. Unlike other piston helicopters of the time, the R22's piston engine was loafing – even at full power.

RHC made many evolutionary changes to the R22 – especially early on. In September 1981, the company upped the horsepower to 160, but kept the maximum delivered to 124. This new R22 HP allowed for better hot-and-high performance. Another important change to this model was the addition of main rotor tip weights to improve rotor inertia.

Two years later, the R22 Alpha was introduced with an increased gross weight of 1,370 pounds (620 kilograms) — where it remains today — and a corresponding increase in useful load. In 1985, the R22 Alpha was approved for an auxiliary fuel system.

DOES ROLLS ROYCE

RR 250C ENGINE CHIP CAUTION LIGHT GOES ON?

Has the Rolls-Royce RR 250C series engine caution light gone on, indicating problems on the compressor or turbine bearings? If this has occurred, did this concern you and do you continue to have concerns?

Have you had to cover all repairs? If your response was "yes" to one or all of the above questions, we would like you to join us in our search for a collective solution to these problems.



Please Contact:
E-mail: honducopters@gmail.com

STAY CONNECTED WITH SKYTRAC REAL-TIME SERVICES

Automated Flight Following

Satellite Push-to-Talk

Flight Data Monitoring

Real-Time HUMS

Onboard WiFi & Cell

MORE VALUE FROM A SINGLE BOX.

SKYTRAC 
GREATER VISION
BETTER DECISIONS

WWW.SKYTRAC.CA / HAI BOOTH #B5208



That year also saw the delivery of the 500th R22 — a real high point for RHC. The R22 was clearly a force to be reckoned with and a proven success. Although, as Kurt Robinson stated, “Frank always said that to be successful, you had to hit 1,000 deliveries.”

RHC hit that mark in April 1989, but not before it introduced the fixed-float Mariner version, and the R22 Beta, with a higher take-off power rating of 131-horsepower for five minutes, and a larger instrument panel.

Along with the success came some problems — namely how low-time certified flight instructors (CFIs) and new rotorcraft pilots, particularly those initially rated in airplanes, were flying the R22. Fatal accidents caused by mast bumping were increasing at an alarming rate. These low-G pushover-initiated events were not unique to the R22. They can occur (and have) in any teetering two-bladed rotor system, and the phenomenon was addressed by the Army well before the first R22 was ever produced. But the sheer number of R22s being produced, and the experience level of the pilots flying them, exacerbated the problem. Additionally, low rotor rpm recognition and recovery events were an increasing problem with R22 operations.

So, in 1982, Robinson started the Flight Instructor Safety Course, taught to about a dozen CFIs each month. This developed into the Robinson Helicopter Pilot Safety Course (RHPSC) the company offers today, which covers all three RHC models: the R22, R44, and R66 Turbine. To date, over 21,000 pilots have been through the RHPSC course, with thousands more trained out of country.

And, in early 1990, RHC introduced a new rpm governor, which made managing rotor rpm near turbine-like. This development, along with the RHPSC, began to have a profoundly positive effect on reducing low rotor rpm and mast bumping accidents. These

were joined by the Special Federal Aviation Regulation (SFAR) 73 that came out in 1995, stipulating special initial and recurrent training requirements for the R22 (and by that time, the R44). Also in 1995, the rpm governor was mandated for new and existing Robinson models through retrofit.

In 1996, the last major change to the helicopter came when the R22 Beta II was introduced. This is the version offered today, and it incorporates a Lycoming O-360 180-horsepower engine derated to 145 horsepower (takeoff power remains at 131 horsepower) for even better hot and high altitude performance.

OWNING AN R22

I received my helicopter instrument rating add-on in an R22 instrument trainer in 1989. It was an experience that really endeared me to the type, and my desire to own one was only enhanced with further opportunities to fly it. I also credited my early R22 experiences in teaching me how to fly a helicopter with a control touch that made flying other helicopters much easier.

So, what was it like personally owning and operating an R22? Well, the R22 immediately allowed me to expand the reach of the media production component of my aviation services company. There would be no training activity except for my own proficiency. And this is important to note — because my perspective will not be from one of a high-use training or utility-focused operator.

Affectionately called Little Eagle, my R22 did the job. I used it for regional personal and business travel, and the time saved by not having to drive to and from the airport to travel by airplane more than made up for the slower cruise speed of the R22. Helicopters aren't fast, but they are quick. That said, my R22 delivered 90 knots indicated in cruise at 10 gallons per hour of fuel burn, which isn't shabby.

The author flying the second of two R22s he owned over a six-year period.
Stacie Maher Photo



WORLDWIDE SUPPORT

FOR MORE THAN 30 YEARS



VISIT US AT HELI-EXPO
BOOTH B7617



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

AIRBUS



ENSTROM
HELICOPTER CORPORATION

LEONARDO
HELICOPTERS



ROBINSON
HELICOPTER COMPANY

Rolls-Royce

SB47

SIKORSKY
A LOCKHEED MARTIN COMPANY



The R22 Beta II can deliver an honest 90-knot cruise speed while burning 10 gallons per hour.



> Supporting Life.

Customized Solutions for Your Air Medical Needs.

- High quality and durable
- Competitive pricing
- Delivered on-time



CALL (701) 409-2442 OR VISIT SPECTRUM-AEROMED.COM

I quickly became much more active with aerial video and photo services by having my own helicopter. Little Eagle also performed admirably hopping rides at local festivals, substituting as Santa's sleigh for yearly visits to my church, and visiting elementary schools to talk about aviation.

Many friends, neighbors and family members discovered the joy of flight that only a helicopter can offer. My wife and I also enjoyed a quick escape to the beach as well as to many places that welcomed helicopters throughout the region to enjoy a meal.

The R22 was pleasantly manageable to take care of. In fact, dispatch reliability was 100 percent and with not a lot of effort. Start it, fly, land, repeat. All I needed to do between 100-hour inspections were oil changes and keep it clean. This was a totally different experience for me, having previously owned a helicopter requiring regular maintenance at 25 hours, 50 hours, and so on.

Admittedly, having the R22 hangared 100 feet from my home made it both easy and enjoyable to take care of the ship. I kept it spotless. Post flight inspections with a cleaning were the norm.

The mechanic who had been maintaining this R22 prior to my purchase became my mechanic. It was a no-brainer. Not only was it in such beautiful condition, it was



©photo Jérôme DEULIN



COMBAT-PROVEN SYSTEMS. DECADES OF EXPERIENCE.

L3 Technologies' MX™ systems are the eyes of more than 200 different types of platforms that operate across 80+ countries. That's over 4,500 powerful EO/IR surveillance and targeting systems deployed in support of advanced intelligence, surveillance, reconnaissance and designating missions worldwide. Platform- and mission-proven with 24/7 global support, our MX systems provide exceptional range performance, stability and reliability in each turret class size. They're fully equipped to support the most modern platforms and allow mission teams to see first and act first. [WESCAM.com/Surveillance](https://www.wescam.com/Surveillance)

Accelerating the pace of change.



L3T.COM

also super smooth through all phases of flight. He quickly taught me a lot about how to generally care for the ship and keep it flying like it should.

The simplicity of maintenance also made calculating cost of use very straightforward. Each month I'd reconcile my usage and place funds into a dedicated reserve account that corresponded with the eventual cost of the overhaul or reduction in value if it was just sold.

PLANNING FOR THE FUTURE

After two years and over 200 hours of flying Little Eagle, I needed to make a decision. An R22's airframe and engine essentially times out at 2,200 hours or 12 years, and Little Eagle had reached eight years (and 600 hours). Clearly, it would run out of usable months before usable hours. It had done a much better job than I expected at meeting almost all of my needs for the aircraft; so much so, that I decided to trade for a new R22 to replace it instead of a used R44.

And so it was that in May 2008, I accepted the keys from Frank Robinson to my brand new R22. It will always be one of the highlights of my flying career — despite the fact that as Frank and I parted ways, he turned to me and said, "Now don't go killing yourself in the damned thing!" Frank being his normal to-the-point self, I'd expect nothing less.

The thing is, those words were timelier than I had realized. My plan, since it was mid-afternoon by the time I was ready to leave, was to fly to Palm Springs, California (PSP) — a short leg from the RHC plant — and spend the night there. The flight was going perfectly, and when I talked to an R22 pilot on Unicom who was going in the opposite direction, he reported a perfectly smooth ride. As I turned towards PSP, I noticed that nearby wind turbines that had initially been still were beginning to spool up and spin quite quickly. The ride went from super smooth to the worst pounding I've ever taken in a helicopter.

I quickly recalled the safety course training to slow down and soften the control inputs — especially the cyclic — in correcting for an updraft. PSP was warning everyone that the winds had gone from calm to gusting over 40 knots, but my R22 behaved nicely through my landing on the FBO ramp straight into the wind.

I spent over five days getting Little Eagle II home — enjoying the ride and doing some touring in Tucson, Arizona. Once home, the ship gave me four years of flawless service, before I decided to sell it to make way for a twin Cessna I'd be needing for extended — and often IFR — business travel.

The R22 is only 29 feet long from the most forward tip of the main rotor to the most aft position of the tail rotor. This — and its two-bladed rotor system — makes utilizing tight spaces and storage a breeze.





PW200 ESP OPERATORS YOU HAVE A CHOICE

GET FULL SERVICE ENGINE MRO SUPPORT FROM THE ONLY
OEM-AUTHORIZED PW200 INDEPENDENT SERVICE PROVIDER

Dallas Airmotive offers quality, quick-turn maintenance, repair and overhaul support for both Eagle Service Plan and non-program PW200 engines powering select Agusta, Airbus, Bell, MD and Sikorsky helicopters.

Visit Us at
Heli-Expo 2019
Atlanta, GA
March 5-7
Booth #B2024

Our Dedicated PW200 Engine MRO Experts Deliver



Comprehensive Capabilities
Full Service Engine & Accessory MRO



Tailored Turn Around Times
On Your Schedule in Just 35 Days



Lease Engine Options
To Keep You in the Air



DallasAirmotive
H+S Aviation
BBA Aviation companies

Learn More At
DallasAirmotive.com/HeliExpo

YOUR EXPERTS IN HYDRAULICS

**COMPLETE OVERHAULS // SEAL CHANGE
EXCHANGE UNITS // COMPONENTS AVAILABLE**

**Bell 206 // 407 // 212 // 214 // UH-1H
Sikorsky S-76 // S-70 // UH-60
FAA ZS4R711M // EASA 145.6670**

**(850) 456-8339
paul@hase-fl.com
10102 Aileron Avenue, Pensacola, Fla.**



www.hase-fl.com

WE HELP AVIATION SALES PROFESSIONALS GENERATE DEALS



**AMSTAT PROVIDES INDUSTRY LEADING CORPORATE
AIRCRAFT MARKET & FLEET DATA**

- ▶ Jets
- ▶ Turboprops
- ▶ Turbine Helicopters

In a suite of comprehensive services to meet every business need



A M S T A T

Information that moves you forward

US 1 877 426 7828 | Int'l +1 732 530 6400 | www.amstatcorp.com

I know the R22 is primarily used for training. But from numerous longer trips throughout the Southeast U.S.; to more local assignments such as GPS mapping of golf courses in Pinehurst, North Carolina, for a video game designer; or chasing a championship-level motocross racer around a complicated course for a video production; I saw just how nimble and versatile this little helicopter can be. It's no wonder that the R22 rules the cattle mustering market.

What's in store for the R22 going forward? Over the past few years, RHC has been turning out about 35 R22s per year, with over 4,800 copies produced to date. "As long as we keep getting orders for the R22, we'll keep building them," said Kurt Robinson. "The R44 Cadet is doing exactly what it's supposed to do, which does cut into the R22 market a bit. But there are still those customers who find that the R22 fits their needs perfectly."

Airframe and panel improvements are keeping the aircraft relevant. For example, all R22s now come with bladder fuel tanks, while a new rotor hub design reduces maintenance requirements and increases reliability. A newer six-hole instrument panel allows for options such as the Aspen EFD 1000. Avidyne 400 series navigators are also an option — with both knobs and a touchscreen — that removes the need for the pilot console (the pilot bar can still be used for iPads linked to the Avidyne). And all Robinsons now come with ADS-B Out as a minimum.

Over the last 40 years, RHC has delivered close to 13,000 R22s, R44s, and R66s, and grown from a small tin hangar to a 600,000-square-foot complex encompassing 1,100 employees — and it's all thanks to the little R22 that started it all. Frank's design not only firmly proved all those naysayers wrong, but launched one of the industry's most prolific manufacturers. Happy birthday to the revolutionary Robinson R22! 🎉



Guy R. Maher | Guy has recorded than 17,000 flight hours as a dual-rated pilot and flight instructor with helicopter, airplane and instrument ratings. He runs Lanier Media Aviation Services, a company he founded in 1978. He can be contacted at guy@verticalmag.com

DYNAMIC COMPONENT

INSPECTION • REPAIR • OVERHAUL



Approved Service Centre

Comprehensive inspection, repair and overhaul services of AS350, AS355, EC130 and BK117 Dynamic Components

AS350
AS355
EC130



Your helicopters will remain fully operational with our extensive range of exchange and rental units

BK117



Airwork NZ capabilities also include

- Turbine inspection and overhaul
- Hooks and Hoist
- Avionics
- Design, certification and manufacturing
- Airwork Support Plan
- Maintenance support
- Aircraft sales and leasing
- MODs and STCs
- Parts and component sales



E sales@airwork.co.nz | P +64 9 295 2111

487 Airfield Road, Ardmore, Auckland,
New Zealand

www.airworkgroup.com



Masco's leadership group (from left): Coby Sisco, director of business development; Kevin Fraley, director of sales; Clay Massey, vice president; Jeff Massey, president.



The company employs about 65 people across its two facilities in Grapevine, Texas, and Lafayette, Louisiana.



THE DETAIL SPECIALISTS

Having spent half a century honing its craft, Masco has built an enviable reputation for the quality of its work. *Vertical* visited the company's headquarters in Grapevine, Texas, to find out what sets it apart.

STORY BY OLIVER JOHNSON
PHOTOS BY DAN MEGNA

Sometimes, the details are everything. Like drilling six feet through the foundation of your shop floor to anchor a testing device to its own foundation, separated from the surrounding building by an expansion gap, to ensure that the device will never move a millimeter. Now *that's* calibration.

Or, dissatisfied with the general state of shipping containers for a product, engineering a solution to better protect the cargo while keeping weight and shipping costs minimal.

For over 50 years, Masco, a maintenance, repair and overhaul (MRO) provider that specializes in instruments, avionics and accessories, has made such details its business, resulting in an enviable reputation for the quality of its work. Simply put, its customers have come to expect that when Masco services a part, that part will return with improved reliability and will be less likely to require an unscheduled removal.

An indication of how Masco's customers feel can perhaps be seen in the longevity of their relationships with the company — with many stretching back several decades. Today, Masco counts many of the industry's largest operators among its clients, including PHI, Air Methods, and Era.

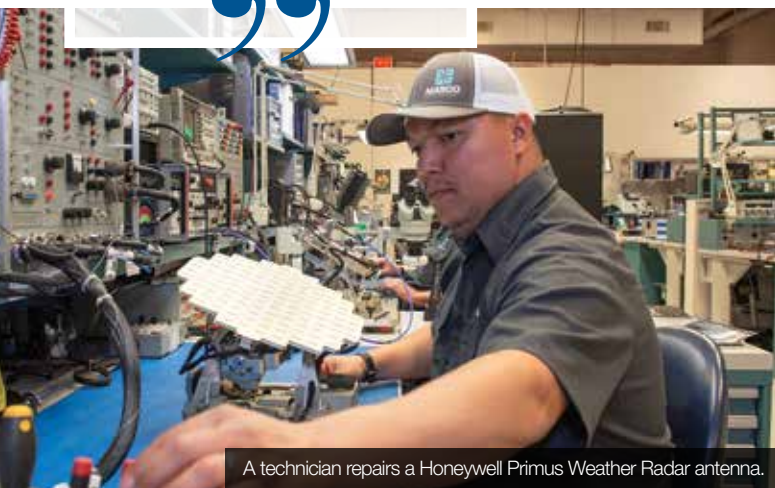
Masco has also become a trusted partner (a phrase repeated often by company's leadership) of OEMs. It is an authorized service center/dealer for Safran, Northrop Grumman, Thales, Honeywell, Sikorsky, Bendix/King, Astronautics, and Mid-Continent Instruments and Avionics, among others; as well as





We're worldwide now, and involved in the corporate fixed-wing market, military market, commercial market, and then all the different market segments within the helicopter industry.

Masco's Honeywell Sky Connect engineer works on the tracking system. Masco is a Honeywell factory-authorized repair center and dealer.



A technician repairs a Honeywell Primus Weather Radar antenna.

an approved vendor for Leonardo, Bell, Airbus Helicopters, and Sikorsky.

Its breadth of expertise spans electronic flight instrument system (EFIS) displays, satellite tracking and communications systems, VHF and navigation/communication systems, radar altimeters, weather radar systems, AHRS displays, gyros, flight directors, primary flight indicators, and engine monitoring gauges. In terms of accessories, it services starter generators, generator control units, linear actuators, searchlights, static inverters, and power supply units, to name just a few.

But despite all this, Masco's workscope continues to evolve, with new projects and services on the horizon. *Vertical* visited the company in January 2019 to take a look back at Masco's half century in the helicopter industry — and find out what its future holds.

Headquartered in a 20,000-square-foot facility in Grapevine, Texas (near to Dallas/Fort Worth International Airport), Masco is led by Jeff and Clay Massey (the company's president and vice president, respectively), sons of the company's founder, Bill Massey. Bill himself was a second generation aircraft instrument specialist, and decided to apply his talent to his own company with the founding of Masco in 1968.

Established as a small instrument repair station in Love Field, on the outskirts of Dallas, Masco originally focused on buying, selling, and refurbishing aviation instruments, mainly for fixed-wing general aviation customers.

As the company grew, Masco switched its focus to helicopters — in particular, those operating in the then-flourishing offshore oil-and-gas industry in the Gulf of Mexico. To better service his company's growing number of customers in Louisiana, Bill Massey opened a small office in Lafayette in 1979. The company proved such a good resource for offshore operators in the Gulf of Mexico that, at one point, that market represented about 75 percent of Masco's business.

But as fortunes fluctuated in the offshore sector over the following years, Masco made astute business decisions to endure the industry's leaner times. During the oil-and-gas slump of the



Photo by Francisco Fluxá, Courtesy Rotortec, Chile

WHAT DID YOU DO LAST WEEKEND?

R66 Turbine - Starting at \$906,000



World's Leading Producer of Civil Helicopters
www.robinsonheli.com



A technician at work on one of Masco's starter generator test stands.



Masco is able to work on over 7,500 parts and components, spanning helicopter types produced by five different airframe OEMs.



The company's origin was in aviation instruments, with Masco founder Bill Massey establishing it as a small instrument repair station in Love Field, on the outskirts of Dallas.

mid-80s, its acquired inventory through trade-outs with operators that gave it greater flexibility to help reduce or eliminate aircraft-on-ground situations; while Masco's later diversification away from its focus on that region and market meant the recent oil-and-gas downturn hasn't had a decisive impact on its business. In fact, year over year, Masco continues to grow.

"We're worldwide now, and involved in the corporate fixed-wing market, military market, commercial market, and then all the different market segments within the helicopter industry," Clay Massey, who joined the company in the late 1980s, told *Vertical*.

AN EVOLVING BUSINESS

Today, Masco employs about 65 people across its two Federal Aviation Administration (FAA) and European Aviation Safety Agency (EASA) -approved repair stations in Grapevine and Lafayette.

Kevin Fraley, director of outside sales, joined the company seven years ago, but has known Masco since he began working in the MRO sector in 1988.

"Masco is one of those companies that you always trusted," he said. "You knew that their handshake, and when they said that they were going to do something for you, they were going to keep their end of the bargain. That kind of simple approach to business, set up by Jeff and Clay's dad, has been the foundation to the company's success."

Over the years, Masco's business has grown into new areas, largely led by customer requirements.

"Our customers took us down the road to whatever problem they needed to have solved," said Fraley. "So, we've kind of evolved into repairs, overhaul, manufacturing, logistic support — you name it.

"We're not a vendor in this business, we're not the supplier, Masco is a trusted partner to the OEMs and operators alike. The business has grown out of the need for the aviation community to have trusted partners."

This diversification has led to it performing work for operators in a variety of market segments — including search-and-rescue, emergency medical services, law enforcement, firefighting, military, training, and corporate. Masco also counts the manufacturers themselves as customers.

"We [provide] build-to-print manufacturing [for the OEMs], and we repair [and] maintain a lot of their legacy product lines," said Fraley. "We provide OEM-level support on many of their products."

Masco's partnership with Honeywell, in which it provides service support for Honeywell's Sky Connect tracking system, is a key example of this. Sky Connect is a complete tracking system that helps operators actively manage their fleet, and as a Honeywell factory-authorized repair center and dealer, Masco provides new systems, sells, and installs Sky Connect, and provides exchanges, repairs, and recertifications. It also manufactures the latest Sky Connect Tracker 3A with push-to-talk and tracking capabilities, along with flight data monitoring.

"As the technology grows we've expanded our capabilities to match that, because that's what our customers are demanding," said Fraley. "And with Sky Connect, we're now part of the connected aircraft — we're part of the future."

Masco also has a longstanding partnership with Northrop Grumman LITEF to serve as the manufacturer's North American service center and aircraft-on-ground exchange center for its

SKYPLAN

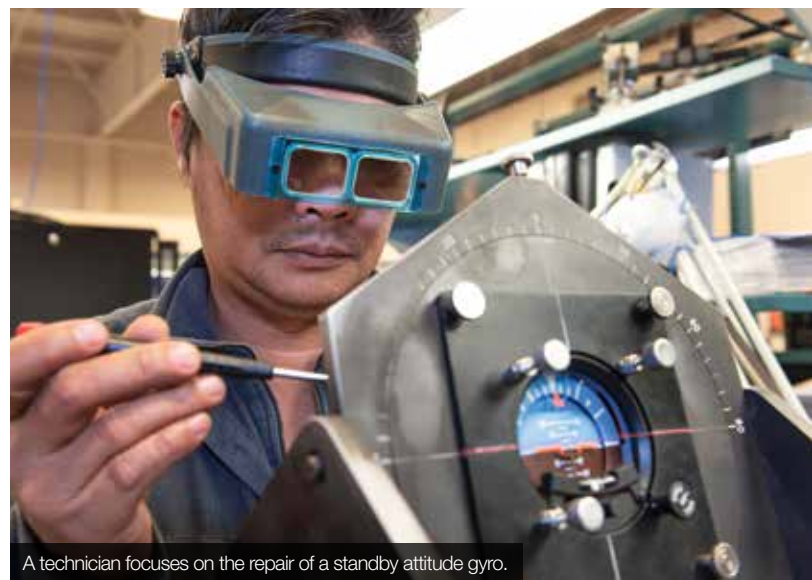
PROVIDING LIFT TO YOUR HELI OPS

- . Heli Flight Permits
- . Heliport Information
- . Weather Briefings
- . Flight Planning and Flight Following
- . Custom-built helipads in Skyplan's "AURORA Flight Planning System"
- . Ground Handling
- . Jet fuel





Masco has a longstanding relationship with Northrop Grumman LITEF. Here, a technician tests a LITEF attitude and heading reference system.



A technician focuses on the repair of a standby attitude gyro.



A technician with 35 years of experience balances an electromechanical gyro rotor assembly.



Starter generator armature measurements are taken to ensure an exact repair.

attitude and heading reference system (AHRS) units (these can be found on aircraft including the Sikorsky S-92 and S-76, Leonardo AW139, Bell 412, Airbus H160, and many fixed-wing aircraft).

A more recent development for Masco was its move into the starter generator repair and overhaul business about seven years ago.

"We saw that the starter generator was always considered an inherently unreliable, problematic type of device, and we thought, 'Why is that?' " said Clay Massey. "We looked at it, decided it was just because they weren't being done right, and saw an opportunity — 'If we get in there and do things right, we're not going to be the cheapest in town, but we're going to give you the best product.' "

The decision required heavy investment in the company — something the Masseys are happy to do to help build the foundation for the company's future.

Working closely with the engineers at starter generator OEMs, Masco built its aftermarket solution in-house from the ground up.

"The attention to detail developed through working on the instruments and the avionics translated very well to the precision and attention that was required in the starter world," said Fraley.

Today, Masco offers enhanced support for the starter generators it services, with trend monitoring and reliability reporting on a regular basis. And it counts some of the largest fleet operators in the world among its customers.

"Starter generator MRO is a super competitive market, and in our opinion, we're the leader in that field now," said Massey. "Our starters make their time, and everybody out there knows it."

A BROAD PORTFOLIO

The starter generators are among over 7,500 parts and components Masco works on, spanning helicopter types from five manufacturers. The company puts a lot of work into product development so that its offering continues to evolve with the requirements of its customers.

"Whenever we take on a new program, it goes through checks and balances to make sure that we can support it with personnel, inventory, equipment, capacity — everything down to our box suppliers," said Fraley. "It's not done on the fly — it's a concerted effort to make sure we can do it right the first time, and make it a repeatable process."

Masco places high priority on technical training and quality



GO BEYOND

HELICOPTER AVIATION

SUPERIOR PERFORMANCE. FOR A HIGHER PURPOSE.

**POWERING HELICOPTERS TO RISE ABOVE —
AND ANSWER ANY CALL.**

From search and rescue to firefighting to emergency response, Pratt & Whitney's industry-leading engines provide the power, speed and reliability to meet your objectives — and serve the greater good.

ELEVATE YOUR MISSION AT PWC.CA

A UNITED TECHNOLOGIES COMPANY



The avionics and instrument shop at Masco. All told, the company's Grapevine facility spans 20,000 square feet.



Putting the finishing touches on a starter generator repair, as a technician applies a coat of paint.



A repaired starter generator is placed into the customized packaging Masco created to better protect the product during shipping.

control, with the company's AS9100D and ISO9001 quality management certificates, along with "5 S" practices, demonstrating the staff's "significant collective aptitude," said Massey.

Many of those working at Masco have been there for decades, with an extremely small staff turnover allowing for continuity of expertise in the services the company provides. Fraley said the company is also fortunate to be located near to several high-quality electronics schools that help provide a highly-skilled, educated workforce.

"They're very skilled technicians," said Fraley of Masco's workforce. "We send our people to the factory to be trained for best practices . . . so the OEMs are in here all the time. Most of the OEMs we work with, they view us as an extension of themselves, just as the customers view us as an extension of their maintenance and reliability department."

Fraley said the longevity of service among the staff at the company was the result of Masco's approach to management.

"The way Masco treats their customers and their OEM partners is the same way they treat their employees," said Fraley. "Over time, that commitment of — 'Hey, we care about you' — that matters. And that's what happens in this company."

Massey said that visitors to the company's facilities often leave with the same impression.

"They always walk out of the shop, and they say two things, and it makes our hearts warm," he said. "First, they say: 'Wow, this place is really clean, organized and efficient — it's amazing, a great shop.' The second thing is always, 'Wow, your employees really seem happy and dedicated.' It's a body of work. It's not one

particular thing we do, it's a relationship with our staff that develops over time. Our team has a first class facility, the proper tools and training, and a focus on quality."

Jeff and Clay represent the second generation of Massey at the company, with the third generation joining them over the years in the form of Jeff's son and daughter (Cole and Kristen), and Clay's son (Joe), who work in various departments within the company.

"We're proud of the fact that we're still a family-owned and -operated business," said Massey. "There's been a lot of family-owned and -operated businesses in this industry that have been bought, and the family's long gone — and we're one of the few that remain."

Looking to the future, Massey said Masco will continue to evolve in line with its customers' requirements — likely involving increased work related to the "connected aircraft" through enhanced satellite communications, as well as preventative maintenance through health and usage monitoring systems.

While it has an enviably diverse MRO offering and a similarly broad customer base, Masco believes the secret to its success will always remain the reputation for quality and reliability it has worked so hard to build and maintain for the last 50 years.

"If anybody in the helicopter industry thinks they're simply providing a product to their customers, they're misguided," said Fraley. "You're providing reliability, safety, care, guidance and a commitment to doing the right thing. That's what everybody wants — and our customers know that they're not going to have to worry about anything they receive from Masco." 🚁



FLY. LET US DO THE REST.



INTERNATIONAL SUPPORT, 24-7:

LEASING & SALES

PARTS

MRO

AIRFRAME UPGRADES

LOGISTICS

CUSTOMIZATION

EAGLE AUDIO

WORLDWIDE REACH FROM:



MEET OUR TEAM AT HAI 2019
BOOTH C2006

SALES@eaglecopters.com | 403.250.7370 | eaglecopters.com



DOWNLOAD THE WALLPAPER!





AirLife has taken its air medical operations in Colorado to the next level with the arrival of two Eagle 407HPs.

STORY & PHOTOS BY SKIP ROBINSON

POWER Packed

An Eagle 407HP operated by AirLife Denver take flight in the Rocky Mountains. The organization received the first emergency medical services 407HP in July 2018.



Even downtown Denver is at 5,000 feet above sea level, so the additional performance provided by the Eagle 407HP's Honeywell HTS900-2 engine is appreciated.

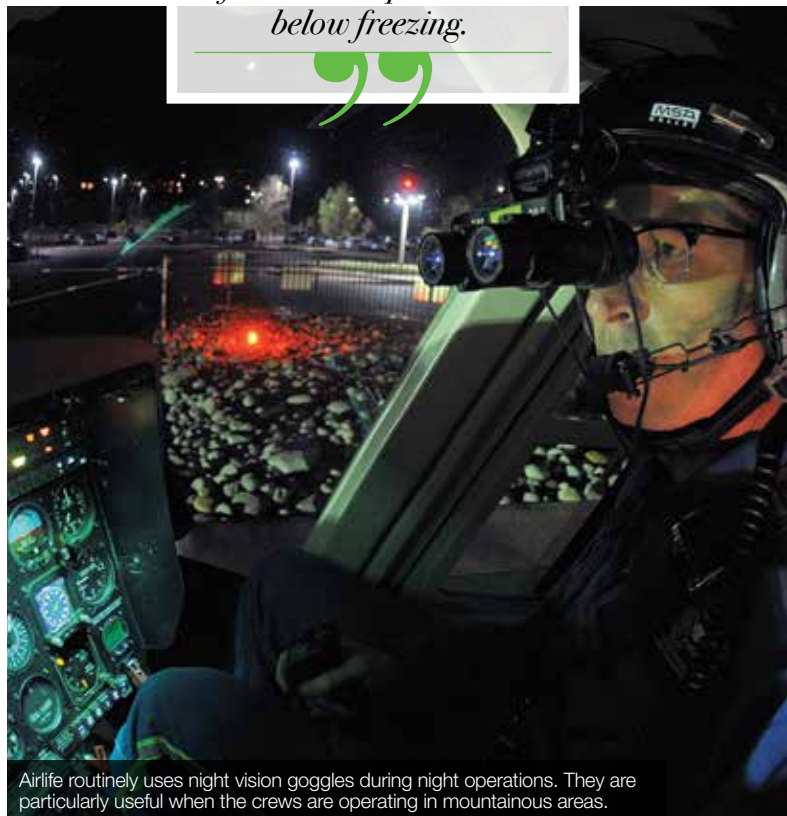
“We can literally be on a short, inter-facility, high-temperature flight request in the morning, and in the afternoon have a scene flight request well above 10,000 feet with temperatures below freezing.”

The mountainous state of Colorado features some of the most beautiful vistas in the continental United States. Sitting at the foot of the Rocky Mountains, the state's capital, Denver, provides residents and visitors easy access to hills and slopes that offer mountain biking, skiing and hiking opportunities — but such activities do carry a risk of injury. And because they're often in highly inaccessible or very remote areas, if there is a medical emergency, evacuation by helicopter is often the best, if not only, option.

With four aircraft across four bases in Colorado and one in Wyoming, AirLife Denver is well placed to respond to such calls for help. The emergency medical/critical care transport service of the HCA-HealthONE system of hospitals, clinics and surgery centers, AirLife Denver provides air and ground critical care transport for both adult and pediatric medical/trauma patients.

Its rotary-wing fleet is comprised of four Bell 407s and, notably, two Eagle 407HPs — a re-engine version of the Bell 407 that replaces the aircraft's original Rolls-Royce 250-C47B with a 1,021-horsepower Honeywell HTS900. The aircraft are owned and operated by Air Methods Corp.

Jessy Fontes, a pilot and the manager of Air Methods' north central region, eastern Colorado area, said the hugely varying terrain — from 3,320 to 14,440 feet (1,010 to 4,400 meters) — makes operations in the area a challenge. “In Colorado, you really don't know on a daily basis what you're going to get, but that is what makes flying here challenging and interesting,” he said. “We can be on a short, inter-facility, high-temperature flight request in the morning, and in the afternoon have a scene flight request well above 10,000 feet with temperatures below freezing.”



Airlife routinely uses night vision goggles during night operations. They are particularly useful when the crews are operating in mountainous areas.

Last year marked the 35th anniversary of AirLife Denver's rotary-wing operations, during which time it has completed over 65,000 missions. Its maiden transport flight, on May 9, 1983, saw a Bell 206L-3 LongRanger fly from Denver to Durango, Colorado. AirLife Denver completed 207 missions during its first year of service, including both on-scene and inter-facility transfer flights.

The following year, it added a second Bell 206L-3 and a fixed-wing aircraft to its fleet. It also started a communications center, and added a high-risk obstetrics team to the flight crews. Other capabilities were added as they were developed over the years, including an intra-aortic balloon pump team and a neonatal team. The retirement of the organization's faithful LongRangers in 1997 was followed by the debut of new and more capable Bell 407s. But while these have proven a great fit for the organization's operations, AirLife saw an opportunity to enhance its fleet with the arrival of the Eagle 407HP conversion on the market — and brought the first of the type to work in emergency medical services (EMS) into operation in July 2018.

"The 407 has proven to be a safe and reliable helicopter, but during the hot months of summer we occasionally could not conduct particular patient transports due to power limitations," said Brian Leonard, director of business development at AirLife Denver. "With the Eagle HP, we are finding the aircraft capable of completing virtually every transport request. So far, the engine is proving reliable, and [the aircraft is] an excellent addition to the safety of our teams and patients."

AN EXPERIENCED TEAM

The organization's rotary- and fixed-wing pilots are employed by Air Methods. Each rotary-wing pilot must pass annual checks in both instrument flight rules and visual flight rules environments. To fly in the Rocky Mountains, AirLife Denver's pilots are required to have demonstrated mountain-flying ability, the skill to operate in "hot and high" environments, and an understanding of extreme winter mountain operations. The experience level is high, with many of the pilots at AirLife Denver having been with the program for over two decades. All AirLife Denver's aircraft are equipped for use with night vision goggles, and the program's crews use these regularly in operations.

Cayce Batterson, lead pilot at the AirLife Denver Frederick/Firestone base, said the 407HP's performance helps make the crews better able to cope with the variable conditions sometimes found in and around Denver.

"We have to be prepared for snowstorms in the mountains while it's sunny and warm in the Denver area," he said. "With the HP's additional performance margins, we are able to leave the snow deflectors on all season, and not worry about performance limits. This makes mission planning easier and more streamlined."

It's just one of the reasons Batterson and his crews have been impressed with the new aircraft.

"The Bell 407 is an aircraft well-known as a fast, reliable, safe, and strong-performing machine," he said.

"The Eagle 407HP allows us to access a greater portion of the transmission limit up into the higher density altitudes of our operational areas."

The high-altitude environment in Denver and the surrounding areas show the benefits of the Eagle 407HP upgrade, providing enhanced "hot-and-high" performance.





Offsite landings can occur at high density altitudes, so having the Eagle 407HP's power to get out of tight places is very useful for AirLife's crews.



A patient is loaded into the 407HP. Loading and unloading the aircraft is a straightforward operation thanks to the large cabin door.



AirLife frequently works with many different local fire departments. The company has built great relationships with the other emergency services.

Temperatures in Denver can be at or near 100 F (38 C) in the summer, while landing zones in the mountains range between 7,000 to 14,000 feet (2,130 to 4,260 meters) with many requiring a vertical takeoff. The vast majority of the organization's operations require out-of-ground-effect capability and vertical takeoff/landing performance, said Batterson.

"This requires we have access to as much power as possible to allow us to have appropriate safety margins," he said. "The [407] HP has allowed us to access a greater percentage of torque out of the 407 gearbox due to its higher temperature limits. It has reduced the need to limit fuel, and increased our ability to respond to calls. I did a scene response this summer at a density altitude of 12,200 feet [3,720 meters], weighed 30 pounds [14 kilograms] under maximum gross weight [5,000 pounds/2,270 kilograms], and didn't even need to pull into the takeoff range during

my vertical climb over the 50- to 60-foot [15- to 18-meter] trees."

The 407HP also provides access to a higher range of torque in cruise flight, said Batterson. "[We] have seen an ability to add around 10 knots of cruise speed over the standard 407, which is already a very fast helicopter," he said. "Having flown all types of aircraft in the mountains here, I think the 407HP is the best of all worlds when it comes to performance, speed, safety, and reliability."

AirLife Denver pilot Greg Poirier was similarly enthusiastic about the new aircraft's performance. "I know that coming to work on even the hottest day in the summertime, the helicopter is going to do everything that I ask of it — no matter the temperature or the elevation," he said.

In the first six months of operation with the aircraft, the program recorded just over 200 hours on the engine. Poirier said AirLife



30 YEARS

15,398,913

FLIGHT HOURS OF INDEPENDENT SERVICE AND SUPPORT

With 30 years of proven expertise and data, we know precisely what it takes to maintain and support your aircraft at every stage of its life cycle.

Acquisition advice to depend on. **Maintenance** programs to stabilize your budget and add value to your aircraft. **Parts** delivered to you on time and in budget. **Leasing** solutions you can rely on.

IT'S TIME FOR A BETTER APPROACH.



MORE THAN HOURLY COST MAINTENANCE PROGRAMS

JSSI PARTS | JET ENGINE LEASING | JSSI ADVISORY SERVICES | CONKLIN & DE DECKER

JETSUPPORT.COM



The Eagle 407HP replaces the aircraft's original Rolls-Royce 250-C47B engine with a 1,021-horsepower Honeywell HTS900-2.



The aircraft get a least three inspections from a mechanic each week. The 407HP is proving to be relatively trouble-free in terms of maintenance so far.



AirLife has four bases in Colorado, and one in Wyoming. The aircraft typically operate within a range of about 150 miles from the bases.

Denver has not had any issues with the aircraft to date, but praised the “top notch” support Eagle Copters has provided.

He said the transition from the older 407 had been very quick. “During our training flights, I was very comfortable with going up as high as we could, as heavy as we could, to really test it out — and it performed flawlessly,” said Poirier. “In the wintertime, there is not as much of a difference, but you can tell that this helicopter really wants to go.”

AirLife Denver’s helicopters are maintained by Air Methods, with dedicated and knowledgeable maintenance personnel. Each helicopter base has its own mechanic, and there are two float mechanics and two part-time mechanics available to support operations at the main maintenance base and to travel to other bases as problems arise. Each aircraft receives a minimum of three inspections from a mechanic each week, and any discrepancies are repaired at that time. Designated mechanics are on call 24/7 to address any discrepancies that may arise. While the 407HP as a type is still being learned, it is proving to be relatively trouble-free for AirLife Denver so far.

Because of weather concerns during the winter, heavy maintenance and scheduled maintenance are performed inside a hangar. In the Denver area, AirLife Denver’s base at Sky Ridge Medical Center has a large hangar facility that is perfect for this type of maintenance, while its base at Cheyenne Medical Center in Wyoming also has a hangar when needed.

A CHALLENGING ENVIRONMENT

AirLife Denver’s other bases are all in Colorado: at Frederick-Firestone Station 2, Lincoln Community Hospital, and Holyoke Melissa Memorial Hospital. Generally, the helicopters travel about 150 miles (240 kilometers) from their bases. For longer distances and interstate flights, AirLife Denver operates two Air Methods-supported King Air 200 fixed-wing aircraft, based at Centennial Airport in Denver. These aircraft take AirLife Denver’s reach across the country, but most of its flights are to the western states.

AirLife Denver operates across Colorado and Wyoming, with its eastern bases reaching into Kansas and Nebraska. It flies to landing zones and hospitals that require a vertical takeoff and landing at elevations as high as 10,000 feet (3,050 meters).

In the summer months, AirLife Denver’s crews are challenged with high density altitudes and fast-moving thunderstorms that roll off the continental divide and strengthen as they move over the plains.

“The high temperatures place crews at density altitudes between 8,000 to 10,000 feet [2,440 to 3,050 meters] in the Denver area, and those increase to well over 16,000 feet [4,875 meters] density altitude in the highest mountains,” said Batterson. “The thunderstorms are unpredictable, and very fast moving.”

In the winter, typical challenges include low clouds, low visibility, fast moving snowstorms, and extreme winds. It is common to see lenticular clouds forming over mountain peaks and have wind gusts of over 50 knots around the continental divide. And the weather can change quickly.

“We are very cognizant of our forecasts, temperature/dew point spreads, and wind directions and velocities to keep us on the front edge of the fog,” said Batterson. “We have to choose our routes through the mountains very carefully, and realize there are times when we simply need to say no to a transport.”

Survival kits and a personal locator beacon are kept on the aircraft year-round, with snow shoes added during the winter. Crews also bring their own heavy jackets and other survival gear, such as basic survival equipment, food bars, a knife, a locator beacon, gloves, hand warmers and caps.

LIFT-IT®, THE TRUSTED LEADER FOR

HELICOPTER RIGGING

NEW LONGLINE PRODUCTS FOR DEMANDING HUMAN EXTERNAL CARGO APPLICATIONS

QUALITY

AS9100 QUALITY MANAGEMENT SYSTEM

SERVICE

MANY CLAIM 24-7-365 SERVICE, BUT FEW DELIVER. WE HAVE PROVEN TIME AFTER TIME, DAY OR NIGHT, WE'LL TURN ON THE LIGHTS AND KEEP YOU FLYING!

INNOVATION

THIMBLE DESIGNS
WEIGHTED LINE COVERS
DOUBLE ROPE HEC SYSTEMS
You dream it and we build it!



**HELICOPTER
RIGGING**



909.469.2251



WWW.LIFT-IT.COM



AirLife Denver bases perform more flights in the summer months, but they stay busy year-round conducting a mix of scene and transfer responses in the mountains, as well as in the open plains of Colorado and Wyoming. Typical scene calls can see the program responding to car accidents, climbing falls, mountain bike crashes, and horse riding accidents — as well as the entire spectrum of typical trauma and medical cases seen in any large urban area. Added to this are hospital transfers and specialty team cases that require flights for neonatal, high-risk obstetrics, and sick or hurt children.

AirLife Denver typically uses either two nurses, or a nurse and a paramedic, for its medical teams, with each team member having at least five years' experience in critical care, paramedicine and emergency nursing. Each new flight nurse/paramedic completes a comprehensive orientation program before joining the flight crews, including supervised transports utilizing all modes of transport as well as simulated training.

The specialty transports of high risk obstetrical, high risk neonatal and intra-aortic balloon pump teams include two medical crew — either a primary flight team nurse, a specialty trained high risk obstetric nurse, nurse practitioner, or respiratory therapist.

For scene calls, AirLife Denver medical crews carry backpacks loaded with medical gear, because they might have to hike into

an area beyond where the helicopter can land. The crew also has to be in fairly good shape as they might have to carry a patient back to the helicopter. The AirLife Denver medical teams very often work autonomously in performing advanced procedures and administering medications, based on guidelines and procedures developed by — and under the supervision of — AirLife Denver medical directors.

AirLife Denver's communications center is based at the Medical Center of Aurora-North Campus. Two communication specialists are on duty 24 hours a day, 365 days a year. The center has radios to communicate with the aircraft, map systems to track flying aircraft, and computers to control and monitor operations.

For over 35 years, AirLife has covered Colorado and the surrounding areas with the aim of getting patients to hospitals as quickly and safely as possible, in often extreme altitudes and temperatures. And with the Eagle 407HP in its fleet, it is now able to do so in a much wider range of conditions. 🚁



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.

 **VIEW MORE
PHOTOS**

AirLife's base at Sky Ridge Medical Center has a large hangar facility to house the aircraft and perform heavy and scheduled maintenance.



GARMIN®



THE NEXT-GENERATION UPGRADES FOR THE MISSIONS YOU'LL FLY TODAY



////// HELICOPTER SOLUTIONS //////////////////////////////////

» **G500H TXi**
TOUCHSCREEN
FLIGHT DISPLAYS

GTN™ 750
TOUCHSCREEN
NAVIGATOR

HTAWS
HELICOPTER TERRAIN
AWARENESS AND
WARNING SYSTEM

GTX™ 345
ALL-IN-ONE ADS-B
TRANSPONDER

GRA™ 55
ALL-DIGITAL
RADAR ALTIMETER

GFC™ 600H
FLIGHT CONTROL
SYSTEM
«

GARMIN.COM/HELICOPTERS

© 2019 Garmin Ltd. or its subsidiaries.

Helitowcart has a variety of tow cart and carrier products to suit all helicopter types ranging from a Robinson R44 to a Sikorsky S-92. Here, a V1022 Heli-Carrier, for skid-equipped rotorcraft, tows an Airbus H120 at Complexe Capitale Hélicoptère's facility in Quebec City.



Members of Helitowcart's team, from left: Nathalie Barbeau, Lucien Barbeau, Jacob Chénard, Katherine Villeneuve, Maxime Perron Caissy, Francine Bélanger, and Steeve Rousseau.



MANAGING THE WEIGHT

Helitowcart has been providing global helicopter operators with towing products for the last 18 years with a modest, but efficient team.

STORY BY DAYNA FEDY // PHOTOS COURTESY OF HELITOWCART

Moving helicopters in and around hangars is no easy feat as a one-person operation — even more so if the route to the helipad consists of challenging terrain like snow, hills or soft grass. In 2001, after experiencing difficulty handling a helicopter post-flight, Lucien Barbeau, founder of Helitowcart, decided that there had to be a better way.

Determined to find an electric solution to his problem, Barbeau built a prototype of a tow cart unit that, to his surprise, caught on with fellow helicopter operators in North America.

Fast forward 18 years, and there are now over 1,500 of the company's tow cart units in operation around the world. With Helitowcart flourishing, Barbeau decided in early 2017 to put the company in the hands of next-generation innovators: Jacob Chénard, Helitowcart's current CEO; Katherine Villeneuve, vice president of commercial affairs; and Maxime Perron Caissy, vice president of operational support.

"[Helitowcart] started at the time for Robinsons only," said Villeneuve. "Every year we've been improving our products. . . . At this moment we can serve all helicopter kinds."

Based in Levis, Quebec — across the St. Lawrence River from Quebec City — Helitowcart designs, assembles and distributes numerous types of helicopter moving solutions, as well as

helicopter accessories such as custom wheels and seat cushions. The company consists of a tight-knit team of 10 employees, all operating from the Levis facility.

"It is important to us to stay a small team; we think it is more efficient," said Villeneuve. "As a small team, we can answer [customers] very quickly, and we can make decisions very quickly as well."

MULTI-FACETED SOLUTIONS

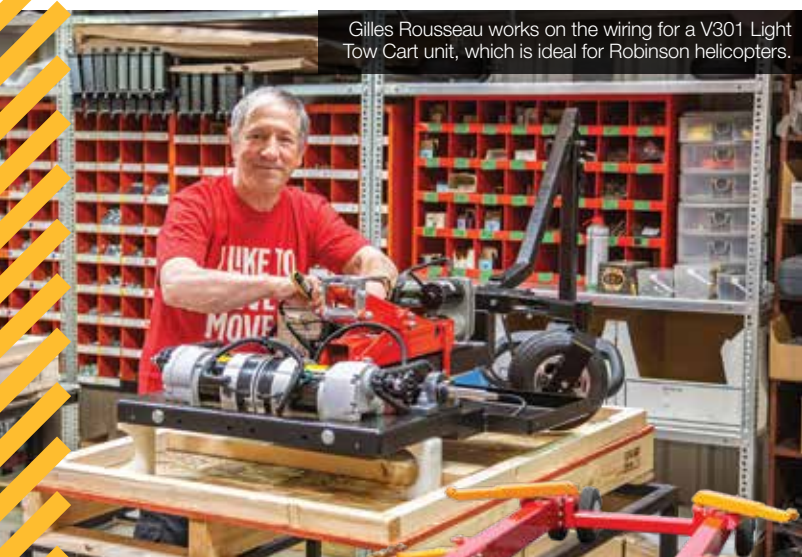
Helitowcart is well known for its series of Light Tow Cart, Universal Tow Cart, and Heli-Carrier products. While the Light Tow Carts are well-suited for towing light aircraft like Robinson helicopters, the Universal Tow Cart (V600 series) has the power and traction to move heavier rotorcraft like the Bell 212.

"The V600 is very, very popular because it's more versatile," Villeneuve explained. "It is so compact and powerful — it is here to stay."

Originally operated through a remote control attached by a wire, the Universal Tow Cart received an upgrade in 2017 in the form of the V614, which has a wireless remote control option. However, the V614 model was initially created for operators who used tow carts at isolated bases, and thus needed a compact solution that could be carried onboard a helicopter.



Steve Rousseau assembles a V920 light duty Heli-Carrier at Helitowcart's facility in Levis, Quebec.



Gilles Rousseau works on the wiring for a V301 Light Tow Cart unit, which is ideal for Robinson helicopters.



Helitowcart's Heli-Carriers are slightly larger than its tow carts, and are designed to move any helicopter in tough environments. The Heli-Carrier V1060 series, for wheeled helicopters, is equipped to handle heavy-lift aircraft, such as the Sikorsky S-92, by lifting and carrying the helicopter nose wheel. Skid-equipped aircraft are catered for by the Heli-Carrier V1000 series, which can maneuver types including the Airbus AS350, AS355, H135 and H145; Bell 206 and 407; MD 500 and 600; and more.

In 2018, Helitowcart introduced its V1018 series Heli-Carrier — specially designed for Bell's 505 Jet Ranger X helicopter. The company noticed the skids on the 505 are slightly different from other helicopters; technicians narrowed the body of the Heli-Carrier and adapted its brackets for the 505, so it was ready to roll out when the aircraft came to market.

"We were ready for the 505," said Villeneuve. "The first sale of the 505 Heli-Carrier was with the second 505 that [Bell] delivered; we were in contact with that customer, so we already had that solution coming."

Between the tow carts and carriers, Helitowcart provides towing products for all helicopters across the range of major original equipment manufacturers (OEMs).

DESIGNED TO DELIVER

Over nearly two decades, Helitowcart has modified its tow carts with various essential features. Serving helicopter operators in varying climates around the world, the company's tow carts must be designed to endure any type of terrain, and powerful enough to perform in any environment.

The pneumatic wheels on the tow carts play a crucial role in allowing them to do so, giving them the traction to move over pebbles, hangar rails and broken tarmac without difficulty. And wider wheels can be fitted with winter cables for tough snow and ice conditions in northern regions.

"We are based in Quebec City," said Villeneuve, "so we know about winter. We are very popular for our heavy duty solutions, especially made for winter conditions or challenging terrain; we know about operations in ice or snow, or soft grass."

With traction covered, the battery-powered motorized wheels give the tow carts the power they need to move thousand- to multi-thousand-pound rotorcraft. On specific tow cart models, each wheel is powered by its own independent motor, which allows these particular carts to continue operating if one motor ceases to run.

In an effort to respond to the needs of its customers, Helitowcart also has the ability to tailor tow carts and carriers to specialized rotorcraft. "We can customize solutions to fit with special equipment [on helicopters] such as the FLIR [camera], floats, skids... anything," Villeneuve said.

The company even recently started offering customized paint colors for its tow carts to correspond with the paint schemes of operators' fleets. "We can do customized paint colors now — easily and fast. This is another advantage to staying a small team," said Villeneuve.

GROWING DEMAND

Selling products on a global scale keeps Helitowcart's staff busy. The last year saw an influx of tow cart requests for emergency medical services (EMS) helicopters, with a large number of orders coming from Airbus Helicopters — a major customer for the company. Villeneuve said the Heli-Carriers were very popular in 2018 as well, adding that it was "a Heli-Carrier kind of year."

Aircraft Satellite Push-To-Talk & SATVOICE

Search & Rescue

First Responders

Aerial Firefighting

Emergency Medical Services

Public Safety

Disaster Relief

Border Services & Homeland Security



SkyNode® S200-P12



TDFM-9100

The Latitude S200-P12 System delivers Iridium "Push to Talk" for your aircraft the way it was meant to be – Fast, Secure, and Easy to Use.

1.888.966.5599 • www.latitudetech.com • sales@latitudetech.com

LATITUDE
Optimize every flight.



entrol

Since 2005

**FNPT AND FTD
HELICOPTER
SIMULATORS**

MAP OF INSTALLATIONS

Visit us in
HAI Heli-Expo 2019
at booth B5729



H125
H135
H120
H155
AS365
AW139
AW109
BELL 206
BELL 412
BELL 429
K-MAX
CABRI G2

www.entrol.es





Maxime Perron Caissy, vice president of operational support, moves a V301 tow cart that is crated and ready to ship to a customer.



Martin Lacroix (left) and William Tremblay with a V1030 heavy duty Heli-Carrier during final assembly and testing.

A V614 Universal Tow Cart moves a Canadian Coast Guard Bell 412EP1 helicopter. The V614 was initially designed to be operated through a remote control attached by a wire, but the company released a wireless version in 2017.



While Canada and the U.S. are major markets for tow carts, the company also sees customers regularly from the U.K., Australia, Switzerland, and Russia.

"We don't see as many companies that are selling all around the globe, like us," said Villeneuve. "Every day we have a new request — [for example,] today we [had] one from the U.K., and Poland as well. Every day is different, and we have customers all around the planet."

With a busy year in 2018, Helitowcart's team recently grew by one to keep up with production. The company strives to keep the majority of its products in stock, but with the growing demand for tow carts, the company currently has a special lead time of two weeks on particular products.

"We have an excellent team here," Villeneuve said. "They will want to work on a Saturday just to make sure our production is good, and by their own choice; we don't ask them to do that. But it's like their company, too."

Moving forward, Helitowcart hopes to amplify its exposure throughout Europe. "We've seen a big growth in the European market lately," said Villeneuve, "so we'll try to increase our presence in the upcoming helicopter conventions."

While Helitowcart hopes to grow its European presence, it doesn't plan on any major expansion within its team, as the current group keeps the company operating like a well-oiled machine.

"There's a very good vibe and energy here . . . we can often hear laughter from the plant, so we want to keep it kind of small," she added. "We have very, very precious employees. And it is fantastic to work in this industry, that's for sure." 🍷



Dayna Fedy | Dayna is junior editor of *Vertical* magazine. She completed her undergraduate degree in communication studies in June 2017, joining MHM Publishing later in the year to pursue a career as a writer and editor.

Bristow Academy is now U.S. Aviation Training Solutions (USATS)

Training Solutions for Industry Leaders

USATS TRAINING VALUE-ADD:

- > 30 years' Proven Performance
- > Global Client Base (120 countries)
- > Customizable Training Solutions
- > Dedicated, Bilingual Instructor Staff
- > FAA-EASA-Military Approvals
- > UH-60, MD-500, B-206, S-300, R-22/44
- > Advanced Training: NVG, External Load, HAT



WWW.USATSFIGHTTRAINING.COM | TITUSVILLE, FLORIDA | T 321-567-0543 | INFO@USATSOLUTIONS.COM

TSOP

Tyler Special Operations Platforms

Fast Roping Systems
and Benches for
Line Maintenance & Repair

Mission Solutions Since 1964

H125/AS350
BK117
Bell 407
OH58
MD500
EC145/EC135



Installs in
under 5 minutes
with no modification
to the ship

Tyler Technologies

(818) 989-4420 • www.tylertech.net





DOWNLOAD THE WALLPAPER!

A PEOPLE *PROBLEM*

Talk of a labor shortage has spread through the helicopter industry, but what's being done to inspire more people to join? And what should we be doing to encourage those who are already here to stay?

BY OLIVER JOHNSON

In March 2018, at the industry's marquee event — Helicopter Association International (HAI) Heli-Expo — academics from the University of North Dakota (UND) told the industry it was facing a very real, and very severe labor shortage. Based on interviews and surveys completed by 250 helicopter companies and operators, the UND predicted a shortfall of 7,649 helicopter pilots and 40,613 mechanics (across all aviation sectors) in the U.S. between 2018 and 2036. Such numbers would clearly have a staggering impact on the industry.

A similarly-focused study has not been completed in the world's second-largest commercial helicopter market — Canada — but anecdotal evidence seems to suggest that operators there, and elsewhere in the world, are finding it increasingly difficult to fill cockpits with experienced pilots, and hangars with maintenance staff.

But when UND unveiled its findings, the feedback was mixed — at least in the comments section underneath our report on the study on *Verticalmag.com*. In fact, it was the biggest and most passionate response we received on any story last year. Frustrated pilots claimed that, despite a wealth of experience and expertise, they were finding it difficult to land a job. If there really was a shortage, surely it shouldn't be this hard, they argued. Other, newly-qualified pilots, fresh from investing tens of thousands of dollars to get their qualifications and build their hours, complained of similar experiences.

We had a comparable response when we posted the story on our Facebook wall.

"There is no helicopter pilot shortage, there is a pay and quality of life shortage that drives away qualified and experienced helicopter pilots," wrote one. "If helicopter companies paid a low six figure wage, certainly what someone with the experience and skills to operate complex helicopters is worth, then a lot more pilots would choose the industry, especially military pilots."





A study from the University of North Dakota indicates a shortage of 7,649 pilots in the U.S. between 2018 and 2036. **Mike Reyno Photo**

Another wrote: "Asking people to invest 100K and then suggest they work on the ground for two years to 'earn the right' is not a proper corporate philosophy to attract and maintain good people. [They] need a sponsorship and mentorship program that supports them and earns their loyalty."

So what's really going on? Is there a problem with recruitment, retention, or bridging the experience gap between newly-qualified and desirably-hirable? Or is it a combination of all of these? And if so, what's the solution?

The forecast that got the industry talking was the result of an in-depth study of the helicopter industry's labor situation, commissioned by HAI and its sister organization, Helicopter Foundation International (HFI). Of the 250 companies surveyed — which included operators large and small — more than half said they had found it harder to hire pilots in the last year than in previous years, while more than two-thirds reported the same challenge with mechanics. And looking ahead to the next five years, more than 60 percent of companies said they expected it would become increasingly difficult to hire pilots and mechanics; less than two percent of companies said they thought it would become easier.

And a familiar pattern is found overseas. According to the HFI, 70 percent of international operators are finding it harder to hire mechanics, 75 percent say they've hired mechanics with less experience than in previous years, and over half believe the inability to hire mechanics in the coming years will interfere with their growth and expansion plans.

The root of the issue, according to UND's study, is simply that more pilots are projected to retire or leave over the next 12 years than are joining the industry. This imbalance will be exacerbated by a growing demand, particularly from emerging markets as they turn to foreign pilots to help grow their fledgling industries.

Dr. Jim Higgins, department chair and associate professor at UND, and one of the study's authors, admitted that the results had received "a healthy dose of skepticism," but said he had faced a similar reaction when UND first predicted a shortage of fixed-wing pilots in 2009 — a shortage the regional airlines are now scrambling to cover.

"When you're an individual that's put the time and effort in, has built an incredible resume and done all the things you need to do . . . and you're not experiencing some success, not securing a job — I can see how it would be easy to say, 'This forecast is full of crap,'" he told *Vertical*. "But the truth is, we looked at it just across the industry. It's probably true that in certain areas, and in certain nuanced aspects of the industry, there might be some overpopulation [of pilots]."

However, he said there was no skepticism among those that are doing the hiring in the industry. "They feel it already," he told *Vertical*. "They're having to lower their minimums and their basic qualifications, [and] take on more in-house training, which of course increases their expenses. . . . Before, there may have been hundreds of applicants for a single position; there's not anywhere near that number anymore."



More pilots are projected to retire or leave the industry over the next 12 years than are joining it. Airlines will be competing for prospective pilots in North America, as will the growing helicopter industries in China and India. **Skip Robinson Photo**

WE TURN YOUR WISHLIST
INTO REALITY

WISH

Carbon dip all interior plastics

Install stainless entry sill and heel skids

Door plastics covered in black leather

Leather insert on back wall

Lon Seal (Wood) flooring

Carbon Fiber Instrument Panel

Carbon Fiber console

Install Rear View Camera to display on G500

Carbon Fiber A/C Ducting

WANT

Air conditioner vents in instrument panel

Powder coat bottom door tracks

Paint intake Funnel, A/C housing brackets & inside cowlings gloss black

Paint inside of baggage compartments gloss black

Install access panel for camera wiring under aft left seat

Install small center console with stainless cup holders

Paint inside of generator scoop

Fiber glass fairing for A/C ducts

Headset hangers

Corporate Leather interior

NEED

Install Donaldson Inlet Barrier System

Install Air Conditioning System

Install GTN 750

Install Full Length Carbide Skid Shoes

Install GTX 345 with ADSB In and Out

Install Garmin Rad Alt

Install TAS 615 Traffic System

Install HTAWS

Paint aircraft with additional clear coat

Remove GMA350H, GTX33H and GNC255A



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!

Maintenance

Completions

Refurbishment

Paint

Interiors

940.626.4849 // aerobrigham.com

THE MILITARY PIPELINE

Ever since the birth of the helicopter industry, the military has played a key role in providing a seemingly never-ending source of well-trained and experienced pilots and mechanics to the commercial sector. The explosion in requirement for helicopter pilots during the Vietnam War ultimately provided many of the leaders of today's commercial helicopter industry — and it's the impending retirement of those highly experienced heads that will be felt so keenly over the coming years.

But another shortage in another industry looks set to have an impact on the helicopter industry that's as unexpected as it is significant. The fixed-wing industry is facing a severe labor shortage of its own, and it has become sufficiently severe for it to look to tap into the helicopter world's long-standing military pipeline to help meet its demand.

Over the last couple of years, rotorcraft transition programs have sprung up across the U.S. The programs, tailored specifically for military personnel leaving the service with rotary ratings, offer to cover many of their costs to train as fixed-wing pilots — and dangle the proposition of a structured pathway to a lucrative career at the end of the program.

SkyWest Airlines, for example, offers up to \$27,500 through tuition reimbursement and bonuses for rotary pilots; GoJet will fund up to \$51,000 in fixed-wing training time for military rotor pilots; while Envoy provides up to \$23,000 towards transition training and offers a new hire signing bonus of \$17,100. And there are many others.

According to UND, three such programs transitioned over 500 military pilots in 2017 alone, with a success rate of 95 percent.

"That is more than enough to justify the cost to the regional airlines," said Higgins. "It's increasing, [and] it'll absolutely have a staggering chilling effect on the number of rotorcraft pilots that are able to enter the commercial industry because the regionals are poaching them. And they're very successful with them."

Does this mean more needs to be done in the helicopter industry to ensure pilots leaving the military stick with rotary? Currently, HAI and HFI offer a free military-to-civilian transition workshop at Heli-Expo each year, and they plan to take this workshop on the road in the future. They also offer resources to allow military personnel to figure out the best and easiest method to transition to a life in the commercial industry, said Allison McKay, VP of HFI.

"Airlines have the resources to dedicate towards the promotion of their programs and they really make it easy for those that are transitioning to go right into training, which is paid for, and the guarantee of a job on the other side," she said. "The Military to Civilian Transition Workshop is designed to highlight why they want to be a pilot and/or a maintenance technician on the rotorcraft side, and there are benefits to our segment of the industry that these workshops are designed to highlight."

As most operators don't have the same resources as airlines, HFI is trying to support them and augment their recruiting efforts, McKay added.



The lack of maintenance personnel is likely to be the most severely-felt shortage across the aviation industry. The UND predicts a shortfall of over 40,000 mechanics for all fixed- and rotary-wing operators in the U.S. **Heath Moffatt Photo**



Some have disputed the shortage, but most operators are reporting a drop in highly-skilled candidates applying for positions. **Heath Moffatt Photo**



Students at the University of North Dakota's aviation program take notes during a classroom session. The University has joined a couple of pathway programs to help its students establish themselves in the industry after graduation. **Wes Van Dell Photo**

HELIWELDERS



AIRBUS

**NAMPA VALLEY
HELICOPTERS**



FAA/TC/EASA APPROVED MAINTENANCE, STRUCTURES & COMPONENT OVERHAUL

- AIRBUS AS350/EC130 PORTABLE FUSELAGE FIXTURE
- ONLY AIRBUS AUTHORIZED EC130 TAILBOOM FIXTURES IN CANADA
- 12-YEAR FUSELAGE INSPECTIONS
- AIRBUS COMPLETIONS, FULL AVIONICS/PAINT
- IMPORT/EXPORTS
- PRE-PURCHASE INSPECTIONS
- WORLD WIDE HELICOPTER PACKAGING & SHIPPING
- RECENTLY AUTHORIZED TO SERVICE OUR CANADIAN CUSTOMERS FOR COMPLETE AS350/EC130/H130 COMPONENT OVERHAUL
- AIRBUS 350/130 COMPONENT OUTRIGHT/EXCHANGE

➤ HELIWELDERS

- Airbus Approved D Level Structures/Inspection MRO H125/AS350/AS355/EC130/H130
- AS350/AS355/EC130 Portable Fixture Repairs
- AS350/AS355/EC130 OEM Approved Tailboom Fixtures
- AS350/AS355 12 year Inspections
- MRO Mobile Repair Team (MRT) Globally

➤ NAMPA VALLEY HELICOPTERS

- Airbus Approved D Level Component MRO H125/AS350/AS355/EC130/H130
- MRO Mobile Repair Team (MRT) Globally

AIRBUS  **SAFRAN**
CERTIFIED MAINTENANCE CENTER

HELIWELDERS CANADA LTD. | NAMPA VALLEY HELICOPTERS

HW Ph: 1.604.530.5225 ➤ www.heliwelders.com // NV Ph: 1.208.362.0851 ➤ www.nvhelicopters.com

"We are going to be launching a pilot recruitment video that's specific to rotorcraft," she said. "We already have a maintenance technician recruitment video that's up on our website. We're trying to give them some tools that they may not have the ability to produce on their own."

The rewards offered by a career in the airlines aren't just appealing to military pilots, of course. For both those getting ready to embark on their careers, and those who have years of experience behind them, the financial carrot offered by the airlines may be enticing. Last September, HAI and HFI held a HeliFutures workshop with a number of HAI members to discuss labor supply issues and

how the industry can continue to attract and retain talent.

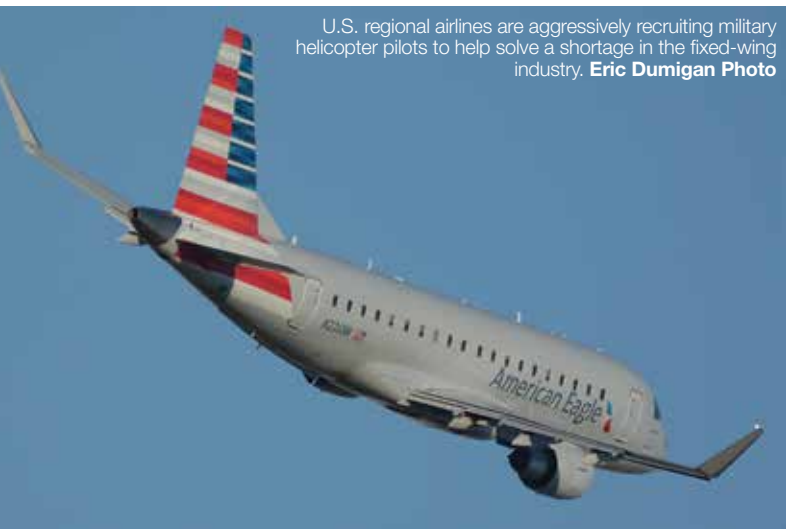
"If you don't believe that you can be competitive alone with salary, then you're going to need to get creative with your benefits," McKay advised operators. "Identify things that your employees want that are outside of the salary discussion — maybe it's a student loan or repayment program while they're working with you, or the hours. See what kind of vacation time they want, start really identifying what benefits your employees really find the most valuable and then start ramping those up."

For those looking at just getting started in the helicopter industry, the financial disincentives are real. The prospect is typically at least \$90,000 on training to get up to a certified flight instructor (CFI) rating and then a long haul to build hours to reach job opportunities in other sectors, without the potential of the bumper paycheck the airlines can offer.

UND's research on the fixed-wing market — where it costs a lot less to get certifications and ratings — found that prospective pilots make a consumer decision when choosing their career. "They absolutely weigh the risk, which is the cost and time and effort; versus the reward, which is the future employment opportunities," said Higgins. "If they're doing it on the fixed-wing side, there's no doubt they're going to do the same thing on the rotorcraft side. And . . . the cost of training is staggering, absolutely staggering. I do think that that is a critical problem."

While he said there is no "magic bullet" solution to this, financing — through scholarships or grants, from either industry or government — is clearly part of the solution. The other is the introduction of a clearly defined career path.

"One thing that we saw on the fixed-wing side that really helped



U.S. regional airlines are aggressively recruiting military helicopter pilots to help solve a shortage in the fixed-wing industry. **Eric Dumigan Photo**

Many military pilots are turning their back on the helicopter industry when they join the civilian world, with lucrative careers offered by regional airlines along with the offer to help fund rotorcraft transition training. **Skip Robinson Photo**



SEE THE CRFT AT HAI HELI-EXPO
BOOTH # C1028

PROVEN



CRFT
CRASH-RESISTANT
FUEL TANK

FOR ALL
AS350 & EC130
PLATFORMS

USABLE FUEL



For more than 40 years,
defense forces have trusted Robertson for helicopter fuel systems
with uncompromising safety performance. Today we are applying
these same principles to the commercial helicopter market with
the *STC FAA & EASA approved* Crash-Resistant Fuel Tank in
partnership with StandardAero (formerly Vector Aerospace).
FLY SAFER NOW.

ROBERTSON
FUEL SYSTEMS

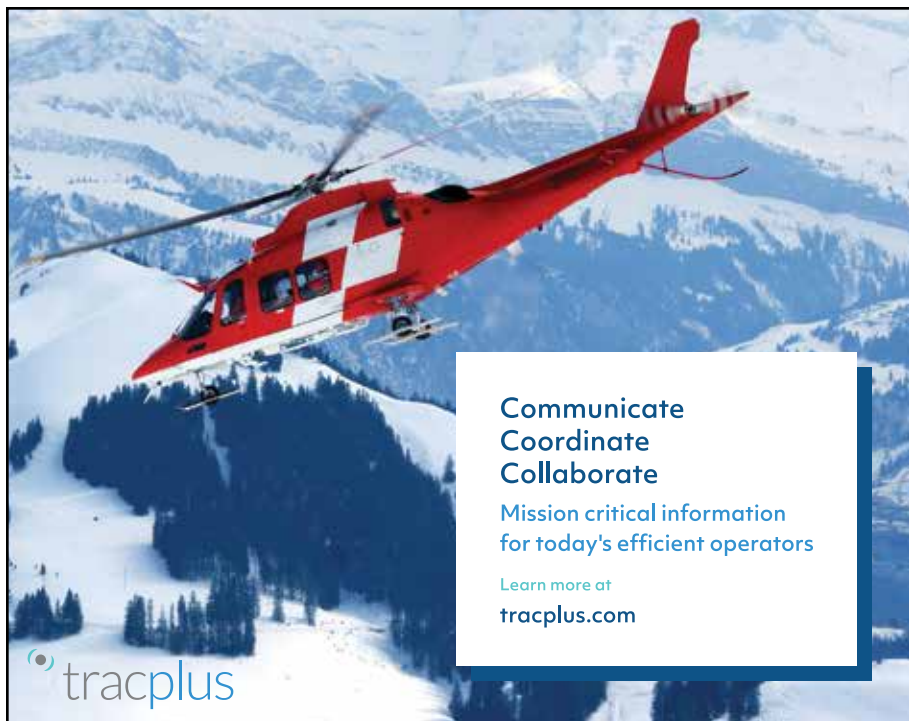
A **HEICO** COMPANY

480.337.7050 | RobertsonFuelSystems.com



StandardAero


604.514.0388 | StandardAero.com



**Communicate
Coordinate
Collaborate**

Mission critical information
for today's efficient operators

Learn more at
tracplus.com



Dedicated to providing quality
workmanship & outstanding
customer service for **40 YEARS**



- Comprehensive MRO
- Component overhaul specialist
- Hydraulic overhaul specialist
- Large inventory available







VISIT US AT **HELI-EXPO BOOTH C4105**

 VISIT OUR
NEW WEBSITE
helitradesinc.com

<p>Head Office 18 Terry Fox Drive P.O. Box 162 Vankleek Hill, ON Canada K0B 1R0 (613) 678-3027</p> <p>Gerald Tom gerry@helitradesinc.com</p>	<p>Alberta Office Site 5, Box 7 RR 2 Airdrie Airport Airdrie, AB Canada T4B 2A4 (403) 912-4658</p> <p>Jeff Abbott jeff@helitradesab.com</p>	<p>Ontario Office 4536 Side Road 10 New Tecumseth, ON Canada L9R 1V4 (705) 435-4031</p> <p>John Belonzo john@helitradesalliston.com</p>
---	--	--

with that risk-reward consumer based model, is if a student, even a relatively new student to the industry, has a path through the industry," said Higgins.

BRIDGING THE EXPERIENCE GAP

Attracting new entrants to the industry is one thing; keeping them once they've got their pilot's certificate or license, but don't have the experience required for many jobs, is quite another.

Dennis Pierce, the owner and founder of Colorado Heli-Ops, a flight training and utility operator based in Denver, Colorado, said he was clearly seeing a lack of "mid-time" pilots in the 1,000- to 2,000-hour range in the industry.

"There's absolutely a shortage, without a doubt," he said. "I have operators that call me every other week, or every month and say, 'I need another pilot — can you find me somebody?'"

He pointed to at least a "30 percent" drop of resumes landing on the desks of major operators he had spoken to as an indication of the changing climate in the industry.

"They're worrying — they're looking every day for new pilots," he said. "Part of that is because a lot of pilots are going to the fixed-wing side, because of the offers and benefits and the offer to pay for training. But also people are getting openings all over the industry, because operator A might lose a pilot to operator B, because operator B's high-time pilot went to the fixed-wing [industry]."

At the Helicopter Association of Canada's (HAC's) annual convention in November 2018, an entire session was dedicated to the labor shortage facing the industry.

The busy fire season last summer highlighted the scale of the issue in the country, said HAC president Fred Jones.

"When operators are parking machines because they can't find drivers for them during the summer months, that's an indication that it's already bad," said Jones. "I gauge it by how many calls I receive in this course of the summer — and this summer was the worst one. I probably received calls from about 25 different operators that were looking for pilots. [They] were looking for experienced pilots, admittedly."

And therein lies what appears to be the crux of the issue — at least for the time being — for many operators. Whether or not it's the sharp end of the forecast

shortage, a demographic shift is taking place in the helicopter industry as the Baby Boomers retire — and take their decades of experience with them.

“To be clear,” said Jones, “from [HAC’s] perspective: there’s not a shortage of pilots; there’s a shortage of experienced pilots.”

This “experience gap” in the industry was reflected in the comments UND received in the responses to its survey. As one respondent wrote: “The problem with this industry is an oversaturation of jobs that require very high levels of experience, and a major deficit of jobs in which pilots can build that experience.”

Matt Zuccaro, HAI’s president and CEO, agrees that the issue facing the industry today is a shortage of experienced pilots rather than an aggregate number of rated helicopter pilots. He said the industry needs to figure out how to help young people coming in make that transition to more experienced roles. He noted the 1,000-hour level — along with some turbine time — seems to be a key landmark in opening up other opportunities.

“That’s a heck of a commitment . . . to build up to 1,000 hours and get yourself some turbine time, but I would propose that the standards for certain mission profiles really don’t require that much time,” he told *Vertical*. He said some of the “more controlled environments” in the helicopter industry — such as aerial tourism — would be a good fit for pilots long before they reach that 1,000-hour mark.

“I really don’t see why we can’t be talking of people transitioning into that type of a mission or similar ones, that have a controlled environment with surveillance and oversight and good structure, to be in the 500-hour range,” he said. “That would help everybody, quite frankly.”

Such a lowering of the minimums for operations would require buy-in from operators, customers and insurance underwriters, he noted. But with the rigid structure of a solid safety management system (SMS) and the various other safety protocols in existence in today’s operating environment, he believes it’s possible.

“I’ve seen plenty of absolutely great young pilots who are in that range of 500/750 hours, who have an excellent safety culture, the mature pilot skills, and the technical knowledge to be just as safe as anybody else that’s out there,” he said. “I think we need to rethink this in a more aggressive manner.”



**DUNCAN
AVIATION**

**DUNCAN AVIATION
PROVIDES THE
HIGHEST QUALITY
COMPONENT REPAIRS
AND OVERHAULS
WITH THE LOWEST
WARRANTY RATES
IN THE INDUSTRY.**



VISIT US AT HELI-EXPO BOOTH #C3428.

www.DuncanAviation.aero/parts/search

We have more than 1,500 avionics and instrument repair capabilities 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)



ROTORPLACE
by Helinet International



**THE E-COMMERCE SITE
THAT WILL CHANGE YOUR
PROFESSIONAL LIFE**

**Save time between
you and the OEMs**

www.rotorplace.com

Easy — Manufacturer warranty — Fast



**Come Meet Us
Booth N°C227**

BEATING A PATH

The idea of having a more clearly defined pathway through the industry to help bridge the experience gap has taken concrete form with the launch of various operator-led programs. Dennis Pierce has created one such program for students at Colorado Heli-Ops. He launched Aviation Futures in 2015, in partnership with Black Hills Aerial Adventures, Papillon Airways, Air Evac Lifeteam, PJ Helicopters, Aero Tech Inc., and T&M Aviation.

Under the program, CFIs at Colorado Heli-Ops are eligible to take seasonal flying positions at Black Hills (a helicopter tour company based in Custer, South Dakota) after reaching 500 hours. This allows them to build their commercial flying experience while keeping their instructor jobs at Colorado Heli-Ops. As they hit experience milestones, they can interview for jobs at the other participating operators.

Last year, two of the company's CFIs alternated two-week shifts at Black Hills and Colorado Heli-Ops. "It helped us by not losing two CFIs, and it helped [Black Hills] by filling one pilot slot," said Pierce. "This program allows [pilots] to stay, current, operating, flying and it just makes them better pilots. This year we had three people go to Rotorcraft Leasing in the Gulf [of Mexico]. It's working."

Another career pathway program — the SkyPath Pilot Program — has been launched by Mark Schlaefli of Sundance Helicopters, an Air Methods subsidiary. The program started in conjunction with flight school Leading Edge Aviation Inc., of Bend, Oregon, and has expanded to include the University of North Dakota's aerospace program.

A candidate applies for the program through select part 141 partner flight schools, and as the pilot progresses through ratings, they are evaluated for their performance. Once they have reached a level of certification defined by the school, they are interviewed by a panel from Sundance and the flight school. If they're accepted into the program, the candidate continues through their ratings at the school and eventually, once they've become an instructor and after a period of dual time (and once part 135 minimums are met) he or she is eligible for a guaranteed interview with Sundance.

"There's no such thing as guaranteed jobs in the world, but it is about as close as you get to that," said Schlaefli. "We should have been, as an operator, directly involved with developing and mentoring new pilots all along. This is something we should have been doing for years."

There are currently five people in the program from UND, and Schlaefli expects the first SkyPath graduates to arrive with Sundance in spring 2020. He hopes to ultimately bring through 10 to 15 pilots each year through the program.

"If we can do that, then we're going to have a great supply of qualified people, we can lower minimums, and have increased performance and increased safety — and I think it will do the industry good," he said.

The program is focused on pilots right now, but Schlaefli aims to broaden it to maintenance technicians; he said the shortage of engineers was actually his biggest concern.

"We just had some discussions with Southern Utah University, who is in a very unique position with their offering a maintenance course, and have actually been successful in having some regulations

Colorado Heli-Ops's Aviation Futures program seeks to help its graduates build their hours through partnerships with operators in various industry segments. **Dennis Pierce Photo**



changed to allow them to develop a rotorcraft specific track for mechanics,” said Schlaefli. “They are going to learn rotorcraft and very specific things [related to rotary-wing maintenance] from the beginning — which I think is huge.”

WATCHING THE CLOCK

Such pathway programs have the potential to help redefine the perception of what counts as industry experience — and with it, redraw the boundaries to different types of operation. Aviation Futures allows its CFLs to begin commercial work at 500 hours, while Schlaefli said SkyPath is also looking at the possibility of lowering that 1,000-hour barrier.

“The more we discussed it, the more we figured out that there’s a lot of guys that have 1,000 hours that were just fine at 600 hours,” he said. “Then they did 400 one-hour sessions, 400 times, for the rest of the log book.”

The solution, he said, would be to add an initial operating experience component. In this, a pilot with 750 hours would go through the normal part 135 training program, and then for his or her first 20 to 30 hours in the aircraft, they would fly in an aircraft with dual

controls with an evaluator on board. A debrief would follow every flight to help bring that individual up to speed.

“We feel, if we have a known quantity that is going through the program that we’ve gotten to know, participated in their professional development, and then observed, one-on-one, in the field doing exactly what we do every day, [that] we’re going to have a much more predictable outcome than the guy I just hire off the street.”

But why is it that the aviation industry as a whole uses hours as a marker of competency? This question emerged as Dr. Suzanne Kearns, a professor of aviation at the University of Waterloo in Ontario, was doing research for a textbook she was writing.

“I spoke to someone who told me to think of it from a regulatory standpoint — if an accident happens and it comes across your desk as a regulator, and you need to show that you’ve done something, he said the easiest thing to do is to throw a few hours of training at the problem,” she said. “It gives the impression that you’ve made a difference, when in reality you know it may not have actually solved the problem. For me, that mindset that it’s easier because you can count [hours] and it’s easily tracked and it’s easier to get your head around — that’s one of the prevailing reasons why we use hours rather

604-792-1333
Info@joinairhelicopters.ca
www.joinairhelicopters.ca
 Chilliwack, BC



- Commerical
- Private
- Approved Mountain Course
- Night Rating

Aviation As It Should Be



JERRY TRIMBLE HELICOPTERS

- Long Line Training
- Turbine Transition
- Touchdown Autos
- Primary & Advanced Instruction

JERRY TRIMBLE • HELICOPTERS •



TRIMBLE AVIATION

- Fixed Wing Training
- Multi Engine Instruction
- Multi Engine Simulator
- Airline Transition Program

jerrytrimblehelicopters.com
 503.577.6371

**NOW OFFERING
 FIXED WING**

TAKE FLIGHT TRAINING

SYNERGY FLIGHT TRAINING INC.





INITIAL FLIGHT TRAINING



RECURRENT FLIGHT TRAINING



INTERNATIONAL STUDENTS



CABRI Q2 | R44

- Private, Commercial and Instructor ratings
- Night Rating and Type Conversions
- IFR Ratings and Renewals
- External Load and Vertical Reference
- Mountain Training
- Pilot Decision Making and Human Factors Course included
- Flyit Simulator Training- IMC simulator training course
- Third Party Flight Training and PPC's for multiple aircraft

Many of our graduates will start their career with Synergy Aviation!

780-453-2085 | TRAINING@SYNERGYAVIATION.CA | SYNERGYAVIATION.CA
 BUILDING #39, VILLENEUVE AIRPORT, STURGEON COUNTY, AB



Sundance Helicopters' SkyPath Pilot Program aims to offer qualified certified flight instructors a fast-tracked entry into flightseeing operations. **Anthony Pecchi Photo**



According to the Helicopter Association of Canada's Fred Jones, the fire season in Canada highlighted a shortage of experienced pilots in the country. **Heath Moffatt Photo**



The University of North Dakota recently joined the SkyPath Pilot Program, launched by Mark Schlaefli of Sundance Helicopters. **Wes Van Dell Photo**



Air Methods owns both Sundance and Blue Hawaiian Helicopters, providing a potential pathway for pilots of those two companies into the emergency medical services industry. **Skip Robinson Photo**

“All of a sudden, the responsibility for saying somebody’s done relies on an individual [to] not just count up hours, but to really know what that person’s capable of and feel comfortable that they can act autonomously as a professional. It’s tricky, but I think it [provides] a lot of opportunities.”

than the idea that it’s the best way as a metric of skill — that was mind-blowing .”

An alternative approach is a competency-based method, but such a system is complicated and requires a bit more sophistication, said Kearns.

“All of a sudden, the responsibility for saying somebody’s done relies on an individual [to] not just count up hours, but to really know what that person’s capable of and feel comfortable that they can act autonomously as a professional,” she said. “It’s tricky, but I think it [provides] a lot of opportunities.”

Several years ago in Canada, HAC created and made available a competency document for wildfire operations that has subsequently been adopted by the wildfire contracting agencies of several provinces.

The document doesn’t specify that pilots have to have flown a set number of hours, but is instead broken into a number of core competencies for wildfire fighting — and pilots must be able to prove that they can do these competencies to get the work.

“We’ve still got some issues to work through on it, but I think it has been a significant success for the industry, and a significant

success at getting young pilots into the system,” said Jones. “But that’s only one industry.”

Geoff Packer, founder of HeliSpeed, believes he has another solution to variable labor requirements. Packer established HeliSpeed in 2015 to supply experienced specialized pilots and maintenance engineers to the industry. While based in the U.K., HeliSpeed has 736 pilots on its books from 39 different countries. When an operator needs to add a pilot or mechanic to its staff on a temporary basis, HeliSpeed can provide a detailed match in experience and required ratings from those registered with it. It can also serve as a subcontractor to farm out pilots from overstaffed operators during slow periods.

“We started off supporting Airbus with test pilots, and we still do that,” said Packer. “We also support different MROs in testing their aircraft and getting them serviceable, and we do ferry flying around the world.”

LEGISLATIVE ACTION

The issue of a labor or skills shortage hasn’t gone unnoticed by the government. When the Federal Aviation Administration Reauthorization Act 2018 was finally passed by the U.S. Congress in October, it contained language directly addressing the need for greater outreach promoting aviation as a career. Among several measures, the act called for the creation of a Youth Access to American Jobs in Aviation Task Force, which has been challenged with developing recommendations and strategies to encourage students, from their junior year of high school, to pursue courses that would lead to a career in aviation. To bridge the gap from education to joining the industry, the task force will also be responsible for identifying and developing pathways for these students to secure apprenticeships and careers in aviation.

In developing its plan, the task force is expected to look at what encourages or discourages young people from pursuing careers in aviation, look at how aviation stakeholders can support those looking to join the industry, and explore ways to enhance apprenticeship and other mentorship programs — including grants and scholarships.


In recognition of the extreme gender disparity in aviation, it also called for the creation of a Women in Aviation Advisory Board, to develop strategies to encourage more women to join the industry.

While acknowledging that the act is focused on the fixed-wing community, Zuccaro said it was at least recognition of the danger posed by the labor shortage aviation is facing.

At Heli-Expo 2019, to be held in Atlanta, Georgia in March, HFI and HAI will be holding a second HeliFutures workshop with its members to discuss the progress made over the last six months. As ever, the show will also include a careers fair and the military-to-civilian transition workshop.

While he knows it will take time and effort to solve the labor issues the helicopter industry faces, Zuccaro said he firmly believes it still holds a special appeal that will continue to encourage people to explore the opportunities it can provide.

“I think that’s one of our greatest attractions in the helicopter industry, is the diversity you could have over a career is just phenomenal,” he said. “The different things you can do and experience, and the benefit that you’re doing to the real world greater society. And I think that’s one thing that we’re trying to promote and show, is that we are unique, we are different, and we can offer you a really exciting career that’s rewarding.” 🚁



NATIONAL HELICOPTERS INC.

COMMERCIAL ➤

PRIVATE ➤

INSTRUCTOR ➤

NIGHT ➤

INSTRUMENT ➤

TURBINE ➤

LONGLINE ➤

FLOATS ➤

**TRAIN WITH THE BEST
...GET HIRED BY THE BEST**

TRAINING SINCE 1985

11339 ALBION VAUGHAN RD. KLEINBURG, ON L0J 1C0

1-866-361-1100 | 905-893-2727 | WWW.NATIONALHELICOPTERS.COM



Helicopter Flight Training

Private, commercial and instructor licences available

- Recurrent and advanced training
- Night ratings
- Type ratings
- Float training
- Slings
- Long lining
- Approved mountain training
- In-house DFTE & DACP
- Springbank Airport offers excellent forestry mountain and control zone areas at our doorstep
- Experience with international students and foreign licence conversions
- Full and part-time courses available
- IFR Ratings
- **We hire from our Graduates**

• 402 A Otter Bay Calgary, AB T3Z 3S6 •

• Tel: 403-286-7186 • www.mvheli.com •



MOUNTAIN VIEW HELICOPTERS

Sikorsky S-51

written by Bob Petite

CANADA'S FIRST MILITARY HELICO

As the Second World War drew to a close, Canada looked to establish its own rotary-wing fleet and capabilities — and the Sikorsky S-51 was to play a starring role.



The first RCAF Sikorsky S-51 in Canada's Northwest Territories in the early 1950s. The aircraft was being used to check out a route for the Mid Canada Line. **Dan Campbell Photo**

PTER



The Canadian military purchased its very first helicopter — a Sikorsky S-51 — in 1947. It had looked at the potential of helicopters in search-and-rescue (SAR) operations during the latter part of Second World War, but despite the Royal Canadian Air Force (RCAF) registering interest in the Sikorsky R-6, it had to wait until after the war to get its hands on a rotary-wing aircraft.

Sikorsky started production of the S-51, which was an upgrade of the wartime R-5, in 1946. It was originally manufactured for commercial use, but with sales sluggish in that realm, Igor Sikorsky switched gears to push the type to the military in the U.S., Canada, and overseas. He quickly saw success with the RCAF placing an order for seven aircraft.

The S-51 was a four-place helicopter, with the pilot up front and three passengers in the back on a bench seat. Powered by a 450-horsepower Pratt & Whitney R-985 Wasp Junior radial engine, it had a gross weight of 5,500 pounds (2,495 kilograms) with a useful load of 1,450 pounds (655 kilograms). It cruised at 85 miles per hour (135 kilometers per hour), had a service ceiling of 14,800 feet (4,510 meters), and a range of 300 miles (480 kilometers). The S-51 came with an electric hoist (controllable from both front and back seats), and could accommodate a casualty litter. While the aircraft's military designation was the H-5, it was mostly referred to as the S-51 by the Canadians.

Flying Officer Tomas Wallnutt (one of five senior flying instructors at the Central Flying School in Trenton, Ontario) was the first RCAF pilot selected for helicopter training at the Sikorsky Plant in Bridgeport, Connecticut. He received a familiarization flight on Feb. 11, 1947, and began his dual instruction the next day in a wartime R-4 helicopter. He flew his first solo flight a week later, quickly graduated to the S-51, and completed his training with about 35 hours on March 11.

The following day, he began a two-day ferry flight with Canada's first S-51 from Bridgeport to Trenton. He flew the aircraft daily to build his time and proficiency with it, and returned to the U.S. on March 19 to ferry the second S-51.

On March 28, Wallnutt suffered a serious accident with one of the aircraft during autorotation practice, brushing a runway with the aircraft's laminated wooden tail rotor. "I received no indication of this happening and opened the throttle to complete another circuit," he later recalled during an interview. "At 200 feet or so altitude, the tail rotor splintered apart and the vibration tore the entire gear box from the tail. The aircraft entered a violent spin and crashed on the runway." Wallnutt was thrown through the left side of the aircraft and ended up on the runway — where he was struck by one of the main rotor blades. Luckily, there was no post-crash fire, and he managed to survive the incident. However, he was unable to fly for nine months, and never flew in a helicopter again. The accident was later attributed to the aircraft's center of gravity limits being exceeded due to a lack of attention to the proper ballast on board. The aircraft was returned to Sikorsky for overhaul and repairs.

Flight Lieutenant Pat Clark was the next RCAF pilot to receive helicopter training, completing his conversion to helicopters in Bridgeport on June 11, 1947. On returning to Canada, Clark spent some time on demonstrations and test flights with the second S-51, and began instructing at the new flying school in Trenton on June 25. Flying Officers Tom Causey, Bob Heaslip, and Bert Milliken were his first students, and became fully-fledged instructors themselves on Sept. 20.

"The S-51 was a brand new beast to me, [and was] very difficult to

fly, especially in the back seat,” Heaslip recalled during an interview decades later. “It could be very unstable, and one had to be on the controls all the time. The S-51 was underpowered with a lot of vibration. I credit a lot of the early success with the helicopter to all the maintenance people that worked on them.”

BEGINNING OPERATIONS

The mandate for the RCAF's S-51/H-5 was flight training and SAR, and the first operational RCAF squadron for the S-51 was at 103 Search and Rescue (S&R) Flight in Dartmouth, Nova Scotia. Its first mission was on Oct. 16, when it responded to the crash of a Navy Supermarine Seafire aircraft near the outskirts of Dartmouth. On Oct. 27, the helicopter and Causey moved to the Air Force Station at Greenwood, Nova Scotia — again with 103 S&R Flight — where it remained on SAR duties. Causey began training new pilots on the type the following March.

On Dec. 6, Heaslip was posted to 112 Transport Flight at Rivers, Manitoba, to help set up a new helicopter flight training school for Air Force, Army and a few Navy pilots. The following August, he was posted to De Havilland Aircraft in Toronto for conversion to the Bell 47D.

Milliken, meanwhile, was attached to the 412 Composite Squadron in Rockcliffe, Ontario, and served as the main training pilot at the Experimental and Proving Establishment. He ferried the RCAF's fourth and fifth S-51s from Bridgeport to Rockcliffe towards the end of 1948.

“Of all the aircraft that Bert flew, he had the most affection for the S-51 helicopter and loved his flying days on rotary wing at Rockcliffe,” his wife, Dorothy, later wrote.

By the end of 1948, the two newest S-51s were in Rivers and assigned to the Army for training at the Light Aircraft School (LAS). The RCAF was to receive its final two S-51s — its sixth and seventh — in 1949.

In between several accidents that required repairs, the first S-51 arrived in Edmonton, Alberta, from where it travelled to numerous airshows throughout the province, and took part in at least one SAR mission. The second S-51 continued SAR operations and training in Greenwood, and it also took part in airshows, while the third moved to Trenton, Ontario, notably appearing at the Canadian National Expedition in Toronto in late August 1949.

On April 1, 1949, the Canadian Joint Air Training Center (CJATC) was created at Rivers, Manitoba. Both Army S-51s spent the year at Rivers being used to train new pilots, along with two Bell 47Ds.

Of course, the S-51s all required dedicated airframe and engine technicians to keep them flying. These people also helped load and unload the aircraft, fuel them, and helped during hoisting operations. The maintenance often took place late into the night, especially during field operations.

“As the helicopter was new to us, considerable training and various tests were carried out in the air,” said Cpl Harold Brownrigg during an interview, who was among the first group of people to receive maintenance training. “We practiced autorotation landings without power, and other maneuvers. This included rescue training over water and the ground by the use of a hoisting cable and harness.”

The final two S-51s arrived at the RCAF station on Sea Island in Vancouver, British Columbia, in May 1949. One of the aircraft was assigned to 123 S&R Flight at Sea Island to be used for training and SAR operations. The RCAF planned to use the other to fly surveyors on a mapping program in the Yukon and British Columbia, as very little mapping of Northern Canada had been done prior to the Second World War.

The aircraft was assigned to RCAF Station Whitehorse, Yukon, where it took part in an Army survey project, moving surveyors



S-51 # 9603 at the Calgary Planetarium site in the early 1970s. The S-51s came in an aluminum color before yellow rescue colors were used. **Bob Petite Photo**



A front view of an S-51 approaching for a landing. **DND Photo**



The instrument panel of a Sikorsky S-51. **Terry Jones Photo**



Flying Officer Tom Wallnutt at Trenton, Ontario, in 1947. He was the first RCAF pilot trained on rotary-wing aircraft. **Tom Wallnutt Photo**

and their equipment between Fort Nelson and Fort St. John, British Columbia, over the summer of 1949. Use of the helicopter cut surveying costs and increased the area that could be covered. At the completion of the program, the helicopter returned to Whitehorse for SAR duties.

By the end of 1949, the RCAF owned five S-51s, while the Canadian Army owned two, plus the two Bell 47Ds.

EXPANDING CAPABILITIES

Throughout 1950, the aircraft continued their training and SAR work as well as performing at various airshows and demonstrations. The list of operations grew as the RCAF explored the aircraft's capabilities. In Nova Scotia, the S-51 took part in radar calibration exercises with an aircraft carrier in St. Margaret's Bay, at one point landing on the carrier; in Ontario, the aircraft was used on forest fires; in Manitoba, it flew recovery operations following flooding; while on the West Coast, it took part in tests to determine the suitability of using the helicopter off the back of a ship — the *MV Songhee* — for searches along the coast.

By 1951, Sikorsky had ceased production of the S-51, and it was producing spare parts on a limited basis. The Air Force looked at stockpiling spares for future needs.

The S-51 continued its survey work, this time in the Mackenzie Mountains in the Northwest Territories. Other notable operations included hauling dynamite to an ice blockage from a river near Medicine Hat, Alberta; the expansion into mountain operations with landings up to 5,300 feet; and the salvage of one badly-damaged S-51 by another on Mary Mountain, near Fort Simpson, Northwest Territories.

Another notable change during the year was Heaslip finishing his

work as an instructor at Rivers. He was replaced by FO Tom Causey.

"I never did get tired of flying the S-51," said Heaslip. "It was a most interesting period of my life and the S-51 was something that was quite new and novel when a lot of people looked on with mistrust and said that the helicopter was not going to last."

During 1952, the Canadian forces explored further modifications to the S-51. The third S-51 had its fabric covered blades replaced with new metal blades, allowing an increase in maximum gross weight to 5,500 pounds (2,495 kilograms), while the RCAF investigated the use of bear paws or skis. Reports from the field indicated that two accidents S-51s had been involved in would not have happened if they had been fitted with some sort of snow skis. One of the RCAF's aircraft was already using bear paws, provided by Okanagan Helicopters in Vancouver. While Greenwood in particular was keen to explore the use of floats on the aircraft, the anticipated arrival of the Piasecki H-21A twin-rotor helicopters, which were equipped with flotation gear, put this requirement on the back burner.

One of the S-51s arrived at Okanagan Helicopters to be used for an RCAF mountain flying course in 1952. The following year, the RCAF looked at obtaining cargo nets for moving bulky equipment over inaccessible terrain — which would require testing; considered using the S-51 for instrument flying, explored the installation of dual controls; and made plans to re-allocate the S-51s after the introduction of the H-21A in 1954.

The H-21 was one of just three types on order for the Canadian Forces, along with the Sikorsky S-55/H-19 and Sikorsky S-58/H-34. The RCAF intended to form an all-helicopter squadron with Heaslip in charge, but this would also require a buildup of new pilots. It planned to ferry five of its S-51s to Rivers for pilot training.



APSCON 2019

OMAHA, NE | JULY 15-20

ADVANCING PUBLIC SAFETY AVIATION

- ◆ **APSCON 2019 sets the standard for excellence in the field of public safety aviation education.**
- ◆ **Exhibition floor features the latest, cutting-edge technology for public safety aviation.**
- ◆ **Subject matter experts share a wealth of information on law enforcement, firefighting, SAR and other public safety aviation operations.**




For more information, call 301-631-2406 or visit www.PublicSafetyAviation.org

Three of the aircraft were upgraded for instrument and night flying in 1954, and they were also fitted with dual controls for training. The S-51's primary role shifted from SAR to range patrol under visual flight rules, and the S-51s would be used for training and range patrol duties as soon as the H-21As were distributed to the SAR units. The first H-21A arrived at Amprior, Ontario, on Aug. 27, flown by Heaslip.

GETTING READY FOR RETIREMENT

With the arrival of the H-21s, the S-51s began to find new homes, but the S-51 that had been based on Sea Island didn't survive the year — it was destroyed in a hangar fire on April 29, 1954. By 1955, four of the remaining S-51s were located at Rivers, with one each at Chatham, New Brunswick, and Cold Lake, Alberta. By this time, lifetime spares procurement for the type was becoming critical. The RCAF hoped to use the S-51s until at least 1961, so made a plan to obtain surplus S-51 parts from the U.S. military.

The aircraft in Cold Lake and Chatham were used for SAR (the Cold Lake S-51 also patrolled the base's air weapons range) and their pilots spent a lot of time practicing with the aircraft's electric hoist.

The crewman in the back was essential for hoist operations, as it was quite difficult for the pilot to see when hoisting solo.

"When we did winch practice in the warmer months, with a crew of two, we used a 150-pound [68-kilogram] dummy, and we would winch ourselves down to ground effect before we could lift the dummy from the ground," recalled Army pilot Terry Jones during a later interview. "The great, long collective was a handful to lift; the steel throttle, to twist; the pedals, although huge, were a good distance forward; and the cyclic could cause interference with the collective on takeoff, when compensating for the rolling motion to the right," he continued.

By 1959, the RCAF planned to phase out its S-51s with the procurement of six Vertol 107 twin-rotor helicopters, and this was expected to begin during 1961/62 and be complete by 1962/63.


The training courses at Rivers continued to churn out new helicopter pilots — by the end of 1959, seven helicopter conversion courses had been held, graduating 20 pilots.

In early 1960, the RCAF decided not to repair any S-51s involved in crashes, and provision of spares for the type beyond mid-1962 was not authorized. Despite this, all the S-51s were equipped with new metal blades by March 1960.

A training accident in June 1960 destroyed one of the remaining S-51s, as it rolled onto one side during a takeoff, but thankfully both the student and instructor escaped unhurt.

By 1962, many of the S-51s were moved to storage. The last flying S-51 at Rivers was involved in an accident in April that year and was written off. The S-51 at Chatham was the last one in operation, retiring on Jan. 1, 1965, when it was replaced by a Piasecki H-44. The S-51 was flown to Rockcliffe and became part of the Canada National Aeronautical Collection, stored in the National Aviation Museum (later renamed the Canada Aviation and Space Museum).

Today, that S-51 is out on loan, on display at the National Air Force Museum of Canada in Trenton, Ontario. The other former-RCAF S-51s ended up in various locations around North America. One is on display in the New England Air Museum in Windsor Locks, Connecticut; one is at the American Helicopter Museum in West Chester, Pennsylvania; and one is in the Hangar Flight Museum in Calgary, Alberta.

For 18 years, the Sikorsky S-51/H-5 served the RCAF and Canadian Army with distinction and pride, allowing the forces to enter the world of rotary-wing operations, and giving many military pilots their first introduction to the wonders of vertical flight. 



The last S-51 to fly operationally with the RCAF was #9601. Here it is at RCAF Station Rockcliffe near Ottawa, Ontario in the mid-1960s. **Ken Molson Photo**

Did you **SOLO** in a helicopter
at least **20** years ago?

If so...
consider joining
Twirly Birds!



Join us at the **HELI-EXPO ANNUAL MEETING**
Tuesday, March 5 • 1700 – 2000
Omni Hotel at CNN Center • Maple Room

Founded in 1945, Twirly Birds is a non-profit organization of individual helicopter pilots formed for the purpose of aviation fellowship and the common bond of vertical flight.

For more information, visit www.twirlybirds.org



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*.

ASIA PACIFIC'S PREMIER Rotorcraft Event

9 - 11 April 2019 Changi Exhibition Centre • Singapore



THE FUTURE OF ROTORCRAFT IS TAKING FLIGHT WILL YOU BE THERE AT LIFT-OFF?

Be on the cutting edge of groundbreaking innovation at Rotorcraft Asia, where the industry's biggest names converge to helm the future of vertical lift.

Discover what's new and trending in the civil, medical, rescue and paramilitary sectors, and keep up to speed with the latest technologies in urban mobility. Connect with other like-minded professionals from around the world and glean revelatory insights from leading rotorcraft innovators at the conference.

Gear up for lift-off as the future takes flight.

Visit www.rotorcraft-asia.com to secure your trade pass today.

EXHIBITION • STATIC DISPLAY • URBAN MOBILITY SHOWCASE • CONFERENCE • START-UP SHOWCASE

CO-LOCATED WITH:

**UNMANNED
SYSTEMS ASIA 2019**

ORGANISED BY:

experia
events that influence

SUPPORTED BY:

CAAS
Civil Aviation Authority of Singapore

DSTA
Defence Science & Technology Agency

EDB
Economic Development Board

**MINISTRY OF
TRANSPORT**
CORPORATION OF SINGAPORE

HELD IN:

SINGAPORE
Passion Made Possible

Secure your spot at Rotorcraft Asia 2019 today and meet with key decision makers through the exclusive **VIP Buyers Programme**.

CONNECT WITH:

Ms. Lim Mei Ling

meilinglim@experiaevents.com

+65 6595 6113



GAUGING the FUTURE

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



Lightweight Carbon Composite Fuel Probes
No Field Calibration Required
Supports Crash Resistant Fuel Systems



liquidmeasurement.com

GAUGE RELOCATION HAS NEVER BEEN EASIER.

Patent Pending.



Now you can connect your AKV ETM1000 to an iPad via Bluetooth. Mount your gauges where you need them using our custom app. Designed specifically for external load operations.

Available for the B407 and AS350.

AKV just made things easier, again.

Visit us at

Heli-Expo booth
#C2025

for a demonstration

www.akvinc.com

call or email at **805.437.1739**

sales@akvinc.com



AKV Inc.
Helicopter Solutions



Crafted in Switzerland

STRATOTIMERTM

Advanced Multifunction Aircraft Chronograph

- Form, fit, function replacement of legacy clocks
- Digital user interface with sweep second hand
- GPS + dual synchronization
- Best-in-class readability
- Customizable colors & timers
- S-Video input
- Day/Night and NVIS capability
- ARINC 429 data bus

AIR DATA COMPUTERS

AVIATION FLASHLIGHTS

DIGITAL FLIGHT INSTRUMENTS

LIGHTING SOLUTIONS

AIRCRAFT CLOCKS & CHRONOGRAPHS

MISSION EQUIPMENT

COCKPIT DISPLAY REPLACEMENTS

DISPLAY MANUFACTURING

MEET US AT HAI HELI EXPO

BOOTH # C2403



www.thommen.aero
sales@thommen.aero

Headquarters: (Switzerland) +41 61 965 22 22

North America +1 (509) 290-4321



Heli Expo: Booth C5823

P: 419-865-2311

Why look anywhere else?



www.nationalflight.com

National Flight Services

Inspections	Pre-Purchase Insp
Avionics	AOG Services
Structural Repairs	Componet Overhaul
Interior Refurbs	Engineering Serv
Exterior Refinsh	NDT Service
Labor Assist Projects	



Helitune
Engineering Rotortuner Solutions

Configurable, adaptable solutions meeting tomorrow's Rotor Track and Balance and HUMS requirements



- Multi-channel data acquisition for RTB, VHM and HUMS



- Intelligent, self-organising sensor nodes



- Cloud-based data collaboration tools



- Comprehensive data analysis suites

See us at HAI Heli-Expo 2019, Booth B6627

Offices in UK, Italy, USA and Germany

sales@helitune.com



Dedicated to providing quality workmanship & outstanding customer service for **40 YEARS**



COMPREHENSIVE AIRCRAFT MAINTENANCE, REPAIR AND OVERHAUL (MRO) SERVICES

APPROVED FOR ROBINSON AIRCRAFT

- Robinson R44
- Major and Scheduled inspections
- Field Maintenance
- 12 Year Component Maintenance

APPROVED FOR BELL LIGHT AIRCRAFT

- Bell 206, 206L and 407
- Major and Scheduled inspections
- Field Maintenance
- Component repair/overhaul
- Hydraulic repair/overhaul
- Structural Repair

APPROVED FOR BELL MEDIUM AIRCRAFT

- Bell 205, 212 and 412
- Major and Scheduled inspections
- Field Maintenance
- Component repair/overhaul
- Hydraulic repair/overhaul
- Structural Repair



VISIT US AT **HELI-EXPO BOOTH C4105**



VISIT OUR
NEW WEBSITE

helitradesinc.com

HEAD OFFICE

18 Terry Fox Drive
P.O. Box 162
Vankleek Hill, ON
Canada K0B 1R0
(613) 678-3027

Gerald Tom

gerry@helitradesinc.com



NEW Ergonomic Collective Grip from Essex Industries



A More Comfortable and Efficient Way to Fly the Aircraft

The new Essex Ergonomic Collective Grip, developed for the UH-60 Black Hawk, allows you to fly the aircraft while maintaining control of all electronic switch functions. This patent-pending design allows for additional switches that comfortably put more needed tasks right at your fingertips. It eliminates hand repositioning or dual seat inputs and provides the optimum hand position for long-range comfort.

Essex Industries platform controls are found worldwide onboard fixed and rotary aircraft for both military and commercial applications, as well as on land combat vehicles. Other Essex rotary applications include Bell 525 and V-280 assemblies and grips for the US Coast Guard fleet of HH-65.

Come see the new Ergonomic Collective Grip at Heli-Expo, Essex Booth #C121.

Apple 
International Inc.



<https://facebook.com/appleheli>



<https://twitter.com/appleheli>

**Airframe, Driveline, Rotary, Engine,
Electrical and Avionic Maintenance & Repair
Overhauled Component Exchange
or Outright. Supplied with 8130-3**

parts@appleheli.com - www.appleheli.com

We have offices in the UK, USA and Asia!

+ (44) 1508 533 180 + (1) 423 652 0206

FAA REPAIR STATION #1A1R131B

**New & Used / Serviceable
Parts Available
Fully Refurbished Bell Helicopters
Ready To Ship World Wide
Or Refurbished To Customer
Requirements.
Helicopter Paint and
Interior Shop**

**We've got a job lot of Augusta
Westland 101 parts available
Contact us for details!**

PRICE REDUCTIONS!

BELL 206 TT STRAPS

-107 \$2,947 EA

-105 \$2,844 EA

+50 USD for 8130

Prices in Philippines excludes
freight and shipping costs

**STOCK IN EU, USA
AND ASIA**



FOR SALE:

**Bell 206LIII LongRanger
Contact us for details!**

sales@appleheli.com



Custom luxury furnishings from genuine aircraft parts

Whether looking to furnish a **corporate**
or **residential space**, our designs can be
customized to fit your specific needs.

**Clocks • Trays • Seating • Lighting • Coasters
& MUCH MORE!**



COME SEE US AT **HELI-EXPO BOOTH #B4424**

310 Snowdon Dr E, Merrickville, ON K0G 1N0
(613) 447-5370 • carolynn@craviations.ca
craviations.ca

Craviations 



SPIN **TO WIN!**

DON'T MISS OUT

WHEN YOU VISIT **VERTICAL MAGAZINE** AT
BOOTH B3818, SIGN UP FOR DAILY NEWS AND SPIN
OUR WHEEL TO WIN ONE OF SEVEN DIFFERENT PRIZES!

Vertical
THE PULSE OF THE HELICOPTER INDUSTRY

Always at
your fingertips

No matter where you are or how you like to stay connected, we deliver the content you love in the way you prefer to get it. We work from the front lines to share in-depth insight and timely, relevant content from all sectors of the rotorcraft industry: operator profiles, industry reports, flight test profiles, maintenance articles, new product releases, and avionics and industry news.



Print



Digital



News



Web

Subscribe

ONLINE → verticalmag.com/subscribe
CALL TOLL FREE → 1-866-834-1114



MarketPlace

YOUR #1 ROTORCRAFT RESOURCE FOR...

MRO \ PRODUCTS \ SALES & LEASING \ SERVICES \ EMPLOYMENT

MRO

PRODUCTS

SERVICES

SALES & LEASING

EMPLOYMENT

Photo c/o Last Frontier Helisking

**Visit us at HAL
Booth 3029 in Atlanta!**

Aero Design Ltd.
Helicopter Cargo Baskets and Accessories

Photo c/o Air-Zermatt

Video c/o Gibbons Whistler

aerodesign.ca

info@aerodesign.ca



SALES PARTS ENGINES EXCHANGES

**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 #B6408**

SAFRAN Helicopter Engines Certified Maintenance Center **AIRBUS** Helicopters Authorized Maintenance Center

SALES AND REFURBISHMENT

We offer a wide range of services including:

- Refurbishment/Rebuilds ⓘ
- Part Sales ⓘ
- External & Internal Refinishing ⓘ
- Aircraft Sales & Leasing ⓘ
- Avionics ⓘ
- Maintenance ⓘ

Click icons for further information ⓘ

www.helisupportnz.com
8 Mustang Lane • Wanaka Airport
+ 64 443 2903

heliSUPPORT
 New Zealand Limited

Your one stop shop for helicopter support!

Helicopter Parts & Components
 Accessories // Components
 Instruments // Repairs & Overhauls



Aeromni
 Aerospace Inc.

www.aeromni.com • info@aeromni.com • 604-534-2376

SELECT
 HELICOPTER SERVICES LTD.

VISIT US AT HELI-EXPO BOOTH #B6717

HYDRAULIC COMPONENT & CARGO HOOK OVERHAUL

SERVOS | INTEGRATED VALVES
MAIN ROTOR DAMPERS | FILTERS
ACCUMULATORS | CARGO & REMOTE HOOKS

P: 250.765.3317
E: info@selecthelicopter.com
www.selecthelicopter.com

AMO 92-04 | EASA.145.7268

CHINOOK AVIATION INC.
 Specializing in Helicopter Structural Repairs



Certified fuselage fixtures for Bell 205A-1, 206 A/B/L, 212 and 412.
Certified tailboom fixtures for Bell 205A-1, 206 A/B/L, 212, 412 and 204B.
North America's Preferred Choice for Airbus H125 Vertical Reference Window

542 Hurricane Dr., Calgary, AB, T3Z 3S8 • P 403.247.2498 • F 403.247.3740 • chinook@nucleus.com • **www.chinookaviation.com**

Integrity Is Timeless

BELL **FAIRBANKS**

MRO

PRODUCTS

SERVICES

SALES & LEASING

EMPLOYMENT

MRO

PRODUCTS

SERVICES

SALES & LEASING

EMPLOYMENT

- SALES & LEASING
- FIELD MAINTENANCE
- COMPONENT OVERHAULS
- NEW & RECONDITIONED PARTS
- AVIONICS
- STRUCTURES
- AIRCRAFT IMPORTS & EXPORTS

AIRBUS

DART
AEROSPACE

HELI-PAINT

SAFRAN

**swiss
rotor
solutions**



1A 27018 SH 633 • Villeneuve Airport Sturgeon County, AB T8T 0E3
Tel: 1-780-460-1800 • Fax: 1-780-458-7311 • phorvatis@avialta.com • **www.avialta.com**

AVIALTA
HELICOPTER MAINTENANCE LTD.

CANWEST
AEROSPACE

CANWEST
GLOBAL AIRPARTS

Aircraft Services (AMO/MRO)

- Used Aircraft Refurbishment
- New Aircraft Completion
- Component Overhaul
- Structure & Paint
- Avionics & Instruments
- Parts & Exchange

ensuring safety & reliability



24/7 International
AOG and Field
Support Available

canwestaerospace.com

1-604-532-0322

Hangar #10, 5225-216th Street | Langley, BC Canada V2Y 2N3



Support... where and when you need it!

PH: 760-806-3780 | FX: 760-806-3787
2580 Jason Court, Oceanside, CA 92056 | www.seasidehelicopters.com

**SEASIDE
HELICOPTERS INC.**



Heath Moffatt Photo

Gold River Base
250-283-7616

Port Alberni Base
250-720-8915

**Full Service
Avionics Shop**

**GARMIN
COBHAM
CHELTON**
FLIGHT SYSTEMS

COMMERCIAL CHARTER SERVICE
• Bell 206, Bell 407, R44, R66, AS350, and Koala 119KE

APPROVED ROBINSON DEALER
R22s, R44s & R66s

- New & Used Helicopter Sales
- Full R22, R44 & R66 Maintenance
- Complete overhaul facility R22, R44 & R66

**EB
HELICOPTERS LTD.**

Box 1000, Campbell River, BC V9W 6Y4
ebhelicopters.com // info@ebhelicopters.com

250-287-4421

FLYRITE
LAW 10-97 EDMONTON, AB

ACCESSORY OVERHAULS

STARTER-GENERATORS

**Overhauls
Rentals**

SAFRAN POWER (GOODRICH)
SKURKA/APC • THALES (AUXILEC)

1-888-439-6020
flyrite@incentre.net

**BROWN
HELICOPTER INC**

PENSACOLA, FLORIDA • FERGUSON AIRPORT 82J

Serving the Industry Since 1978

Huge inventory of Sikorsky and Bell parts as well as those hard to find parts.

We ensure a rapid response to all orders and inquiries to keep you in the air.

10100 Aileron Ave Pensacola, Florida 32506 | P: 850-455-0971 | F: 850-456-8231 | E: sales@brownhelicopter.com

MRO

PRODUCTS

SERVICES

SALES & LEASING

EMPLOYMENT

Full Support for Airbus Helicopters

Conversions & Upgrades

Avionics, Components, Maintenance, Manufacturing, Structures and Paint

Lease, Lease to purchase, & Sales

Heliproducts
INDUSTRIES

Pitt Meadows Airport // BC, Canada // P: 604-465-5008 // F: 604-608-9222 // E: info@heliproducts.com // heliproducts.com

Transport Canada FAA // AMO 83-05. EASA 145.7216

POWER AVIATION

Helicopter Support In Europe

Direct sales of Bambi Bucket, KAflex Driveshaft, TT Straps etc.



www.poweraviation.se

SPECIALIZING IN BELL, MD & AIRBUS HELICOPTERS

- MAINTENANCE & LEASING • PARTS & COMPONENTS
- PAINT FACILITY & STRUCTURES



1020 Virginia Road, PO Box 128, Coombs, B.C., V0R 1M0

info@aerosmithheli.com aerosmithheli.com (250) 954-0668 | 1-877-954-0668

YOUR FULL SERVICE HELICOPTER REPAIR SHOP!

NATIONAL HELICOPTERS INC.



TRANSPORT CANADA APPROVED MAINTENANCE ORGANIZATION

BELL 430/429/412/212/206 SERIES
MD 500 SERIES | R22/R44/R66
AGUSTA | EUROCOPTER

- AVIONICS REPAIRS/INSTALLATIONS
- COMPLETE AIRCRAFT PAINTING
- COMPONENT OVERHAUL
- CUSTOM COMPLETIONS
- ENGINEERING DESIGN & APPROVALS
- NON DESTRUCTIVE TESTING
- AIRCRAFT HANGARAGE AVAILABLE
- INTERIORS



YOUR COMPLETE MAINTENANCE CENTRE
PROVIDING **QUALITY** SERVICE YOU CAN **TRUST**

11339 ALBION VAUGHAN RD. KLEINBURG, ON L0J 1C0 | 1-866-361-1100 | 905-893-2727

WWW.NATIONALHELICOPTERS.COM



Alpine Aerotech

NEW LOOK, SAME TRUSTED SUPPORT



40+ STCS // OVER 10 MILLION NEW & OVERHAULED PARTS IN INVENTORY



PROUDLY SERVICING BELL, LEONARDO & AIRBUS

VISIT US AT HELI-EXPO BOOTH C2634

DESIGN // ENGINEERING // CERTIFICATION // MANUFACTURING // 40+ STCS // AVIONICS // PART SALES // STRUCTURES
COMPONENTS // PAINT SERVICES // SPECIALIZED REPAIR // HEAVY MAINTENANCE // AIRCRAFT SALES & LEASING

EXPERIENCE HAS NO SUBSTITUTE

CONTACT US **24/7** FOR SUPPORT

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



LIVE DEMOS

**HELI-EXPO
BOOTH C06**

CHANGING
THE WAY
YOU MOVE
YOUR HELICOPTER



**WIRELESS
REMOTE CONTROL
LANDING DOLLY**



(877) 435-4946 | brad@heliwagon.com | www.heliwagon.com

WEB STORE FOR SPARE PARTS
E-distribution - OEM Surplus Outlet - Services



WWW.AERO-BAY.COM



SAFETY • EFFICIENCY • SERVICE



Specializing in Bell Helicopters: 204, 205, 206, 212, 407 & 427
• Dynamic Component Overhaul • Exchange & Rental Program
• Part Sales • Bell Approved Blue Coat Repairs



Approved Bell
Helicopter Testron
Customer Service Facility



**PROUDLY
SINCE 1974**

"Our Commitment, Your Advantage"

Box 190, 3010 Selwyn Rd., Valemount, BC V0E 2Z0 T: (250) 566-4401 F: (250) 566-4333 www.yhl.ca



WHERE INSPIRATION MEETS INNOVATION

➔ **WIPER BLADE ARMS MOTORS**
For use on Airbus Helicopters
Cage Code: F6914



BARFIELD
Now an authorized
distributor
FALGAYRAS
AERONAUTICAL AND INDUSTRIAL EQUIPMENT
of products including
the Wiper Arm.

Complete Testers



Barfield Products



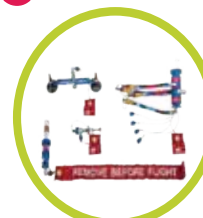
TT1200A



DPS 1000



Navoids



Adapters

Other Test Equipment



Fluke



Thermal Image Multimeters



Bird



RF Antenna and Cable Analyzer

Visit us at booth #B6331 Heli Expo 2019 Atlanta . March 3 - 7
WWW.BARFIELDINC.COM



Ergonomic Specialists Providing **S·A·F·E** working environments

**SAFETY FIRST CUSTOM MAINTENANCE
STANDS & HANGAR EQUIPMENT**

702-209-8811 | safestructuredesigns.com



HELIROLLDRUM

TOUGH TANKS - COLLAPSE COMPACT

DOUBLE REVENUE FLIGHTS & NO EMPTY RUNS! DEFUEL & LIFT MAX. – THEN REFUEL FOR HOME RUN.
NEW HELIROLLDRUM 66. DEVELOPED FOR THE AS350. SMALL ENOUGH TO ROLL OUT DOOR IF CARRIED IN CABIN.



**NEW
FERRY TANKS
AIR CARGO TANKS
ANTI SPLASH FILLER CAP**



AUSTRALIAN MADE

WWW.TURTLEPAC.COM | EMAIL: TURTLEPAC@YAHOO.COM.AU

We speak your global aviation language...

AOG

URGENT

Dauphin parts
in stock

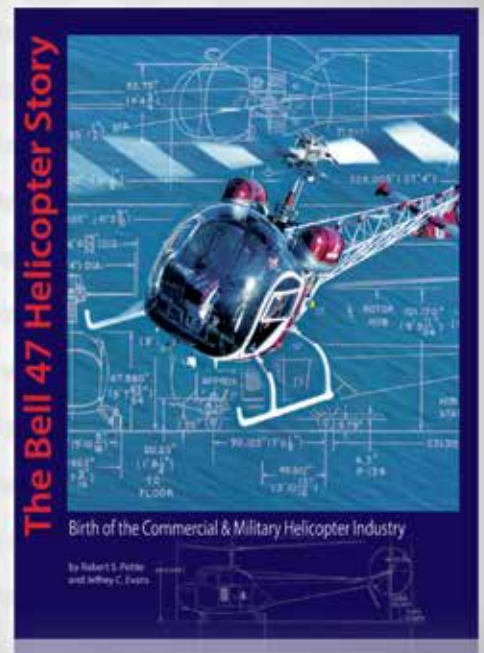


alpine.aero
air support

The Bell 47 Helicopter Story.

For everyone interested in early helicopter history, this book on the history of the **Bell 47** is for 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
 - \$89.95 plus postage and GST (Canada only)



Visit www.helicopterheritagecanada.com to order your copy online today

BOOTH C1305 @ HAI HELIEXPO 2019



HELI TOW CART

HELICARRIER

V1000 SERIES

GROUND HANDLING SOLUTIONS

+1-418-561-4512
info@helitowcart.com
HELITOWCART.COM



Rosen
SUNVISOR SYSTEMS

Rosen Sunvisor, not just for planes anymore !

- New for 2018 STC'd Robinson Helicopter Visor System
- Agusta Westland, Bell, Sikorsky and Airbus STC'd systems available
- Crew Plus Shade Systems
- Canopy Retractable Shade Systems
- Rosen iPad Mount System, New Improved Design

WWW.ROSENVISOR.COM **800.284.7677**



SERVING THE HELICOPTER INDUSTRY FOR 39 YEARS

Complete Component Tracking By:

- Cycles • Where it's been
- Hours • Where it's from
- Calendar • What it costs
- Overhaul • Where it's at
- Inspections • What's left
- ADs and SBs • Where it's going

Inventory • Purchase Orders • Work Orders

COMPUTRAK.ORG
970-493-6886



HELICOPTER PARTS SALES
*Check Out our Huge Inventory!
Over One Million Items!*

We have a large inventory of quality parts from reputable sources, for outright sale and exchange.

ACCESSORIES • COMPONENTS • INSTRUMENTS

Airbus Helicopters, Bell Helicopter, MDHC, Schweizer, Sikorsky, Lycoming, Rolls-Royce, Turbomeca

Check out our website!

WE BUY:

- Light and medium turbine helicopters
- Parts, components and inventories
- Distressed and run-out airframes

Toll Free 800-585-7004 USA & Canada Only.
TEL: USA 1-608-756-3632 • FAX: USA 1-608-756-2606
email: info@tradewindinternational.com
www.tradewindinternational.com



USA600J-4-1500
ALL WAY ARTICULATING JOYSTICK VIDEOSCOPE

- 4MM DIAMETER
- 1500MM LENGTH
- 360° ARTICULATION
- 5" LCD SCREEN
- FRONT & SIDE LED LIGHTING
- INTERCHANGEABLE SIDE VIEW TIP
- RECHARGEABLE BATTERY

USA BORESCOPIES **931-362-3304**
sales@usaborescopes.com
USABorescopes.com



SCHWEISS

DOORS

HYDRAULIC — OR — BIFOLD
ONE-PIECE DOORS STRAP LIFT DOORS

507-426-8273
SCHWEISSDOORS.COM

MFO

PRODUCTS

SERVICES

SALES & LEASING

EMPLOYMENT



CAP 1034 COMPLIANT



CA-EBS

ETSO 2C503 LIFE VEST

ETSO 2C504 SURVIVAL SUIT

CALL: 609-587-3300

VISIT: go.switlik.com/VERTICAL



See you in Atlanta! Booth B6635

**HELICOPTER
GROUND HANDLING**

30 YEARS

**HELI-EXPO
BOOTH C1716**

**STILL A
BETTER IDEA**

ChopperSpotter.com
15124 Business Parkway, Rosemount, MN 55068
1-608-537-2049 | info@chopperspotter.com

ChopperSpotter



**AVIATION TOOLING
& GROUND SUPPORT
EQUIPMENT**

SAI Szabo Aviation International

1-866-221-9473
szabosales@telus.net
www.szaboaviation.com



PARTS AND COMPONENTS

www.ex-changeparts.com **eX-Change Parts AB**

Ex-Change Parts AB · Holländargatan 22 · 113 59 STOCKHOLM · SWEDEN
info@ex-changeparts.com · ph: +46 8 5454 9880 · fax: +46 8 5511 4755

WE SUPPORT AIRBUS, BELL, SIKORSKY AND MD



**GLOBAL
AIRPARTS**

- Helicopter & Fixed Wing parts
- Parts Sales
- Rotable exchanges
- Aircraft teardown
- Inventory Management
- Sikorsky | Bell | Leonardo

604.746.6221
parts@globalairparts.ca
www.globalairparts.ca



verticalmag.com

MFO

PRODUCTS


SERVICES

SALES & LEASING

EMPLOYMENT

WE ARE
**AVIATION, STRUCTURAL,
& AEROSPACE ENGINEERS**
FOR FIXED & ROTARY WING AIRCRAFT


SPECIALIZING IN:
Aircraft Modification & Certification
STC, RDA, PDA Development
Repair Design & Product Development
Special Missions / Search & Rescue
Cargo & Interior Conversions



ICARUS
Aero Inc.
Aviation Engineering

1-844-682-AERO (2376) | 647-399-7396
AMO: 41-17 | DAO#17-D-82 | www.IAERO.ca

D.F. CAPITAL LTD.
International Leasing and Sales



**AS350 B2/FX2/SD2 &
BELL 206L1/C30 LEASES**

Don Farkas • 250-507-9668
dfarkas@shaw.ca
Denis Robitaille • 450-750-6249
denis.helico@sympatico.ca

**FOR LEASE
AS350 B2**

- Flexible terms catered to your needs
- Purchase with lease-back
- Existing leases wanted

CONTACT US TODAY!
seastar.leasing@gmail.com



PLATINUM

Simulators

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

WE FIX BLADES.




**ROTOR BLADE & COMPOSITE
REPAIR SPECIALISTS**
www.acs-composites.com

ADVANCED
COMPOSITE STRUCTURES

AERONAV INC.

ELECTRICAL & AVIONICS SYSTEMS SUPPORT

SALES & INSTALLATION SERVICE & SUPPORT AIRFRAME REWIRE





AUTHORIZED DEALERSHIPS

TECHNISONIC Honeywell ASPERA ELGIN BendixKing GARMIN COBHAM AEM

SALES@AERONAV.CA | WWW.AERONAV.CA

AMO# 98-04

THE PROFESSIONAL AIRCRAFT MOVERS

**NOW WITH
THREE SPECIALIZED
COVERED TRAILERS
FIXED & ROTARY WING**



Driven by our Customers' Success

**CONTACT US TODAY &
START SAVING MONEY!**

www.calgarygooseneck.com
403.266.2468 | 406.450.0170
doug@calgarygooseneck.com
dodie@calgarygooseneck.com



**Trying to reach the
PARAPUBLIC
INDUSTRY?**

If your business depends on servicing the EMS, Law Enforcement, SAR, Fire, and Military sectors of the helicopter industry, **YOU NEED TO TRY OUR SISTER PUBLICATION!**

Vertical 911
THE PULSE OF THE HELICOPTER INDUSTRY

Carla McKay // carla@mhmpub.com
Derek Kast // derek@mhmpub.com

FOR LEASE

Bell 206 BIII • Bell 206 L-R • AS350 SD2



Fully equipped, Canadian Registered Helicopters

Also: Import | Export | Pre-Purchase Services & Safety Consulting
For Sale: AS350 B2 Blades | Bell Surplus Inventory

**BLACKBIRD
Service &
Leasing Ltd.**

Contact Us:
Ian: 250.975.0024
Barclay: 250.615.7015
helicopterleasing@hotmail.com



NOW HIRING FOR THE FOLLOWING POSITIONS

PILOT & AME OR EXPERIENCED AME APPRENTICE

LOCATION: Revelstoke BC, relocating to Revelstoke is requested.

Applicants must be Canadian Residents or hold a valid Canadian work permit.

AME

Full time position maintaining AS350SD2's and AS350B3 helicopters. AS350 type course, Honeywell 101 engine type course and Arriel 2B1 course will be required but not needed initially for the right applicant. Wages based on experience.

PILOT

1500 Hours+ required with an opportunity to gain experience in mountain flying, long line operations and Heli-skiing. May to September we do a variety of work such as Forestry, Mining Exploration, Aerial Construction. Winter operations within the Revelstoke area December to April include Heli-skiing, Avalanche Control and Class D Rescue. Preference will be given to Pilots with experience in AS350, long line and mountain operations.

PLEASE APPLY BY EMAIL TO
JAIME RYGA // INFO@SMHELI.COM

SELKIRK MOUNTAIN HELICOPTERS LTD.

PO Box 2968, 530 Westside Rd.,
Revelstoke, B.C., V0E 2S0
WWW.SMHELI.COM

DELTA Helicopters Ltd.

We are a family owned business that has been operating since 1972; we currently operate a fleet of 23 helicopters.



deltahelicopters.com

POOL PILOTS FOR FULL-TIME POOL POSITION

BASE PILOT POSITION – Slave Lake, AB BASE PILOT/BASE MANAGER POSITIONS – Fort McMurray & Lac La Biche, 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), 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.

NOW HIRING

Permanent Full Time Helicopter Pilot

Applicants Must:

- Have 1000 hrs. PIC rotary line
- Be willing to relocate to Fort Nelson, BC
- Hold a valid Canadian Commercial Helicopter Pilot License
- Be fluent in English

Job Duties:

- Daily inspection of helicopter
- Flying in the Fort Nelson area which could include: transportation of customers for crew changes, bush pilot operations, search and rescue, aerial surveys, med-evacs, forest firefighting, bucketing, longlining
- Helping on ground and around the hangars as required

**Annual compensation starting at \$72,000
Moving expenses and housing available**

Apply by email including references to: qwest@northwestel.net or fax to: **250-774-5303**
We are located at 90 Bell Rd. Fort Nelson Airport in Fort Nelson, BC. **Ph: 250-774-5302**



YOUR CLIENT
doesn't compromise.

That's why they trust you
to find the helicopter
or provide the service
expertise they need
when they need it.

Exceed their
expectations.



JETNET

- › Comprehensive helicopter listings and detailed individual aircraft specifications
- › More than 31,600 in-service airframes worldwide
- › New Operator/Airport Utilization feature registered more than 15,000 flights
- › Turbine: 11 makes/120 models; Piston: 3 makes/23 models
- › Transactions on more than 49,000 retail helicopter sales over 20 years

*The World Leader in
Aviation Market Intelligence*
800.553.8638
+1.315.797.4420
+41 (0) 43.243.7056
jetnet.com

VISIT THE JETNET EXHIBIT AT THE HAI HELI-EXPO,
MARCH 5-7 IN ATLANTA, GA, BOOTH #B6735

>> KNOW MORE.

THERE I WAS... // MIKE MUENCH

"To err is human; to forgive, divine" is a catchy little phrase from the 18th century. It pretty much remained intact until the advent of the helicopter. You know how helicopter pilots can't leave a catchy phrase alone? Well, this one is no exception. One such pilot, enthralled by his own and his machine's ability to remain motionless at a point in space, came up with the axiom: "To fly is heaven; to hover, divine." It is something to ponder, emblazoned across your coffee mug, in the early morning hours while at your desk, trying to wake up enough to begin your pre-flight inspection.

I admit, the ability to hover is sort of a magical concept when you think about it. I'm sure we've all had that fantasy of flight as children — imagining hovering around on a magic carpet like the ones we saw in cartoons or read about in books. ("Why should I call you Ali Baba?" I remember my little brother asking me, as I "flew" my magic carpet during a daring adventure one playtime.)

That obsession with flight never really left me, which might help explain why I owned a coffee mug eulogizing the ability to hover, and would happily leave it on my desk for all to see whenever I left for a flight.

"Are you going to hover there all day or get to flying?" I would hear my boss say over the radio, staring out of his office window at the helipad.

"On my way..." came my reply. "Just checking hover power."

I would always spend a little extra time trying to improve my hovering ability every chance I got. As an electronic news-gathering pilot for a Philadelphia news station, I once got a call to hover over the Jack Frost sugar refinery with my gyro camera operator. We were to get footage of the building being demolished to make room for a gaming casino on the Philadelphia waterfront.

"Great," I thought. "I'll be hovering over the Delaware River until they get ready to demolish that building."

I was enjoying the motionlessness of this OGE hover when the TV control room boomed over the radio: "Get ready — we are live! Three... two... one..." KA-BOOM!

"Keep that camera steady," the director said to my videographer/sidekick over the radio. "She'll be falling any second... [Pause]. Any second... [Long awkward pause]. Any minute now..."

As the minutes passed, the video guru sat next to me just shook his head. Soon he was just plain bored.

"Sky One to TV control, I'm going to need fuel soon," I said. "We've been hovering about three hours now."

"Ok, but don't shut down and hurry back," came the reply. "It's liable to fall at any moment. We don't want to miss this."

I did as requested, and was soon back in the air, hovering over the plant. But the demo team clearly hadn't got the memo. The minutes continued to tick past.

"I'm going to have to go for fuel again soon," I radioed, and quickly repeated the trick to resume my vigil above the Delaware.

Eventually, as darkness began to set in, the radio crackled into life again. "OK, Sky One — let's call it a day." It took 13 hours for that sugar refinery to finally collapse. In the end, I did see it fall, but it was from the comfort of my couch at home watching it on TV rather than through the window of my cockpit. The entire episode almost cured my obsession for hovering.

Then, one day, a pilot friend asked me to fill in for him working a Nascar stock car race. However, I wouldn't be shooting it for TV — all I had to do was hover 2,000 feet up and relay

the signal from the in-car cameras back down to the TV control room.

"It's interesting. You'll like it," he said.

On race day, I flew up to the track. While the helicopter was being fitted with a radio signal transceiver, I got acquainted with the broadcast crew.

"Nothing to it," the director told me. "Have another cup of coffee while we wait for the race to start."

When I got to my assigned altitude, I realized two things. One: there was no way to pick out references with which to maintain that point in space. And two: there were no restrooms with which to discharge that processed coffee.

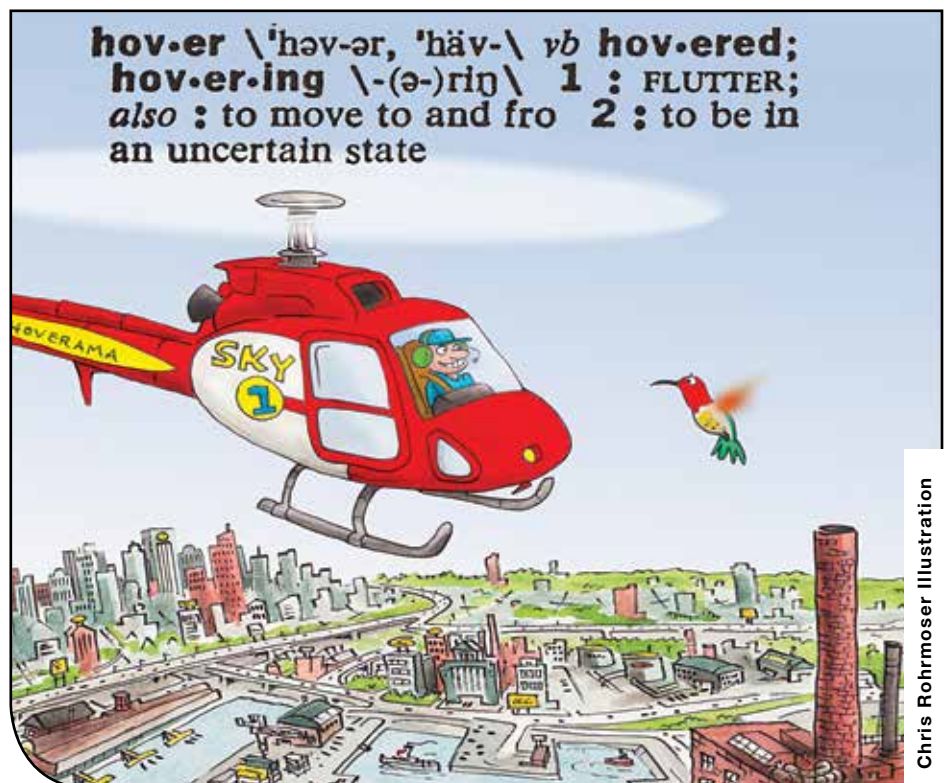
"Watch your altitude, Sky One," cautioned air traffic control. "You are right above the ILS corridor."

Then the control room chimed in. "Mike, you are drifting back," they said. "We're losing the signal. Move forward... Hold it steady... Move right... Your other right."

"I need the rest room," I replied.

"Mike, hold it a little longer," came the response. "You'll be needing fuel soon anyway. You can go at the next caution flag."

Okay... I found the cure. Now, how do I overcome this aversion to hovering I have developed? 🚰



Chris Rohrmoser Illustration



MAINTENANCE PREDICTABILITY

Bell 407 Health and Usage Monitoring System (HUMS)

Aeronautical Accessories is the exclusive distributor for the GPMS Foresight MX Health and Usage Monitoring System (HUMS) for the Bell 407.

- Maintenance Predictability
- Low Cost
- Lightweight
- Next Generation Technology



1-800-251-7094
aero-access.com/407-HUMS

 **Aeronautical**
ACCESSORIES™

A Bell Brand



**GO ABOVE AND
BEYOND FLIGHT**