

Vertical www.verticalmag.com 911

THE PULSE OF THE HELICOPTER INDUSTRY

THE H145. MAKES LANDING IN A STORM A BREEZE.



**FLY
WE MAKE IT**

It's no surprise the H145 is the helicopter of choice for rescue missions. Whether at sea, on a mountain or in a blizzard, it can bring help to where it's needed. Compact and versatile, it provides outstanding flight performance under the most extreme conditions.

Resilience. We make it fly.



SPRING ISSUE 2019

www.verticalmag.com

Vertical 911

THE PULSE OF THE HELICOPTER INDUSTRY

SPECIAL SEAHAWKS

Sundown for the U.S. Navy HH-60H

ATLANTIC AIRWAYS
SERVING THE FAROE ISLANDS

BRAZILIAN DAM COLLAPSE
RESPONDING TO BRUMADINHO

MERCY ONE
SAVING LIVES IN IOWA

THE H145. MAKES LANDING IN A STORM A BREEZE.



**FLY
WE MAKE IT**

It's no surprise the H145 is the helicopter of choice for rescue missions. Whether at sea, on a mountain or in a blizzard, it can bring help to where it's needed. Compact and versatile, it provides outstanding flight performance under the most extreme conditions.

Resilience. We make it fly.



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.

In the right hands, it will start a revolution.

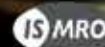


PHP
PRECISION HELIPARTS
A **PAG** Company

Call 404-768-9090 or visit us at
www.heliparts.com.

Accessories
Avionics
Hydraulics
Instruments
Wheels & Brakes

Others sell parts, WE SELL SUPPORT™



Inventory Supported
Maintenance • Repair • Overhaul

TABLE OF CONTENTS

SPRING 2019 ISSUE // VOLUME 12 ISSUE 2

 COVER STORY

28

THE FIFTH PILLAR

PHI explains its new focus on the human dimension of safety.

BY IAIN HOLMES

44

TRAGEDY IN BRUMADINHO

How helicopters supported the response to a dam collapse in Brazil.

BY ELAN HEAD

50

MERCY IN THE MIDWEST

Mercy One provides lifesaving care to Iowans with two Bell 429s.

BY SKIP ROBINSON

60

DUAL IDENTITY

Atlantic Airways serves the Faroe Islands as both an airline and a rescue service.

BY JON DUKE



032

SPECIAL SEAHAWKS

After 30 years, the U.S. Navy HH-60H Seahawk is set to retire.

BY SKIP ROBINSON

 IN EVERY ISSUE

10 FOCUS ON PROFESSIONALISM // 12 ROTORBEAT // 22 FIELD OPS PHOTOS //
72 MARKETPLACE // 76 FINAL APPROACH //

FACEBOOK PHOTO CONTEST

CONGRATULATIONS, **Jeffrey Ramos!**

April Winner



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

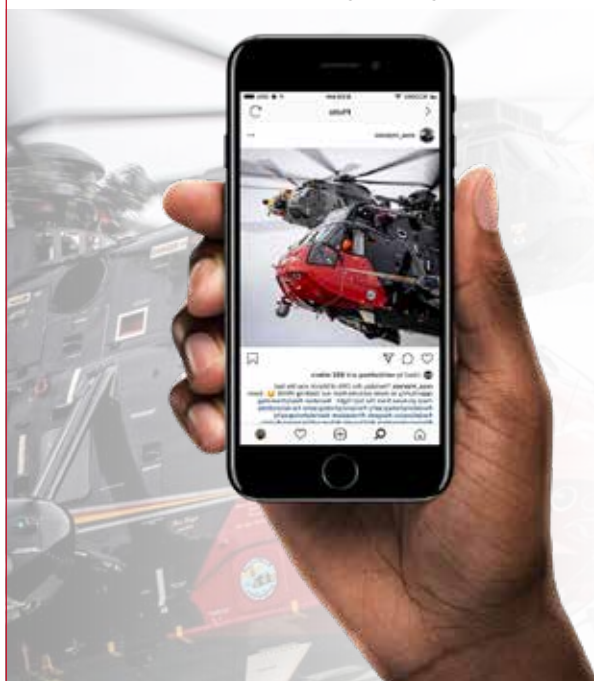
If you have a helicopter-themed photo you'd like to share, post it to our Facebook page at www.facebook.com/verticalmag, or share it on Instagram using the hashtag #verticalmag. In addition to receiving prizes, our weekly winners have their photos featured on our home page and in *Vertical Daily News*, our daily email newsletter.

INSTA HELI HIGHLIGHT

CHECK OUT **@ross_impress**

ARE YOU ON INSTAGRAM?

We recommend you check out one of our favorite accounts, **@ross_impress**, showcasing the Belgian Air Force.



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
VERTICAL 911 EDITOR Elan Head, elan@mhmpub.com
JUNIOR EDITOR Dayna Fedy, 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

Gerrard Cowan, Jon Duke, Iain Holmes,
Tony Kern, Skip Robinson

Contributing Photographers

Lloyd Horgan, Mitchell Nazar, Skip Robinson, John Slomp



Subscribe to Vertical 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 // spring 2019 // volume 12, issue 2



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



Don't be **ANTISOCIAL.**

The world's best helicopter magazine has gotten even better.
More ways to connect and interact with helicopter professionals worldwide.
Keep in touch.

verticalmag.com |       

Vertical
THE PULSE OF THE HELICOPTER INDUSTRY

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



One year ago this month, I took a leap of faith and decided to try something that wasn't in my wheelhouse. After 21 years flying jets for Uncle Sam, five in the bowels of a large government agency, and 15 more running a small business, I took a job with a high-altitude stratospheric balloon company that navigates the edge of space providing weird and wonderful services for a host of customers. I had no background in the technology or science of lighter-than-air flight, no reason that I needed to move from my beautiful home in the Rocky Mountains, and no real financial incentive to make the leap. But I felt myself getting stale and thought my operational street cred was running a little low. I packed up my beautiful wife and seven dogs and moved to Arizona.

There are many things I have learned in the past 12 months, but perhaps the most important is the idea that when I stay too long in a closed system, my drive and learning curve flatline.

A few weeks ago, while looking at the hazards of air ingestion into a hydrogen balloon — a bad thing that can lead to an explosive mixture like the one that destroyed the airship Hindenburg in 1937 — I ran across the Second Law of Thermodynamics, a straightforward law of physics that states in a closed system, you can't finish any physical process with as much useful energy as you had to start with; some is always wasted. What's worse, in a closed system, available energy can never *increase* — progress is not possible. When you toss in the concept of *entropy*, nature's gradual decline into disorder, the stage is set for not only stagnation but declining energy states. J. Willard Gibbs, the 19th century American theoretical

“
*There are many things I
 have learned in the past
 12 months, but perhaps
 the most important is
 the idea that when I
 stay too long in a closed
 system, my drive and
 learning curve flatline.*
 ”

physicist, called this condition “mixedup-ness.” Prior to making my jump to new latitudes, that was me.

Being the human factors guy I am, I immediately recognized what I — and many others — experience when we stay inside our bubble too long. In a word, a gradual but inevitable slide towards *mediocrity*.

The aviation industry works hard to avoid this. There are scores of conferences, websites, information-sharing magazines such as this one, and online courses meant to get us out of our bubble and join the discussion about new ideas, new technologies, and new techniques for operating and maintaining our beloved machines. Yet there remains a large number within our ranks who resist the new, and cling to their small understanding of the world as they know it.

A classic example of this phenomenon can be seen with a great organization called the *Medallion Foundation*. Formed from an infamous legacy of too

many aircraft accidents and fatalities in Alaska, the Medallion Foundation was formed in 2001 to improve pilot safety awareness and reduce insurance rates. I was fortunate to work with this group for several years after its founding. The idea was — and is — to provide free or low-cost training and safety services to those who fly in this hostile environment with limited resources. The interesting thing was the early adopters were those who *already* had robust safety systems in place, and those for whom the program was intended were reluctant to join. They preferred their own bubbles to new ideas. That trend continues to this day.

We see a similar tendency at the safety seminars and conferences around the world. The organizations who show up are those who need it the least. Last year at the iconic *Bombardier Safety Standdown*, I was approached by a senior member of a regulatory agency who said he had just reviewed the attendance list of companies represented at the conference and that “the people that need to hear this aren't here.”

It is quite possible that the people who need to get out of their bubbles won't read this article either, but I will issue the challenge just the same. No matter how safe and professional you think you are, no matter how long it has been since your last accident or near miss, no matter how experienced your crew force is — you still have a lot to learn from others. So I challenge you to take the leap and explore the vast resources at your fingertips. If our industry wishes to remain one of the safest modes of transportation in the world, and we seek to safely serve and rescue others who depend on us, we have to break from our comfort zones and satisfaction with the status quo.

Fly smart. 🚀

TECHNISONIC COMMUNICATIONS



THE FUTURE OF COMMUNICATION IS ALREADY HERE.



And to law enforcement, technology has never sounded better. The all-new TDAP-611 analog audio panel offers clean, clear sound, while doing away with unneeded size and complexities.



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

spring 2019

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

Air ambulance transports can put patients at financial risk, says GAO



Around 69 percent of air ambulance transports of privately insured patients in the U.S. are out-of-network, although some providers, including Air Methods, have recently been entering into more in-network agreements with insurers. **Air Methods Photo**

BY ELAN HEAD

Air ambulance transports in the United States can leave privately insured patients on the hook for tens of thousands of dollars, a new report from the Government Accountability Office (GAO) confirms.

The report explores the phenomenon of balance billing in the U.S. air medical industry, in which an out-of-network provider goes after a patient for the amount of a bill not covered by the insurer. While providers are prohibited from sending balance bills to Medicare and Medicaid patients, no such protections extend to privately insured patients.

According to the GAO, skyrocketing billed charges in the air medical industry have exacerbated the financial risk to these patients. Between 2012 and 2017, the median price charged for a helicopter transport increased from \$22,100 to \$36,400, while the median

price for a fixed-wing transport rose from \$24,900 to \$40,600 — jumps of more than 60 percent.

Given such high sticker prices, the associated balance bills can also be steep. As part of a study commissioned by Congress, the GAO analyzed 60 relevant consumer complaints from two states. Of those, all but one of the balance bills was for more than \$10,000, with the largest balance bill exceeding \$60,000.

The GAO noted that the extent to which patients actually pay the full amounts of the balance bills is unclear, since air ambulance providers first encourage patients to appeal to their insurers for increased payment. If that is unsuccessful in fully addressing the bill, then providers may offer various payment options, sometimes requiring patients to share detailed information about their financial status.

“Air ambulance providers we spoke with said that they use discretion on how much

assistance to offer, and not all patients receive discounts after providing all relevant documentation,” the GAO report states. “Even with discounts, according to data from some air ambulance providers we spoke with, the amount patients pay can still be in the thousands of dollars.”

The GAO estimated that around 69 percent of air ambulance transports of privately insured patients were out-of-network in 2017. That’s considerably higher than what previous research has estimated for ground ambulance transports (around 51 percent) and other emergency services.

The report suggests that, compared to other types of healthcare services, “the emergency nature of most air ambulance transports, as well as their relative rarity and high prices charged, reduces the incentives of both air ambulance providers and insurers to enter into contracts with agreed-upon payment rates.”

While some states — including Montana and North Dakota — have attempted to regulate balance billing by out-of-network air ambulance providers, their efforts have been challenged under the Airline Deregulation Act, which pre-empts states from regulating the rates, routes, and services of air carriers. Nevertheless, officials in both states reported receiving fewer consumer complaints after their laws were enacted, with officials in Montana noting that “uncertainty over the possible effects of the law has made most air ambulance providers more willing to enter into contract negotiations with insurers.”

Additionally, some air ambulance providers who spoke with the GAO reported that they have recently been entering into more network contracts. For example, in August 2018, Air Methods and Anthem announced an in-network agreement covering Anthem consumers in five states: Indiana, Kentucky, Missouri, Ohio, and Wisconsin. “These contracts could decrease the extent of out-of-network transports and balance billing in the future for these states,” the report observes.

The GAO also noted that the Secretary of Transportation is in the process of forming an advisory committee on air ambulance patient billing, as required by the FAA Reauthorization Act of 2018. The committee will make recommendations on topics including options and best practices for preventing balance billing, steps that states can take to protect consumers, and the disclosure of charges and fees for air ambulance services.

The GAO’s latest report on the air ambulance industry follows one it released in 2017, when the agency noted that it lacked information necessary to determine the prevalence of balance billing. This time around, the GAO was still unable to make firm conclusions in that respect, as “there is a lack of comprehensive national data about the extent and size of balance bills, and air ambulance providers are generally not required to report such data.”

With its 2017 report, the GAO made four recommendations to the Department of Transportation (DOT). According to its latest report, the DOT has taken steps to respond to two of these recommendations: communicating a method to receive air ambulance complaints, and taking steps to make complaint information publicly available.

However, the DOT has not yet acted on the remaining two recommendations: determining what information could assist in the evaluation of future complaints, and considering consumer disclosure requirements for air ambulance providers, such as established prices charged and the extent of contracting with insurers.

RotorBits

AMGH ACQUIRES SEVENBAR AVIATION

Air Medical Group Holdings (AMGH) announced in April that it had signed a purchase agreement to acquire SevenBar Aviation, LLC, a privately-held air medical operator offering fixed- and rotary-wing services to a broad array of healthcare organizations throughout the United States. AMGH said that SevenBar Aviation would closely align with AMGH subsidiary Med-Trans Corporation.

SevenBar Aviation has grown its geographic footprint significantly over the last seven decades and has a fleet of nine jet and turboprop airplanes, in addition to six helicopters. The company is headquartered in Dallas, Texas, with nearly 100 employees, and currently has bases in New Mexico, Texas, Maine, Massachusetts, Virginia, and North Carolina.

“SevenBar Aviation’s commitment to its communities, patients, and healthcare partners are a tremendous asset and will align with the AMGH and Med-Trans strategic vision and culture,” said Med-Trans president Rob Hamilton in the press release announcing the acquisition. “We are very much looking forward to working with the leadership and dedicated employees of SevenBar.”

SevenBar president Kim Montgomery stated, “We are very proud of the long term relationships that we have held for many years with our healthcare partners. This new partnership with Med-Trans Corporation and the support from AMGH will enable us to continue to focus on our mission; providing additional value and long term solutions for our partners, our employees and communities.”

AMGH PLACES ORDER FOR 21 AIRBUS HELICOPTERS



Longstanding Airbus Helicopters customer Air Medical Group Holdings (AMGH) will add a total of 21 helicopters to its fleet for air medical transport missions, the companies announced at HAI Heli-Expo 2019. The agreement consists of a mix of single-engine H125 and twin-engine H135 helicopters, with nine of the orders confirmed in 2018 and deliveries planned over three years beginning in 2019.

“This order will support our company’s fleet replacement and growth in the air medical market. In our operation across the United States we perform a critical care transport for a patient every 10 minutes and must always be ready at any moment,” said Fred Buttrell, president and CEO of AMGH. “The H125 and H135 offer an ideal configuration for our various missions, and bring along with them the high level of support we have come to expect from Airbus.”

AMGH is one of Airbus Helicopters’ largest customers, with a current Airbus fleet of nearly 85 helicopters. In 2018, the company merged with ground ambulance operator American Medical Response (AMR) to form Global Medical Response (GMR), a leading medical transportation company. GMR operates in total some 306 helicopters, 7,000 ground vehicles, 100 fixed-wing aircraft, and 111 fire vehicles, and transported more than 13 million patients in 2018.

VH-92A PRESIDENTIAL HELICOPTER UNDER BUDGET, BUT STILL FACING CHALLENGES

BY ELAN HEAD

The next U.S. presidential helicopter is on track to cost around \$234 million less than initially anticipated, according to a new report from the Government Accountability Office (GAO).

As of last May, total acquisition costs for the Sikorsky VH-92A were estimated at \$4.95 billion, down around 4.5 percent from the \$5.18 billion estimated in April 2014. With the program expected to deliver 23 aircraft, that equates to a unit cost of around \$215 million per helicopter.

Of the estimated savings, approximately \$88 million can be attributed to efficiencies gained during development, and \$103 million to revised spare parts cost and equipment production list. Another \$36 million comes from lower than expected inflation rates.

"A key factor in controlling total program acquisition cost has been performance requirements stability," the GAO report states. "The Navy has not added any key performance requirements to the fixed-price contract, thereby limiting cost growth. In addition, the Navy and the contractor have been able to limit the number of necessary design changes that require modifications to aircraft."

Based on Sikorsky's commercial S-92A, the VH-92A incorporates an executive cabin

interior and specialized communications and other equipment for the mission of transporting the U.S. president. It will replace the Marine Corps' existing fleet of Sikorsky VH-3D and VH-60N helicopters, which have been in service for decades.

The Navy previously attempted to replace this aging fleet starting in 2002, selecting a variant of the AgustaWestland (now Leonardo) AW101 called the VH-71. However, the Navy terminated the contract in 2009 due to schedule delays, performance issues, and a doubling of cost estimates, from \$6.5 billion to \$13 billion.

While estimated costs for the VH-92A are lower than expected, the program has seen some delays. Specifically, the Milestone C review to authorize low-rate initial production has been pushed back five months, from January to June 2019; and the initial operational test and evaluation start has been pushed back from October 2019 to March 2020. An initial operational capability decision is now anticipated in October 2020, three months later than initially expected.

Moreover, the GAO observed, "the VH-92A program continues to face development challenges that could affect Sikorsky's ability to deliver fully capable aircraft prior to the start of

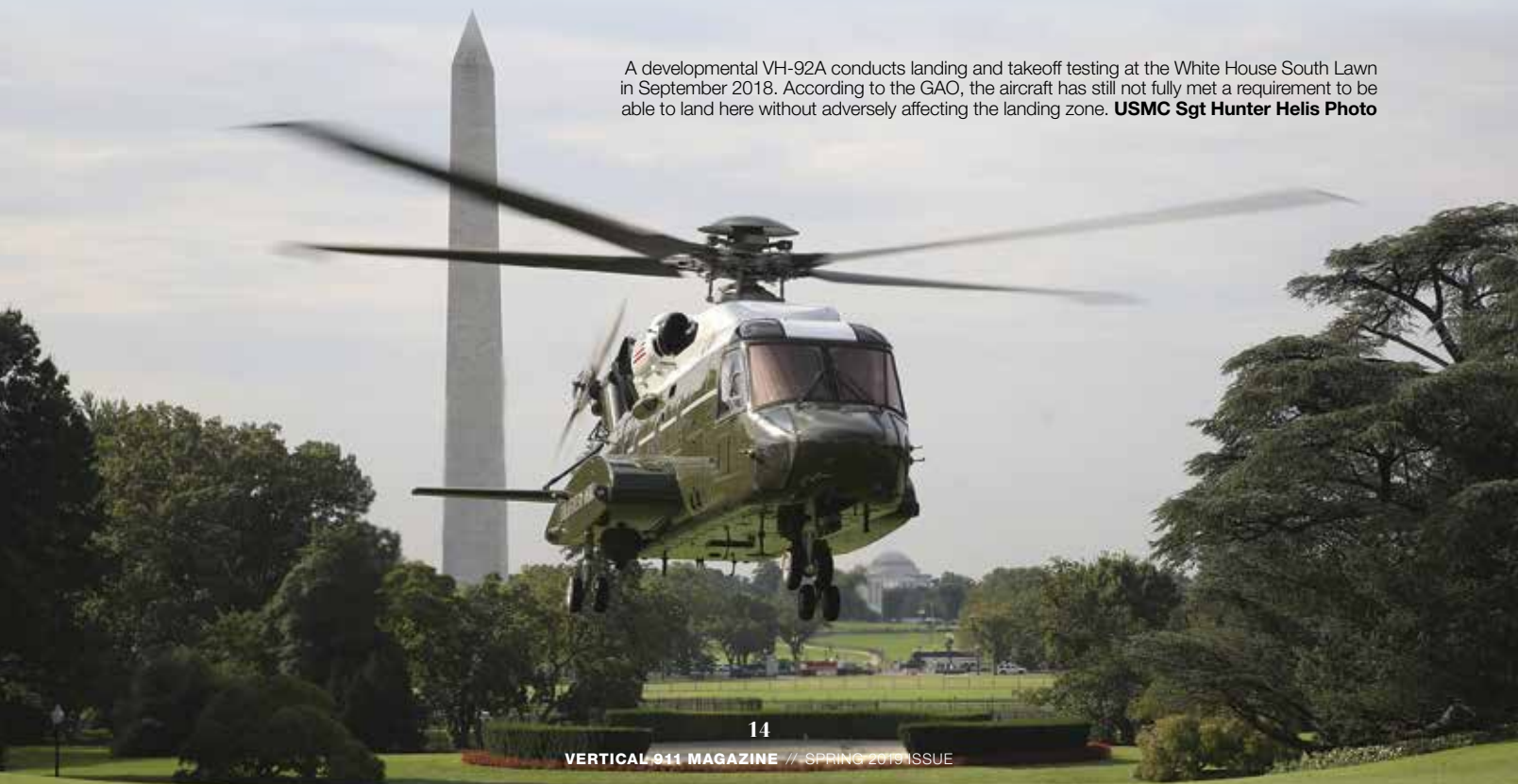
initial operational test and evaluation." These include issues related to the aircraft's propulsion system and landing zone suitability, and the interoperability of its mission communications system with secure networks.

"According to the program office, the performance requirements associated with these challenges may not be fully achieved until after the low-rate initial production decision currently planned for June 2019, which may result in a need to retrofit already built aircraft," the GAO report states.

In a statement provided to *Vertical 911*, Sikorsky VH-92A program director Spencer Elani noted that the company delivered the first helicopter to support the president of the United States ahead of schedule. Two aircraft are now in the government test program and have executed various tests validating the VH-92A's capabilities and unique modifications, he said.

"Sikorsky is confident the Defense Acquisition Board will soon issue a positive Milestone C decision for the VH-92A program to enter into production," Elani stated. "Sikorsky is pleased a recent agency review noted the excellent teamwork and open communication between the government and industry team building the next generation presidential helicopter."

A developmental VH-92A conducts landing and takeoff testing at the White House South Lawn in September 2018. According to the GAO, the aircraft has still not fully met a requirement to be able to land here without adversely affecting the landing zone. **USMC Sgt Hunter Helis Photo**



RT-7000 AIRBORNE TACTICAL RADIO



Revolutionary TACTICAL COMMUNICATIONS

- 29.7 – 960 MHz AM/FM P25 Phase 1 & 2
- NVIS-Compliant Touchscreen GUI with Knob/Button Navigation
- Panel-Mount or Remote-Mount Options
- Flexible Architecture - Adapts Easily as Technology Evolves

Cobham Aerospace Communications

COBHAM

The most important thing we build is trust

sales.prescott@cobham.com

Beautifully **reliable.**



Join the thousands of operators who trust Spidertracks to enhance the safety and adaptability of their team through real-time flight watch, two-way text messaging, and dependable global coverage via Iridium NEXT.

spidertracks
time to save lives

Take control of an interactive demo at spidertracks.com/v911

HELICOPTER LOAD STABILITY SYSTEM TAKES MAJOR STEPS FORWARD



The Vita Inclinata team and demo pilot Jon Bourke following a successful exhibition of the Load Stability System during HAI Heli-Expo 2019. **John Slemp Photo**

BY DAYNA FEDY

Vita Inclinata Technologies of Seattle, Washington, is working with the U.S. Army Aeromedical Research Laboratory (USAARL) to qualify its Load Stability System (LSS) as safe to fly for all helicopter medevac operations. The company recently signed a Cooperative Research and Development Agreement (CRADA) with the USAARL for research and flight testing of the LSS.

The LSS is a self-contained, autonomous suspended load stabilization device that uses thrust produced by four electric ducted fans to eliminate the swing during helicopter hoist and sling load missions. Under the CRADA, Vita Inclinata will work with USAARL to establish the airworthiness criteria and operational envelope of the LSS to prepare it for deployment with U.S. Army missions.

"Currently, taglines have really been the only solution to hoist rescues," said Caleb Carr, CEO of Vita Inclinata. "So the main question here is, can we throw the LSS into every type of operational environment that the U.S. Army and other military agencies and private agencies operate within? We are confident that we can."

Carr was inspired to start Vita Inclinata after a search-and-rescue mission ended in tragedy

when a Sikorsky UH-60 attempted to lower a basket using a hoist system to perform a rescue, but could not get it through the trees due to swinging. "I've been working since 2012 to basically create a solution to prevent those kinds of deadly scenarios," he said, adding that the LSS was founded as a result of the work of Vita Inclinata.

"We've actually been able to test the system in 111-knot winds [in a laboratory] so far with full operational success," he added. "Now it's just a matter of continuing to get that validation with an independent agency — that being the U.S. Army."

Vita Inclinata is working with the U.S. Army and Navy under a prospective effort to roll out the LSS for Bambi Bucket and hoist rescue control. The company is also in the process of building out a system for 129th Rescue Squadron to implement the LSS by July 2020 for pararescue operations off the West Coast.

"Working together with the Army . . . [and] actually collaborating multiple agencies together . . . not only has it been an exciting time, but I basically get to wake up every day and figure out how to save lives — and play with helicopters," said Carr.

Vita Inclinata's LSS has been developed in two configurations: the LSS-HR (Hoist

Rescue) for rotary-wing search-and-rescue (SAR) operations; and the LSS-SL (Sling Load) for helicopter sling load operations.

With the LSS-HR, the hoist cable can slide through the center of the LSS, which attaches to the cable using a series of rubber components to put pressure on the cable without wearing its integrity. Carr said this attachment method is being tested both in the lab and in operational settings.

The LSS-SL attaches at the bottom of the longline hook, and the load is then connected to the weight-bearing LSS.

While currently in the prototyping/refinement stage, the LSS so far has 12 hours of flight time behind it on multiple different helicopters. Vita Inclinata recently brought the LSS, specifically the Sling Load prototype, to HAI Heli-Expo 2019 in Atlanta, Georgia, for its first public flight demonstration. The LSS was demonstrated on a Bell 407HP operated by Helicopter Express at DeKalb-Peachtree Airport on the last day of the show (March 7); the aircraft was piloted by Jon Bourke, director of quality assurance at Helicopter Express.

"In general [the demo] went very, very well," said James Watkins, Vita Inclinata's chief revenue officer. "We had maybe 25 or so people live at the airfield, and then we had another

30 or so at the [HAI] booth who were watching the live stream there.”

Those who were present at the airfield to watch the flight demo were potential clients from Asia and the U.S., some government agencies, and potential partners, Watkins said

“This was the first time they’d seen the LSS fly,” he added. “I think it was, for some of them, almost like magic. They’re expecting a lot of movement, and then all of the sudden it just stops. . . . And that was really fun for us to see.”

The flight demo, which was less than 30 minutes, was done in three stages: first with no load stabilization (the LSS was off), second with partial stabilization (the LSS was turned on part way through the flight), and finally with full stabilization (the LSS was on the entire flight).

Vita Inclinata and Helicopter Express agreed upon a series of maneuvers for the test script, “and the pilot flew those flawlessly, and the LSS performed flawlessly,” said Watkins.

“We had set up maneuvers to show the different types of motion that pilots most encounter, particularly when using long lines,” he continued.

“You’ll have the big spherical motions that are

caused largely by prop wash and movement of the aircraft, and then you have the linear movement — sort of in a direct line side to side — so we had the aircraft essentially flinging the LSS. We were able to shut down that movement.”

Watkins said even with an extreme long line swing, the LSS is able to kill the motion within one-and-a-half swings.

The system that was unveiled at Heli-Expo 2019 will be tested to manage weight up to 5,000 pounds (2,265 kilograms), but CEO Carr said that number could be scaled up to

roughly 20,000 lb. (9,070 kg) by changing the fans on the system to deliver a higher thrust capacity.

Carr told *Vertical 911* that Vita Inclinata is hoping to perform a larger demo with the LSS at Heli-Expo 2020 in Anaheim, California, with a bigger, heavier aircraft.

Right now, the company is working toward getting the LSS to market as quickly and efficiently as possible. “Things are moving very well in that department,” said Watkins. “We’re getting great reactions from potential partners and clients.”



Vita Inclinata used a Bell 407HP operated by Helicopter Express for the first public flight demonstration of the LSS. **John Slemp Photo**



Even with an extreme swing, the LSS is able to kill the motion within one-and-a-half swings. **John Slemp Photo**

RNLI crewmembers provide care to a mock casualty during the UKSAR3D event last year, which explored the integration of UAVs into SAR operations. **RNLI/Nathan Williams Photo**



DRONES LIKELY TO COMPLEMENT, NOT COMPETE WITH MANNED HELICOPTERS FOR SAR

BY GERRARD COWAN

Coastguards are increasingly adopting unmanned aerial vehicles (UAVs) to assist in search-and-rescue (SAR) operations, with drones seen as complementing helicopters in surveillance and other functions.

The subject was the focus of a week-long event last year in South Wales in the U.K., called U.K. SAR in the Third Dimension (UKSAR3D). This saw the country's Maritime and Coastguard Agency (MCA) and the Royal National Lifeboat Institution

(RNLI) — a charity that provides volunteer lifeboat crews — explore the potential of UAVs in SAR work.

Drones could be useful in a number of areas in SAR, particularly in local, tactical situations, said Phil Hanson, aviation technical assurance manager for the MCA. They could provide situational awareness for local search managers and control rooms; act as a radio relay in communications blackspots; enable searches in difficult and hazardous areas; provide nighttime forward looking infrared (FLIR)

search; relay voice messages from rescuers to casualties using onboard speakers; or provide white light scene illumination. All of these aim at boosting the efficiency and effectiveness of the search, while reducing the risk to rescue personnel, he said.

Broadly speaking, the MCA is exploring two operational areas for unmanned aircraft systems (UAS) in SAR: using small drones, rotary- and fixed-wing, in local tactical situations; and the potential of larger drones with persistent capability operating beyond visual line of sight (BVLOS) to

provide support for SAR, pollution monitoring, and vessel traffic management. The MCA is also looking at the potential utility of drones for other government bodies with a maritime interest — in coastal erosion, for example, or in counting seabirds.

There were a number of lessons learned from UKSAR3D, said Hanson. The MCA and RNLI realized that greater levels of autonomy and the ability to pre-process and prioritize imagery must be implemented onto the UAVs to avoid burdening search teams with any additional workload; this would allow the drone to be integrated into the coastal teams as a capability to make search more effective and reduce the risk to SAR personnel. Drone operators must be skilled and current in search techniques, protocols and procedures, and fully integrated into search teams to provide real benefits, he added.

UKSAR3D was an invaluable exercise for the SAR community, said RNLI senior innovation manager Will Roberts, with the organizations learning about the maturity of certain systems and gaining exposure to the UAS industry (and vice versa). One of the key insights was that developing systems intended for SAR without SAR expertise would result in systems and processes that are not fit for the purpose, he said: “Searching a space is very different to hovering and staring.”

As *Vertical 911* went to press, the organizations were planning a 12-month operational evaluation, with a police drone team working alongside the RNLI and the MCA.

Roberts said the use of drones in UAS for the RNLI and MCA would grow incrementally, which would allow the organizations to gradually build the case for or against the

use of the systems. The capabilities of UAS will first be demonstrated through simple use cases, he said: for example, deploying a land-based UAS team to support SAR operations in the littoral and inshore environment. These would be operated by a third party, with the RNLI using the intelligence they generate, he added.

UAS extends the eyes and ears of a SAR vessel, said Ron Tremain, business development executive for the U.S. Coast Guard (USCG) at Insitu, a Boeing company. The UAS producer won a multi-year contract in June 2018 to provide its ScanEagle UAVs to the USCG onboard the National Security Cutter fleet, expanding the work the company has already carried out for the service. They provide “a bird’s-eye view of targets of interest,” he said, as well as enabling aerial surveillance of manned helicopter and boat crews, which can improve the safety of personnel.

UAS are most likely to function as a complementary service to manned helicopters for at least the next 10 to 20 years, Tremain said, rather than replacing them in any significant areas. Instead, they will maximize the capabilities of the helicopter. For example, if the USCG or a similar operator needs to rescue a person injured on a boat, a system like ScanEagle could first survey the scene and gather information on the weather, the condition of the seas, and the physical layout of a vessel; this information could then be provided to the helicopter crew, improving their awareness before they fly out to provide aid.

“Whenever you go out on scene, no matter what communications you have with the ship, things are never as you are told when you get there,” Tremain said.

UAVs could potentially provide persistent search and surveillance over a wide area and at long range more effectively than traditional rotary- or fixed-wing assets, Hanson said. However, “one thing we all agree on is that drones cannot replace helicopters, coastguard rescue teams, or lifeboats.” What they can do is serve as an additional tool in SAR, he said, enhancing the capability offered by traditional winch-equipped helicopters, by assisting with the search element and providing situational awareness to the search coordinator and to assets engaged in the operation. He said that the procedures for manned/unmanned teaming of assets must be addressed to ensure the safe operation of all assets involved in the operation, while it will also be vital to create an ability “to conduct reactive (unplanned) operations without the need to gain special permission to allow time-critical tasks to be conducted.”

Drones could be a more cost-effective solution than helicopters in instances where the tasking is more “speculative,” said Roberts, or where they can help with immediate, small-scale tactical operations like a cliff search or quickly scanning a mudflat. He said that while there are a number of UAS that could feasibly be used now to conduct searches over large areas of land or water, there are a number of barriers, such as through-life costs.

“It’s not just a matter of buying and flying — there is the whole logistical ‘tail’ required to support these platforms, the people who operate them and exploit their data,” he said.

The potential future use of UAS in SAR is comparatively small in relation to the systems’ prospects in areas like line inspection or agriculture, Roberts added. As a sector, the best approach would be to lower the barriers to entry for UAS, he said, so that platforms developed for other applications can be adapted for SAR use cases. For example, UAS producers could be provided with more access to SAR personnel and expertise to inform product development, or to imagery to train object detection networks in the automated detection of people and objects in the water, something that is already being worked on, he said.

“By lowering the barriers to entry, we increase the competitiveness in the sector, in turn driving innovation and over time, cost efficiencies,” Roberts said.

One of the drones trialed by the MCA and RNLI during UKSAR3D. **RNLI/Nathan Williams Photo**



RotorBits

FAA SEES DECLINE

IN REPORTED LASER INCIDENTS

The number of reported incidents in the United States involving lasers aimed at aircraft declined from 6,754 in 2017 to 5,663 last year, according to statistics released by the Federal Aviation Administration (FAA).

That represents a decline of around 23 percent from the 7,398 reported in 2016, when laser incidents reached a peak.

"The FAA and law enforcement agencies are working hard to increase public awareness of the dangers posed by lasers," the agency stated. "Reported incidents of lasers aimed at aircraft have decreased in recent years. However, the substantial number of reported incidents clearly show that laser strikes on aircraft remain a serious threat to aviation safety."

The FAA attributes the high number of reported incidents to several factors, including the widespread availability of inexpensive laser devices, stronger power levels that enable lasers to hit aircraft at higher altitudes, and green lasers, which are more visible to the human eye than red lasers. The FAA's extensive outreach program has also encouraged more pilots to report laser incidents.

The FAA works closely with federal, state and local law enforcement agencies to pursue civil and criminal penalties against individuals who purposely aim a laser at an aircraft.

The agency takes enforcement action against those who violate Federal Aviation Regulations by shining lasers at aircraft, imposing civil penalties of up to \$11,000 per violation. Civil penalties of up to \$30,800 have been imposed by the FAA against individuals for multiple laser incidents.

The FAA's guidance for agency investigators and attorneys stresses that laser violations should *not* be addressed through warning notices or counseling. The agency seeks moderately high civil penalties for inadvertent violations, but maximum penalties for deliberate violations. Violators who are pilots or mechanics face revocation of their FAA certificate, as well as civil penalties.

Some cities and states have laws making it illegal to shine lasers at aircraft and, in many cases, people can face federal charges. Federal, state, and local prosecutors have sentenced laser violators to jail time, community service, probation, and additional financial penalties for court costs and restitution.

The FAA strongly encourages people to report laser incidents, whether they are pilots, air traffic controllers, or members of the public.

ASU INTRODUCES E3 LIGHTWEIGHT NVG

Aviation Specialties Unlimited Inc. (ASU) expects to have its proprietary, lightweight E3 night vision goggles (NVGs) in production by the third quarter of this year, the company announced at HAI Heli-Expo 2019.

"We've received encouraging feedback from pilots who have flown with our E3 prototypes," said ASU president Jim Winkel. "The industry has been asking for a lighter weight solution for night vision goggles for years. We listened and invested. Every gram matters!"

According to Winkel, ASU started by designing the new, lightweight Aeronox mount and battery pack, followed by development of the E3 goggles, which are now in final qualification testing.

"We were able to take more than 200 grams of weight off of the NVG user's flight helmet, while improving functionality and performance," he stated. "Our TSO [technical standard order] application for Aeronox mount and battery was submitted in December 2018. We anticipate submitting our TSO application for E3 during the first half of 2019."

For the last 24 years, ASU has cultivated a global presence selling and servicing NVGs, modifying cockpits, and training pilots and crewmembers. Now, the company will also be a manufacturer.



"Most don't realize that ASU has been conducting imaging and electro-optical research and development for years," said chief technology officer Joseph Estrera. "The introduction of the new E3 affirms that ASU is not solely a value-added reseller but is, in fact, an innovator and now an original equipment manufacturer. The E3 is currently in the final stages of testing and findings to date look promising. We feel confident that this will be a highly demanded goggle."

ASU will continue to sell and service existing NVGs and remains authorized to repair and service L3 and Harris manufactured goggles.

"ASU has a long-standing record of working with the goggle OEMs and will continue to foster those relationships to continue to meet the needs of the industry in the best way possible," said Winkel.

METRO DELIVERS FIRST IFR-CERTIFIED EC145e


Metro Aviation has announced the delivery of the first single/dual-pilot instrument flight rules (IFR)-capable Airbus EC145e to GundersenAIR in Lacrosse, Wisconsin.

"Having IFR capabilities assures that we are providing our crews and our patients with the utmost safety and technology and we are grateful to Metro Aviation for the painstaking and meticulous work they have done to develop the three-axis autopilot for our new EC145e," said Stephanie Hill, program director for GundersenAIR.

The certification, an IFR HeliSAS supplemental type certificate (STC) and technical standard order, marks the first of its kind for the EC145e. With support from Metro Aviation, Genesys AeroSystems and S-TEC established an STC for the aircraft in February 2019. The IFR platform incorporates the latest HeliSAS/electronic flight instrument system (EFIS) technology, including the Genesys AeroSystems IDU-650 EFIS and a three-axis autopilot. For the GundersenAIR program,

this translates to expanded service capabilities in the western Wisconsin region.

"The road to this new technology has not been quick or easy, but we are enthusiastic about expanding the customer base for this aircraft," said Milton Geltz, managing director for Metro Aviation. "Metro placed the first EC145e in service in July 2016, and has successfully operated this airframe as a VFR [visual flight rules] ship since then. We are excited about introducing it in Wisconsin with IFR capabilities."

Beyond the added IFR features, the configuration roster includes Metro Aviation's traditional EMS package, which was installed at the Shreveport, Louisiana-based completion center. Metro Aviation will also operate the aircraft once in service. 

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.

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

Exercise Clockwork provides new helicopter crewmembers with valuable training in whiteout landings in snow. Prior to the deployment, Merlin pilots practice these reduced visibility approaches in simulators; then, once in Norway, instructors will again demonstrate the correct technique before handing things over to their students.

According to 845 Naval Air Squadron pilot Lt Lilley, the procedure starts with a standard approach to a marker, which could be a rock or a group of Royal Marines. "At a point you might lose that reference as you're coming down and the snow cloud starts to build. You just have [to] hold your nerve hoping that the snow cloud will dissipate and you'll regain those references. That's also where the crewman can feed in; they'll have started to get eyes on to the ground and how close we are away from it."



EXERCISE CLOCKWORK

TEXT AND PHOTOS BY LLOYD HORGAN


Every winter, the Royal Navy's Commando Helicopter Force travels around 1,400 miles to Bardufoss, Norway, for training inside the Arctic Circle. This year, we sent photographer Lloyd Horgan behind the scenes with 845 Naval Air Squadron to learn more about this demanding deployment.





845 Naval Air Squadron's training course during Exercise Clockwork starts with basic familiarization flights around the local area to get crews used to working in the cold and mountainous environment. From there, crews gain various qualifications in tasks ranging from snow landings to underslung loads and "trooping" (infilling and exfilling the squadron's main "customer," 3 Commando Brigade). If that weren't hard enough, they then go through the same program under the inky black conditions of the Norwegian winter night.





✚ An 845 Naval Air Squadron Merlin Mk3A lands in the mountains surrounding Bardufoss. "For the pilots and aircrewmen it's a crew mentality, so we try to work the training together as much as possible," explained pilot Lt Lilley. "We fly a set package of sorties working up from snow landings right up through underslung loads, trooping, and mountain flying, and then we do all of that at night, which you know makes it twice as hard."



✚ An 845 Naval Air Squadron Merlin Mk3A with the rotors turning at Bardufoss Air Station prior to departing on a night sortie. Night flying is one of the most demanding elements of the training during Exercise Clockwork. "Working at night, especially when the temperature drops, the extreme cold can put that added pressure on you and make your job that little [bit] more difficult," explained aircrewman Sgt Chamley.



✚ One of the most rewarding tasks that 845 Naval Air Squadron performs during Exercise Clockwork is the resupply of firewood to remote refuge huts in Dividal National Park. With no direct ground path to the huts, the squadron's Merlin Mk3A helicopters are by far the most effective way to transport the logs — about five tonnes of them this year.

"The logging task is a longstanding action that we as Clockwork are able to fulfill, and have been doing so for many years," said Lt Cdr Hampson. "It enables us to give a tiny bit back to the community that has accepted us flying here for the last 50 years — a phenomenally beautiful landscape, capable of delivering the harshest of lessons if we don't get it right. I'm incredibly grateful for the ability to bring the squadron here to train and am very happy to support each and every local task that we can so that we may maintain links into the future."




UTILITY OPERATIONS POWERHOUSE

From the precision of powerline installation & maintenance to agricultural spraying, construction operations & general transport, MDHI helicopters are trusted worldwide for the execution of a wide range of commercial utility operations.

THE FIFTH PILLAR



WATCH **VIDEO**



How PHI has taken its safety management system to the next level by focusing on the human dimension of safety.

BY IAIN HOLMES

PHOTOS COURTESY OF

PHI AIR MEDICAL, LLC

As part of its drive to achieve zero accidents, PHI has added a focus on human factors to its safety management system, extending to both its offshore and air medical operations.

By any measure, 2008 was a tragic year for the U.S. helicopter emergency medical services (HEMS) industry. From December 2007 through October 2008, 35 people lost their lives in 13 helicopter air ambulance accidents — the most ever in an 11-month period. According to calculations by Dr. Ira Blumen of the University of Chicago, the fatality rate for HEMS crewmembers in 2008 was 164 per 100,000 employees, ranking it as the most dangerous job in America that year.

Since then, a concerted industry-wide effort has attempted to improve safety in the sector, with Congress, the Government Accountability Office (GAO), Federal Aviation Administration (FAA), National Transportation Safety Board (NTSB), industry experts, and the media all playing a role in addressing HEMS safety issues. The NTSB held a public hearing on the subject in 2009, which led to them issuing recommendations.

Among other things, the NTSB wanted to see HEMS operators adopt safety management systems, night vision imaging systems, autopilots, scenario-based training, and flight data recording devices. Some of the NTSB's recommendations were incorporated into a final rule issued by the FAA in 2014, while operators have voluntarily adopted others.

Around this time, one company, the offshore and air medical operator PHI, Inc., decided that simply reducing the accident rate wasn't enough; that its goal should be no accidents at all. So, in late 2010, PHI launched a safety initiative called "Destination Zero" that extended to its HEMS operations under PHI Air Medical, LLC.

"Destination Zero was born of a desire to change and strengthen our culture, to have a sense of direction and a platform to direct our energy and aspirations for a more focused, more deliberate approach to safe operations," explained PHI president and chief operating officer Lance Bospflug. "When we launched Destination Zero, our goal was to create a work environment that is accident- and incident-free — a work environment with zero personal injuries, zero flight accidents, and zero preventable occurrences."

Beyond a commitment to continued investment in technology, systems, and processes, the organization set out to make Destination Zero a belief system that changed the culture of the company by fundamentally empowering individual employees.

"With education, ongoing engagement, and unwavering commitment by leadership at every level of PHI, Destination Zero became a movement across the company — with people embracing their responsibility to 'Stand Up, Speak Out and Take Action' as important as any function for which they were responsible," Bospflug said. "Because our workforce and stakeholders are constantly changing, it is a message which needs to be told and retold so that new employees, new partners, and customers understand the passion, the history, the fears, and the expectations that were behind its original intent."

Understanding that a culture of safety needs to be supported by a solid and proven framework, PHI set out to develop a robust safety management system (SMS). Guided by International Civil Aviation Organization (ICAO) and FAA standards, PHI initially developed its SMS using the four standard pillars of safety policy, safety risk management, safety assurance, and safety promotion.

However, as the company evolved its approach to the human element of safety, it came to believe that the traditional SMS required new and additional connection points to ensure the safety and well-being of employees and customers.

"[We] recognized that it is the human factors that most determine the ability to achieve and sustain Zero," Bospflug said. "The



According to PHI's Lance Bospflug, Destination Zero has become a movement across the company — with employees embracing their responsibility to “Stand Up, Speak Out and Take Action” as important as any function for which they are responsible.



more we introduced new initiatives around the human element, the more we recognized that they were obscured in a traditional SMS. We believed to ensure their full effectiveness and longevity, we needed to officially place them where they belong — at the heart of our SMS — in a codified manner.”

Consequently, PHI added a fifth pillar to its SMS, the human dimension of safety, which addresses the mental, social, and psychological well-being of individuals as it relates to one's performance. This pillar now sits at the center of PHI's SMS and influences and connects each of the other four pillars, reflecting how human beings influence each component of a safety management system.

“Within the fifth pillar, we will expand our work on, and support of, Destination Zero, life-saving thinking, life-saving behaviors, and brain-centric hazards and individual and team reliability. Within this new pillar, we will work on important initiatives such as unhealthy fear mitigation, fatigue risk management, the role of positivity on performance and more,” Bospflug said.

“And, the more we explore human boundaries, the more we recognize the need to better understand, manage, and support the mental, social, and physiological aspects of the human dimension,” he continued. “That is at the core of this pillar, one that is not only in compliance with the FAA and other global regulatory bodies, but demonstrates an unwavering commitment by PHI to do what is right and best for each employee.”

PHI announced the addition of this fifth pillar to its SMS in December last year. Bospflug said that initial feedback to the concept has been positive, “yet we are clear that we must continue to demonstrate a program's merit before our informed, intelligent workforce will truly buy in and own it.” He said the company intends to take a sustained, methodical approach to introducing, educating, and reinforcing the elements of the human dimension of safety.

However, Bospflug is optimistic about its long-term potential. “We believe the human element, and the science around it, will

be transformational in how we empower our employees to be and work safe,” he said. “We have only begun to scratch the surface of the human element, and as we continue to invest in the understandings and drivers of the human psyche, we will uncover new and more profound ways to educate, inform, and engage our employees to embrace the safest behaviors and practices.”

What PHI is doing isn't just noteworthy for the aviation and air medical transport communities; it could potentially benefit all companies that rely on humans to perform tasks.

“Regardless of the industry, we all share one thing — people,” Bospflug said. “People are at the heart of our success and our ability to be and work safe. This is true for healthcare, petrochemical, energy, aviation, and many other industries. When it comes to human factors, it doesn't matter what industry it is; people are what define success.”

Despite its current financial difficulties (PHI, Inc. filed for Chapter 11 bankruptcy protection in March 2019 in order to address the upcoming maturity of its unsecured senior notes and strengthen its balance sheet), PHI's commitment to safety and more specifically human factors science will serve them well as they enter the second decade of their journey to Destination Zero.

“Through the human dimension of safety, we are making a bold statement that even in a changing and even challenging economic environment, we will continue to build upon what we have invested the most in over the past decades — the most important element of safety — each of our people,” said Bospflug.

As an industry, we should appreciate PHI for its transparent commitment to zero being not only obtainable, but also the only acceptable number of accidents. 🚑



Iain Holmes | As an aviator and former flight nurse, Iain's interest lies in enhancing patient and medical caregiver experience with crew resource management, human factor science, and just culture framework. Iain has not shied away from being provocative; challenging the status quo with the hope to generate discussion that produces a positive change.

YOUR MISSION **SAVES LIVES**

CLEAR IMAGING IS CRUCIAL

FLIR continues to redefine what's possible with a complete, mission proven line of high definition EO/IR sensor options. Unmatched, multi-spectral HD imaging solutions, with ITAR free options, and world-class service and support.

UltraForce 350-HD



Star SAFIRE 380-HD



Star SAFIRE 380-HDc



The World's *Sixth Sense*®

SPECIAL SEAHAWKS

After 30 years of continuous combat operations, the U.S. Navy HH-60H Seahawk is set to retire.

STORY & PHOTOS BY SKIP ROBINSON





DOWNLOAD THE WALLPAPER!

For 30 years, the U.S. Navy's HH-60H (foreground) has supported American forces in theaters around the world. Its replacement, the MH-60S (background) will continue this tradition for years to come.





Even if you love helicopters, you might not know much about two U.S. Navy helicopter squadrons that go by the names of “Red Wolves” and “Firehawks.” However, if you were a Navy SEAL or other special operator over the last 30 years, one of them might have come to your aid in a faraway place.

The Helicopter Sea Combat Squadron (HSC-84) Red Wolves and HSC-85 Firehawks are U.S. Navy Reserve helicopter squadrons tasked with supporting special operations and combat search-and-rescue (CSAR) missions. Both are direct descendants of two legendary Vietnam-era helicopter squadrons: the Helicopter Attack Squadron (Light) Three or HA(L)-3 “Seawolves,” and Helicopter Combat Support Squadron Seven (HC-7) “Sea Devils.”

Formed in April 1967, HA(L)-3 was equipped with several different Bell UH-1 Huey variants and flew thousands of missions in Southeast Asia’s marshy lowlands and rivers, protecting the boat-equipped naval riverine forces. Many of these missions involved the interdiction and attack of enemy junks, and other

boats carrying weapons and supplies to the Viet Cong and North Vietnamese Army. HA(L)-3 also provided aerial support for SEAL teams and demolition units within the Navy.

The drawdown of combat operations in Vietnam brought an early end for the squadron. HA(L)-3 formally disestablished in March 1972 as the most decorated, combat-tested Navy aviation squadron in history. In the years that followed Vietnam, the Navy realized the need to preserve certain mission capabilities within the Navy Reserve. As a result, the Navy established two specialized light attack helicopter squadrons: the HAL-4 “Red Wolves” on the East Coast in 1976 and the HAL-5 “Bluehawks” on the West Coast in 1977. Both squadrons were equipped with weaponized and hoist-equipped Bell HH-1K Huey helicopters, and specialized in the insertion and extraction of Navy special operation teams and attack support.

The Sea Devils of HC-7 performed CSAR missions in Vietnam, utilizing a myriad of helicopter types including the Sikorsky H-3 Sea King, Kaman H-2 Sea Sprite, Boeing H-46, and even one



An HH-60H from HSC-85 performs a final break with an MH-60S on the eve of the H model's retirement.



The HH-60H spent many years conducting combat operations in desert environments.

“*The self-defense capabilities were really cutting-edge at the time, and the Navy did fairly well to keep the airframe updated.*”



A normal HH-60H crew consists of a pilot, co-pilot, crew chief and gunner, with a combat medic added during combat missions.

Sikorsky H-34. The Sea Devils executed 150 successful combat rescues, earning over 500 combat decorations including the Congressional Medal of Honor for pilot LTjg Clyde Lassen in a daring night rescue flying a UH-2A. Similar to the fate of HAL-3, HC-7 was disestablished in June 1975, transferring combat-tested HH-3A “Big Mother” aircraft to newly formed Navy reserve strike rescue squadron Helicopter Combat Support Squadron Nine (HC-9).

By the 1980s, the HH-1K and HH-3A were both long of tooth and not able to do the longer range, hot-and-high missions the Navy was requiring. Meanwhile, the Navy had been flying the Sikorsky SH-60B Seahawk since 1983, and was very satisfied with its performance.

In the mid-'80s, the U.S. Coast Guard (USCG) began looking for a replacement for its aging Sikorsky HH-3F SAR helicopter, and the Navy for a new long-range special operations and CSAR helicopter to replace its HH-3As. In September 1986, Sikorsky was awarded a contract for an initial five helicopters based on the

SH-60F anti-submarine warfare (ASW) version then in development. Dubbed the “Rescue Hawk,” the HH-60H was then validated as an urgent requirement for personnel recovery, anti-surface warfare (ASUW) and CSAR in support of carrier-based strike operations.

The Navy and USCG decided to procure this long-range SAR helicopter with similar characteristics to keep the overall costs down. The Navy would procure the HH-60H, while the USCG would procure a variant called the HH-60J. The airframes were virtually identical, featuring unique double sliding windows on the left side, a sliding door on the right, and a large internal fuel capacity. The USCG version would carry three external fuel tanks, while the Navy version would carry two, with the left tank mount adapted as a weapons wing.

The HH-60H made its first flight on Aug. 17, 1988, and after a smooth development process, deliveries of 42 aircraft began in 1989. In preparation for receipt of the type, HAL-4 and -5 formally redesignated as Helicopter Combat Support Special squadrons

Four and Five, assuming the dual role of special operations and combat search and rescue. No longer in need of a dedicated CSAR squadron, Navy tasked HC-9 with training up newly minted "HCS" aircrews, before ultimately disestablishing the squadron in 1990.

IMPRESSIVE CAPABILITIES

The HH-60H achieved initial operating capability (IOC) in April 1990 with a standard crew of two pilots, a crew chief, and a gunner. When it entered service, the HH-60H carried various defensive features including a hover infrared suppression system (HIRSS) to minimize the heat signature and lower the threat from enemy heat-seeking missiles. During a major upgrade to the HH-60Hs in 1998, a mount was added to the nose to carry a laser designation capable AAS-44 forward-looking infrared (FLIR) turret. At the same time, the HH-60H was modified to carry AGM-114K/N Hellfire missiles on the left wing using a four station M299 launcher.

The aircraft was initially configured with two window-mounted M-60D machine guns as well as one cabin-configured GAU-16 .50-cal machine gun. Later, the 7.62-mm M-240 replaced the M-60D in the crew-served weapon role, augmented by the 7.62-mm M134 GAU-17/A Minigun.

Aircraft survivability equipment included the ALQ-144 infrared jammer, AVR-2 laser detectors, APR-39 radar detectors, AAR-47 missile launch detectors, and ALE-47 chaff/flare dispensers (AVR-2 detectors were later deleted as laser detection capability was integrated into the APR-39A(V)2 system). Kevlar armor ballistic plates were added to the rear cabin floor to provide small arms

protection, while Kevlar armor was added in the cockpit to protect the pilots.

"One advantage of the HH-60H was its large internal cargo space for gunners and our payload — SEAL teams, etc.," recalled Kit Brown, a previous commanding officer of HSC-85 who has flown multiple versions of the Seahawk in operational, evaluation, combat, and testing situations. "We could keep it that way with the flexibility of two external auxiliary fuel tank stations. With these tanks, the range could be extended to five hours, or either could be removed to save weight.

"The self-defense capabilities were really cutting-edge at the time, and the Navy did fairly well to keep the airframe updated," Brown continued. "The most effective weapon proved to be the GAU-17 .30-cal Miniguns. We found armed engagements with hostile troops to rarely last more than a dozen seconds, and given the limited amount of opportunity to engage, the rate of fire of those guns was paramount and very, very effective. The HH-60H had a robust suite of radios as well, allowing for critical communications with ground units, airborne units, and inter-flight communications."

With the addition of the H model, the U.S. Navy had achieved the ability to protect the aircraft carrier against the ever-expanding enemy small boat and patrol vessel threat when transiting tight waterways and entering ports of call. Missions flown by the HH-60Hs with HS squadrons included not only personnel recovery, CSAR, and ASUW, but also special operations support, vertical replenishment, logistics, personnel transfer, airborne use of force, anti-piracy and more.



HH-60H crews trained continuously for day and night operations in desert environments. Here, an HH-60H performs a dust landing.

"Through the mid-1990s to 2015, the HH-60H was a mainstay with every carrier-based HS squadron," recalled retired Maintenance Master Chief Jimmy Thompson, who served with Helicopter Training Squadron 10 (HS-10), which trained all Navy HH-60H pilots and aircrew from January 1990 until it was disestablished in July 2012.

"Each HS squadron was initially equipped with five SH-60F ASW Seahawks and two HH-60H Seahawks, but as further airframes were delivered to the fleet, in 1995 it was changed to three HH-60H aircraft," Thompson continued. "Anti-surface warfare capabilities greatly increased with the addition of four AGM-114K/N Hellfire missiles attached to the helicopters' left-hand extended wing pylon."

According to Brown, "Unarguably, the HH-60H is a Naval workhorse and over time was modified based on real-world requirements after years of combat support operations. We operated the HH-60H at the extreme ends of the operating margins, routinely flying at max gross weights, but also flying at very high density altitudes, well in excess of 10,000 feet."

COMBAT EXPERIENCE

Not long after obtaining IOC with HCS-4 and HCS-5, HH-60Hs deployed overseas to Saudi Arabia. By late December 1990, they were in place at Tabuk to participate in Operation Desert Shield and, soon after, Desert Storm under the call sign "Spike." Because each unit was still training on the HH-60Hs, they combined forces to form two requested, two-plane detachments.

"Spike" worked closely with Saudi UH-1N SAR flights, with the UH-1Ns performing day visual flight rules (VFR) flights out to 125 miles, and the HH-60Hs ranging out to 210 miles at night using night vision goggles (NVGs). "Spike" Detachment flew 461 sorties and 750 flight hours, and was credited with some searches and a few rescues.

As one of the two squadrons in the U.S. Navy dedicated to Naval Special Warfare support and combat search and rescue, the HCS-5 Firehawks deployed to Iraq for Operation Iraqi Freedom in March 2003. HCS-4 arrived in early April to augment the Firehawks. Both squadrons completed 900 combat air missions and over 1,700 combat flight hours in three years. The majority of their flights in the Iraqi theater supported special operations ground forces missions.

In accordance with the Navy's Helicopter Master Plan, HCS-5 received orders to redeploy home and prepare for disestablishment. The squadron ceased operations in 2006, and disestablished in December of that same year. HCS-4 assumed overall responsibility for the OIF Detachment, redesignating as HSC-84. The squadron would carry on in Iraq for five more years, accomplishing over 6,500 combat flight hours in support of special operations.

As a result of success enjoyed by the Red Wolves, the U.S. Navy decided to reestablish a West Coast special operations squadron. The fleet utility squadron HSC-85 "High Rollers" redesignated as "Firehawks" in June 2011, and exchanged Block 1 MH-60S airframes for the HH-60H. Again, less than four years later, both squadrons were directed to disestablish as a result of sequestration cost-saving efforts. Congressional intervention saved HSC-85, but HSC-84 did not share the same fate. The Red Wolves disestablished in March 2016 as the longest-deployed, most decorated Navy helicopter squadron since Vietnam.

The HH-60H also served others in combat, including the 2515th Navy Air Ambulance Detachment (NAAD). Formed in 2006 as a



Operating in challenging conditions, Navy Seahawks require continuous maintenance.



The cockpit of the HH-60H incorporates technology from all three decades of its operations.



The Navy's aviation maintenance professionals worked diligently to keep HH-60Hs flying in some of the most demanding and austere locations around the world.

An MH-60S drops Navy SEALs in the type of mission it will carry on doing into the future.



“

“There will be plenty to miss not flying the HH-60H, but there is plenty to be excited about with the MH-60S and its long future in the Navy special operations world.”

”



With the retirement of the HH-60H, the MH-60S will continue to provide advanced capabilities and be a true force multiplier for special forces.



mixture of HSC-25 and HS-15 aircraft and personnel, the unit operated several Navy HH-60Hs out of Camp Buehring, Kuwait. Equipped with a litter management system and red cross markings, they performed missions into southern Iraq to provide airborne medical response in support of ground operations.

HCS-5 Firehawks Corpsman Greg Sanderson was already a highly trained Los Angeles Fire Department firefighter flight paramedic when he reported to the squadron in 2003 and subsequently deployed with the HH-60H to Iraq. He told *Vertical 911*, "The HH-60H was showing its age, but was still a very capable workhorse for the Navy and had plenty of endurance. Five-hour flights were normal as it could bag out to about 5,000 pounds of fuel, including the auxiliary tank mounted on the port sponson. I was always impressed with the incredible amount of firepower it could provide for close air support after we dropped off a special operations team. Typical configuration was left window M-240 and right door GAU-17. Using the short-travel pintle on the left, we could also carry Hellfire missiles mounted to the extended pylon. She was truly a gunship!"

Sanderson continued, "Due to the aircraft's long loiter time, we used the HH-60H to provide top cover and close air support to our ground teams after insertions. We were also there to provide medical support and casualty evacuation. There were missions where other aircraft we were working with, such as the MH-53 Pave Low, would need to air refuel off a tanker while Army UH-60s would need to leave to get fuel. We stayed behind to continue covering the action, and [this] made for some very long flights lasting up to five hours in the HH-60H. This was hard on both the mind and body, but was also very satisfying knowing we were there for our guys."

"During night missions we used the FLIR with outstanding success. It worked great for finding the house or facility we were targeting and additionally for catching enemy 'squirters' as they tried to escape our team who were paying them a visit."

Sanderson concluded, "I've worked with Bell 412s, Hueys, and AW139s in the fire department; all great helos. But the HH-60H is a true combat aircraft and extremely robust, and as far as I'm concerned it's the greatest helicopter ever made."

END OF AN ERA

Despite the H model's impressive capabilities, as is the case for all aircraft, the time eventually came for its replacement. At that point, the Navy also wanted to streamline logistics, so the decision was made to replace the HH-60H with the MH-60S, the standard fleet logistics airframe.

Although the aircraft are very similar in appearance, the MH-60S is based on the UH-60L Black Hawk. It provides a number of improvements over the H model to include enhanced survivability, robust avionics and communication systems, and the larger cabin volume and double doors ideal for cargo and passenger transport, enabling troops to embark and disembark quickly for insertion/extraction.



The HH-60H could provide an incredible amount of firepower for close air support, according to its crews.

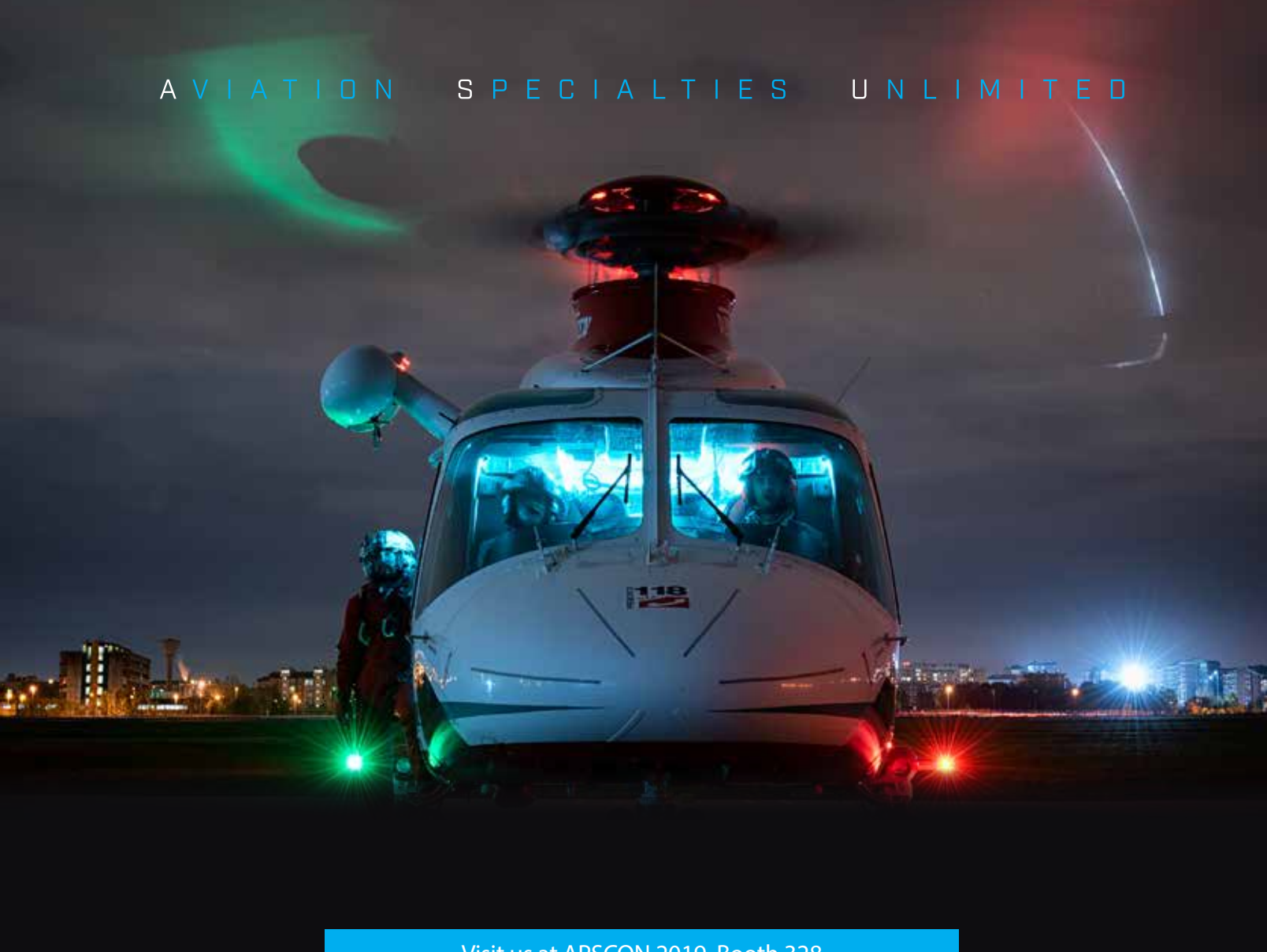


One advantage of the HH-60H was its large internal cargo space for gunners and payload, and the MH-60S also has a large cabin volume.



HH-60 crews used the aircraft's FLIR capabilities with outstanding success.

A V I A T I O N S P E C I A L T I E S U N L I M I T E D



Visit us at APSCON 2019, Booth 328

MISSION TECHNOLOGY EVOLVED.

Our ongoing mission is to enhance night vision technology for your success.

We listen to you, optimizing equipment for usability and effectiveness.

This is ASU.



www.ASU-NVG.com
+1 (208) 426-8117



NEW E3 ANVIS by ASU
Lightweight Goggle

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

The MH-60S also has the ability to increase range with the installation of internal Robertson fuel tanks, making the aircraft flexible in multiple mission areas. Meanwhile, a common glass cockpit with the MH-60R reduces costs and provides the ability for the models to work together exchanging tactical information in a hunter/killer littoral environment.

"The MH-60S has been serving the Navy well since 2002 and is now a proven and understood airframe. With a common glass cockpit design between the new MH-60S and MH-60R, both homeland and overseas support and upgrades would be much easier," Brown explained.

"Having the tail wheel further aft, having the two large sliding doors, and the cavernous cabin like Army UH-60 airframes made the MH-60S a useful transport for the special operations and combat SAR missions. The drawback is if we need to go further some of the cabin space is sacrificed for removable internal fuel tanks. The MH-60 can carry AGM-114 Hellfire missiles, M240 machine guns and will be upgraded to the GAU-17 7.62-mm Miniguns soon."

Brown admitted, "Change is often difficult to embrace, particularly for those of us set in our ways. The transition from the HH-60H to the MH-60S is no different. There will be plenty to miss not flying the HH-60H, but there is plenty to be excited about with the MH-60S and its long future in the Navy special operations world."

Despite the type model change from the HH-60H to the newer MH-60S, at least one thing remains unchanged: the Navy has a

very capable CSAR aircraft that will continue to provide advanced capabilities and be a true force multiplier to special forces.

"I have worked helicopters for nearly 30 years and specifically on the HH-60H for nearly 17 of those," said Thompson. "To watch a piece of history retire brings a tear to my eye, but [I know] the legacy of the HH-60H is not forgotten as the MH-60S continues on carrying out the full spectrum of multiple warfare mission areas."

HSC-85 officially ceased HH-60H operations in March 2019 and the "Hotel" will now fly its last days with training squadron HSC-3 until its official "sundown" ceremony during May 2019. To say it has served its crews and country well is an understatement. After nearly 30 years of continuous combat service, no one can discuss everything that the HH-60H has done for the United States, but rest assured there are thousands of stories.

And its legacy of service is not yet over. While one or two may be saved for display in museums, the majority will transfer to the USCG. There, they will be converted into MH-60T "Tangos" and continue performing the demanding mission of long-range over-water search-and-rescue for the American people. 🚁



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.

Although the HH-60H will be missed, with the transition to the MH-60S, the Navy continues to have a very capable CSAR aircraft that will support special forces for years to come.





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
© 2019 Honeywell International Inc.



TRAGEDY IN **BRUMADINHO**



How helicopters supported the response to the Brumadinho dam disaster in Brazil.

BY ELAN HEAD
PHOTOS BY MITCHELL NAZAR

The collapse occurred just before 12:30 p.m. local time on Friday, Jan. 25. Video of the event shows the earthen tailings dam appear to tremble, then bulge at its base before unleashing an explosion of reddish-brown sludge — toxic byproducts of iron ore mining that swept through the valley below with the force of a tidal wave.

Corpo de Bombeiros Militar de Minas Gerais (CBMMG), the fire agency for the Brazilian state of Minas Gerais, was alerted almost at once. CBMMG immediately dispatched its on-duty Airbus EC145 helicopter, staffed with a pilot and co-pilot, two airborne operations firefighters, and a medical crew consisting of a doctor and a nurse. Within 20 minutes, they were on scene at Brumadinho and searching for survivors.

“We couldn’t see anything besides mud,” recalled one of the firefighters, sub-officer Marcio Gualberto de Faria. “We couldn’t see buildings that were there before — no houses, no fields, no river. The only thing we could see was an ocean of mud.”

The helicopter landed on a soccer field to offload the medical crew and excess equipment to prepare the aircraft for rescue operations. According to de Faria, “While we were doing this, we suddenly saw someone walking in our direction, desperate, screaming, saying he was one of the employees of Vale” — the mining company that owned the dam — “and that there was a cafeteria for the employees that worked for Vale around that area.

The Brumadinho tailings dam collapse on Jan. 25, 2019, unleashed an avalanche of toxic mining waste, enough to fill almost 5,000 Olympic-sized swimming pools. More than 200 people lost their lives in the catastrophe.



CBMMG, the fire agency for the Brazilian state of Minas Gerais, was the first to dispatch helicopters to the site of the catastrophe.

When the dam collapsed, those employees were all having lunch there and the mud had destroyed the whole cafeteria.”

The EC145 lifted and its crew began searching for victims in the area the man had described. “It wasn’t easy to see anything with all that mud; it was a really tough rescue,” de Faria said. Finally, the crew spotted three people alive but half-buried in the sludge, among them a 15-year-old girl named Talita Cristina Oliveira de Souza in desperate need of medical attention.

Because the helicopter was not equipped with a hoist, the pilot hovered close to the surface while de Faria exited the aircraft in an attempt to pull de Souza to safety. “Talita had part of her body buried in the mud, so it was difficult to get her out of there; it was too slippery,” de Faria recalled. “After a lot of work, we were able to take her out and put her inside the helicopter.”

The girl was flown back to the soccer field, where the waiting medical personnel commenced a successful effort to save her life. The helicopter crew returned to the air to search for more victims, but the task would prove daunting. The mud flow had covered an area of 1.5 square miles (3.95 square kilometers) over a distance of five miles (eight kilometers). It had taken out trees, power lines, buildings, and even a bridge, and all of this debris was now mixed up in the same endless reddish-brown sea.

To the hopeful crewmembers, branches surging from the mire appeared at first to be the arms of victims pleading for help. They soon realized, however, that this was only an illusion — the flow of mud left few survivors.

“We spent a lot of time doing low-altitude flying around the area, but unfortunately on that day, we couldn’t rescue any other

victims alive,” de Faria said. “The feeling of going back to that place where we first found Talita and not being able to find anyone else alive, was an awful feeling.” The crew did retrieve one elderly woman who had been saved by rescuers on the ground; along with de Souza, she was flown to Hospital João XXIII in the state capital of Belo Horizonte.

A HISTORIC OPERATION

While the crew of the EC145 was beginning search-and-rescue operations, the CBMMG air operations battalion commander, lieutenant-colonel Alexandre Gomes Rodrigues, alerted the remaining members of the battalion to the unfolding disaster, asking them to report to the battalion’s main base in Belo Horizonte.

“Everybody answered the call! All crewmembers, even those at vacation, [began] to show up at the base willing to help in some way,” Penido recalled. He wasn’t able to join the effort until the second day, but said that around 40 people were soon gathered at the base’s operations room, waiting to be deployed.

An Airbus AS350 B2 AStar helicopter was dispatched to Brumadinho from Belo Horizonte shortly after the first volunteers arrived. There was another AStar at the base — a new from the factory H125 (AS350 B3e) — but it had not yet been officially transferred to CBMMG. Rodrigues contacted Airbus Helicopters’ Brazilian representative, Helibras, and in less than an hour had permission from the manufacturer to use it at the scene.

Two other CBMMG helicopter bases, located in Varginha and Montes Claros, also sent their AStars to Brumadinho. Additional agencies, including the Instituto Estadual de Florestas (IEF, the



state wildlife and environmental agency) began dispatching their helicopters as well.

"The first step was to seek as many resources as possible to support search-and-rescue operations," recalled Rodrigues. "We got aircraft from the state's public forces and from various other institutions in the country."

According to Penido, by the end of the day, there were around seven AStars working the scene alongside the EC145, operating from the same soccer field next to a church where CBMMG had established a hasty command post.

The next day, Rio de Janeiro's state fire agency, CBMERJ, arrived with reinforcements including an H125, a dozen airborne crewmembers, and a fuel truck. Helicopters from the Brazilian military began arriving on the third day, including four EC725s and two AS365s that were used to transport troops to the site of the disaster. By the seventh day after the tragedy, there were 21 helicopters working simultaneously during daylight doing search-and-rescue and troop deployment missions.

"In one week, air traffic in the Córrego do Feijão church was higher than the corresponding three months of operations at Confins International Airport [in Belo Horizonte]," said Rodrigues. "Our main challenge facing so many aircraft simultaneously was to maintain flight safety above all else. The fire department's mission is to always save lives, but flight safety has always been our [first priority]."

CBMMG was well prepared for this type of complex operation, having unfortunately contended with a similar event, the Mariana dam disaster, in 2015. Nineteen

Crews worked for months after the disaster to locate and extract the remains of victims.



Many CBMMG crewmembers who responded to Brumadinho had experience responding to previous tailings dam collapses, but the scale of the tragedy this time around was unprecedented.

people were killed as a result of that dam collapse, which destroyed the village of Bento Rodrigues and is still regarded as the worst environmental disaster in Brazil's history. That dam was partially owned by Vale, the same company that owned the dam in Brumadinho.

According to Penido, drawing on the lessons of the Mariana event, CBMMG prioritized the early establishment of a flight information service on scene. "The third CBMMG helicopter that arrived, besides the regular crew, also brought to the early command post an aeronautical radio transmitter and a experienced tower traffic operator that established a flight circuit and began to provide the necessary information to keep the safety of airspace," he said.

Rodrigues credited both civilian air traffic controllers from Empresa Brasileira de Infraestrutura Aeroportuária (Infraero) and military personnel with providing a "splendid service" in support of the continuing air operations. Meanwhile, CBMMG coordinated all aircraft taskings from its command post.

"Each aircraft was leaving with its previously determined mission, thus facilitating the entire operation. Each crewmember's flight discipline was critical to the success of each mission," Rodrigues said.

UNIMAGINABLE TRAGEDY

While the environmental impact of the Brumadinho dam

disaster may prove to be less than that of Mariana, the human toll has been far worse. Penido said that only six people were rescued alive from the mud. More than 200 people died in the toxic sludge, many of them Vale employees, and as of late March, others were still missing.

As the days went on, helicopter crews shifted their focus from an urgent search-and-rescue response to supporting larger recovery efforts, including moving troops throughout the disaster area and extracting the remains of victims.

"Due to viscosity of the mud at some places, even the shortest path can become pretty tricky and cost several hours of work and energy just to cross it to get to the search areas," Penido told *Vertical 911* in March, as recovery efforts were still ongoing. "When the meteorological conditions do not allow helicopter flight, deploying the troops by truck can take even one hour, while when helicopters are used, it would take only few minutes."

Helicopters have been essential for efficiently transporting search crews across the site of the disaster.



Helicopters operated from a soccer field near to the scene of the disaster. Air traffic controllers were on site to help deconflict traffic.





An aerial view of the site of the dam collapse shows the scale of the tailings material that was unleashed.



Operating in the mining waste unleashed by the dam collapse has been tough on both rescuers and aircraft.

Helicopters have been particularly essential for supporting the K-9 teams that have been searching for bodies, explained Lucas Silva Costa, the officer in charge of CBMMG's K-9 operations.

"The K-9 teams used in the rescue of Brumadinho victims are being transported most of the time by helicopters," he said. "The reason for this is that it would take too long to use roads instead of helicopters to do this transportation and consequently, the K-9s would be tired upon their arrival, resulting in a decrease in their performance in the rescue of the victims."

Helicopters have also allowed the teams to begin their searches in specific locations where the dogs are most likely to discover bodies. "Also, the K-9 team works best in the early morning and late afternoon," Costa added. "So helicopters take them early in the morning to do their first searching, then take them back for some afternoon rest and take them up again in the late afternoon in order to do one last searching for the day."

Weeks after the event, CBMMG crews were still flying long hours in support of activities at Brumadinho, which had become the largest airborne search-and-rescue operation in the history of Brazil.

"The tragedy was of a magnitude that, I believe, no one ever imagined before," Rodrigues said. "I take this opportunity to thank the dedication and commitment of each one who was there — be it civil, military, or volunteer, all without exception — who donated their sweat [to bring] dignity to those relatives who had the lives of their loved ones mowed down by the muddy sea of the Brumadinho dam."

Luana Torres assisted with translation for this story. 🌐

AIRBUS
APPROVED SERVICE CENTER

DYNAMIC COMPONENT

INSPECTION • REPAIR • OVERHAUL

AS350 | AS355 | EC130 | BK117



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

airwork

E sales@airwork.co.nz P +64 9 295 2111

487 Airfield Road, Ardmore, Auckland,
New Zealand

www.airworkgroup.com

MERCY^{IN THE} MIDWEST

Operating two Bell 429s, Mercy One provides lifesaving care to the people of Iowa.

STORY & PHOTOS BY SKIP ROBINSON



Mercy One works with many local fire and police departments in Iowa and the surrounding states.





DOWNLOAD THE WALLPAPER!



The program likes the Bell 429's speed, modern avionics, smoothness, and its cabin size.

“

“The Bell 429 is like flying a very refined car: smooth, quiet, stable, reliable, and well made.”

”

With two bases located in and around Des Moines, Iowa, Mercy One's Bell 429s are a common sight in the skies above the city and outlying areas.

The hospital-based program started in November 1986 under the name Mercy Air Life. It has been an Air Methods program since the beginning, with Air Methods providing pilots and mechanics, and MercyOne Medical Center supplying the medical crews. Mercy Air Life initially flew a twin-engine Bell 222UT, making it the first instrument flight rules (IFR)-capable helicopter emergency medical services (HEMS) program in Iowa.

In late 2002, the program changed its name to Mercy One while continuing to fly the Bell 222UT. The aircraft was fast and had long legs, and the flight crews enjoyed the cabin space and smooth rotor system.

However, after the Bell 429 hit the market in 2009, Mercy One retired the 222 and moved to the 429, becoming the first EMS operator of the type. The 429 sported the newest avionics technology, more fuel-efficient engines, an extremely smooth rotor system, and a large and comfortable cabin for the flight crews. The rear clamshell patient loading doors were also a great feature for the EMS mission.

“I came from U.S. Navy HH-60Hs, an incredibly capable aircraft in its own right [see p.26], but the Bell 429 is like flying a very refined car: smooth, quiet, stable, reliable, and well made,” commented pilot Kit Brown. “It cruises at 140 knots without trouble and has plenty of power for our mission profile. . . . It's a terrific helicopter and although none are perfect, it's a great choice for our program.”



Mercy One operates two Bell 429s. It became the first EMS operator of the type in 2009, and received its second aircraft in 2012.

Mercy One's original base is located at Mercy Medical Center in downtown Des Moines. In November 2010, a second base was opened at Knoxville Iowa Airport using a Bell 407. The 407 was a good machine, but in 2012, with its first Bell 429 proving to be very capable, Air Methods purchased a second 429 in order to standardize the Mercy One fleet.

Iowa has very warm and humid summers, with the potential for thunderstorms and even tornado events. According to Brown, "We don't have high mountains in our area, but the summer temperatures can affect helicopter performance. We are fortunate that the Bell 429 is a strong aircraft and we rarely have an issue with flying at near gross weight. We range out to 150 miles and our fuel load can accommodate that."

Meanwhile, he said, winters in Iowa can be brutally cold. "We fly the helicopter successfully near the operating temperature limits of the helicopter, as we see -20 F [-29 C] in the winter and 105 F [41 C] in the summer. With power to spare, Mercy One's 429s are equipped with air conditioning and robust heat, not for creature comfort but out of necessity for patient care.

"Winter snow storms are a common occurrence in Iowa, and the winter weather can prove to be life-threatening for the crew and patient on scene," he continued. "As we do in the summer, we remain in constant communication on the ground and in the air with our own MercyOne dispatchers, who keep us apprised of impending weather. We always carry extra warm weather gear, cold weather survival equipment, and are prepared if we need to land at an outlying airport."



Mercy One's pilots said they enjoy the 429 and its sophisticated avionics.



The aircraft's large cabin allows the program to easily carry a pediatric isolette and multiple crewmembers.



About 20 percent of Mercy One's flights are to respond to scene calls. The remainder are interfacility transfers.





Current expansion plans have the program adding three more Bell 429s (one of which will serve as a spare) by early next year, at which point it will become the largest operator of the model in the U.S.



Night vision goggles have made EMS operations safer, and Mercy One uses them on a regular basis.

Approximately 20 percent of Mercy One's flights are scene flights, while the remaining 80 percent are interfacility transfers. Because of the extensive ranching and farming activities in the rural areas surrounding Des Moines, Mercy One is commonly tasked with responding to accidents involving people thrown from horses or crushed by livestock. Accidents involving heavy farm equipment are also common, and can result in crush injuries, burns, and amputations. The helicopters may also fly to farms and ranches to respond to heart attacks, strokes, and other time-sensitive medical emergencies.

Motor vehicle accidents are common throughout Mercy One's operating area. During the long days of summer, the program may be called to respond to drowning events or boating accidents on Iowa's lakes and rivers. Mercy One also receives occasional requests from local and state law enforcement agencies for assistance in searching for missing persons that may need medical assistance.

A DEDICATED TEAM

According to Mercy One manager of flight services Dennis Cochran, the program continues to contract with Air Methods for aircraft, pilots, and maintenance services, with eight pilots and four mechanics covering both bases. Meanwhile, 20 flight nurses and seven flight paramedics employed by MercyOne Medical Center constitute the adult transport team, with another eight pediatric and 11 neonatal nurses available for transports of younger patients.

"The Mercy One flight team consists of registered nurses and critical care paramedics experienced in trauma, cardiac, and



The program often responds to scene calls on farms, where injuries can range from heart attacks to machinery accidents.



The clamshell rear doors allow for easy access to the cabin.

critical care,” Cochran explained. “A specialized pediatric transport team was established in 2014 for ground and air transport. We also have a specialized neonatal transport team available for ground and air transport.”

Mercy One also carries sophisticated equipment including an intra-aortic balloon pump and an Impella heart pump. In 2017, blood products were added onboard the helicopters during all transports.

According to flight nurse Mackenzie Udelhoven, “Flying with Mercy One is my biggest personal accomplishment to date. I’m spoiled flying in our Bell 429; the speed and space afforded by the [429] allows us to deliver the ultimate in care to our patients.”

Udelhoven noted that the aircraft’s spacious cabin can accommodate not only the medical crew, patient, and all necessary medical equipment, but also a family member, giving them “the ability to fly along with their loved one during what invariably is one of the worst days of their lives.” Mercy One also sometimes installs an extra seat in the cabin for a third medical professional or a new crewmember undergoing orientation.

“The [429] gives us the ability to have very quick takeoff and shutdown times, which has proven to make the difference in patients’ vitality,” she added.

Flight nurse Shelly Ouverson, who is on Mercy One’s pediatric transport team, also praised the 429’s expansive cabin and fast, smooth profile in cruise flight.

“The Bell 429 has greatly enhanced our capability during pediatric transports as it allows for multiple crewmembers to ride along to assist our young patients,” she said. “When taking care of critically ill children it is imperative to have the ability to move comfortably.

Having extra room may also permit a parent to fly, which is obviously good for both the child and parent. We also like the speed of the 429, which allows us to get to the receiving hospital quickly. Something that is known by people who fly on them, the 429 is smooth! This helps our babies, parents, and us in the back. We can do procedures easier, focus better, and it’s much less fatiguing than a higher vibration aircraft.”

Mercy One has its own dispatch communications center staffed around the clock, employing 14 communications specialists. The dispatchers are trained in the basics of Federal Aviation Administration (FAA) rules and weather criteria, as well as crew resource management. Twice daily, the crews brief with the dispatchers regarding any weather limitations or flight concerns for the day. Working for Mercy One, the aviation dispatchers are focused on the safety of flight operations of the program’s helicopters, and constantly working to ensure expeditious and safe patient transfers.

The dispatchers remain in communication with law enforcement and local hospitals during the flight, relaying any change in patient status. Likewise, Mercy One dispatchers provide medical updates to the MercyOne hospital emergency room and intensive care unit (ICU) staff while en route. If and when a flight must be diverted, the dispatchers are crucial in assisting the pilot with arranging fuel and ground services, as well as coordinating patient care with a ground facility.

ENHANCED CAPABILITIES

Mercy One has been an active IFR program since its inception in 1986 and makes consistent use of the IFR system to meet

A Mercy One Bell 429 lifts off from a local farm. The 429s typically range out up to 150 miles from their bases.



customer demand. Shortly after the program's first Bell 429, N911ED, entered service in 2010, Mercy One took advantage of the aircraft's WAAS localizer performance with vertical guidance (LPV) capability by adding five point-in-space approaches around central Iowa. These non-part 97 procedures allow direct IFR operations to and from the program's flagship hospital in Des Moines, along with three key customer hospitals and one prominent scene location near Interstate 80 in Stuart, Iowa, west of the Des Moines metro area.

The procedures, designed by Hickok and Associates and funded by Bell Helicopter, form the vertices of a low altitude IFR network centered around Des Moines, offering LPV approach minima of 300 feet and $\frac{3}{4}$ mile. Expedited IFR handling by Des Moines TRACON is codified in a letter of agreement and facilitated by an especially strong relationship between program pilots and controllers. Mercy One has averaged over 100 IFR patient transports annually since its IFR network was put in place.

According to Mercy One pilot Joe Wahlig, the 429 offers excellent IFR performance thanks to its highly versatile glass cockpit and dual redundant four-axis automatic flight control system (AFCS). With a 1,000-foot-per-minute cruise climb at 110 knots true airspeed (KTAS), the aircraft wastes no time reaching Mercy One's IFR en route altitudes (typically 4,000 to 7,000 feet mean sea level). Once at altitude, it offers an honest 145 KTAS while burning about 530 pounds (240 kilograms) of fuel per hour.

The vast majority of Mercy One's IFR patient transports are less

than 150 nautical miles in total distance, and with plentiful nearby alternates, part 135 IFR fuel planning requirements can normally be met within the aircraft's 7,000-lb. (3,175-kg) maximum gross weight limitation. However, this weight limit often necessitates tradeoffs. To optimize range versus payload, the program utilizes a system to rapidly reconfigure carry-on medical equipment to meet patient requirements while minimizing cabin loading.

In March 2019, Mercy One's health network announced plans to expand its contract with Air Methods. Under the agreement, Air Methods will provide two Bell 429s to Mercy One health network hospitals in Sioux City and Mason City, Iowa, as well as a fifth Bell 429 to serve as a spare aircraft for the four bases. The expansion is expected to be complete by the first quarter of 2020, at which point the program will be the single largest operator of the 429 in the United States.

To accompany this expansion, Mercy One added two new, proprietary non-part 97 instrument approaches from Hickok and Associates. These will serve two rural hospitals near the Iowa-Missouri border that do not have nearby airports and so would otherwise not permit service to the area in IFR conditions. The surveys have already been completed and are awaiting final approval from the FAA.

For 33 years, Mercy One has provided continuous service to the City of Des Moines, the state of Iowa, and the surrounding areas. With this latest expansion, the program is poised to continue its lifesaving missions for many years to come. 🚁

Mercy One returns to Des Moines with a trauma patient.



WHEN LIVES ARE AT STAKE,

THERE'S NO TIME TO WAIT

AVAILABLE NOW

- The **only** FAA & EASA approved solution for multiple models of the AS350/EC130 series

PROVEN STRENGTH

- The **most** durable, composite material tank, tested to stringent FAA standards to neutralize external threats

QUICK INSTALLATION

- The **easiest** 3-day retrofit, requiring no intrusive structural mods or specialized field service

AS350 / EC130
CRASH-RESISTANT
FUEL TANK



ROBERTSON
FUEL SYSTEMS
A HEICO COMPANY


StandardAero

DUAL IDENTITY



DOWNLOAD THE WALLPAPER!

Atlantic Airways operates two Leonardo AW139 helicopters for passenger transport and search-and-rescue in the Faroe Islands.

Occupying a unique position as both an airline and a rescue service, Atlantic Airways provides not only a vital link to the remote Faroe Islands, but also a lifeline for its inhabitants.

BY JON DUKE // PHOTOS BY LLOYD HORGAN

VERTICAL 911 MAGAZINE // SPRING 2019 ISSUE





David Sand Davidsen, one of the company's rescue swimmers, winches back up to the AW139 during a training exercise.

Just south of the Arctic Circle and almost equidistant between the U.K., Norway and Iceland, the Faroe Islands nevertheless maintains a temperate climate as a result of its position at the end of the Gulf Stream. Although the archipelago of over 700 islands and outcrops is a self-governing country administrated by Denmark, there are more than 250 miles (400 kilometers) of Atlantic Ocean to cross before reaching anything that might be called a mainland.

There are few better examples of the characteristic self-reliance of the Faroese than the fact that they maintain not only their own airline, but also an island-hopping helicopter service and 24-hour search-and-rescue (SAR) and helicopter emergency medical service. It is unusual for small territories to maintain such technically complex and financially burdensome state infrastructure. It is more unusual still that these organizations are all provided by a single company. Self-reliance evidently goes hand in hand with versatility.

Atlantic Airways has operated a domestic airline connecting the Faroes to mainland Europe since 1987, but a national recession kept it from becoming profitable until the mid-1990s. In 1994, SL Helicopters, which had operated a commercial public service with one Bell 212 aircraft, was incorporated into Atlantic Airways. Pilot Hans Erik Jakobsen joined the company in the same year and is now the manager of helicopter operations.



Rescuers are all qualified both as rescue swimmers and hoist operators, with individual roles being decided prior to each shift.

Until this time, SAR cover for the islands had been provided by the Danish coast guard. Operating at long range, this was far from an ideal situation. "During the '90s, we realized that we really needed a SAR helicopter," Jakobsen said. "We started out with one Bell 212, and then in 2000 we gained a Faroes government contract which allowed us to purchase a [Bell] 412, which with four-axis automation was a major advance."

In 2015, a further contract was secured that consolidated the island-hopping service with the SAR service, as Jakobsen explained. "This gave us the necessary economics to purchase two [Leonardo] AW139s with the seven-tonne gross weight kit."

In common with all of Atlantic Airways' other aircraft, these machines were named after significant Faroese citizens. Both helicopters took the names of artists — Sámal Joensen-Mikines and Ruth Smith Nielsen — and are based at Vágur Airport, on the westernmost major island of the same name.

Without a large metropolitan population to finance their upkeep, the two aircraft must deliver maximum utility in the most efficient manner possible, and this means turning their hand to a multitude of tasks. The island-hopping shuttle service provides the majority of trade for the aircraft in their domestic role, but they are also used for survey flying and sling-loading.

FLEXIBLE WORKING

This small but extremely diverse operation demands not only a multi-purpose aircraft but also a multi-purpose crew. Rescuers are all qualified both as rescue swimmers and hoist operators, with individual roles being decided prior to each shift. Three of the company's six rescuers are drawn from its cadre of maintenance personnel, with the other half being from the ground-handling team. David Sand Davidsen joined the company as an engineering apprentice, and was quickly offered a position to train as a rescue swimmer.

"I like a challenge, and have always been interested in helping people, so it seemed like the perfect opportunity," he explained. "And my situation was a little bit special as I got to train as a rescue swimmer while I was still an apprentice."

Having started with the company in September 2013, by November of the same year Davidsen found himself undertaking the additional training to become a rescue swimmer.

"I was in Denmark for three-month periods, twice each year for three years, as well as rescue swimmer school in Norway. There was a lot of school going on and it was a pretty heavy workload with the medical training as well. It was a little more challenging than usual, but I managed!"

Weather in the Faroe Islands is highly changeable. "We can have sunshine here but a few islands to the south or north it might be foggy or very windy," noted Hans Erik Jakobsen.





WATCH **VIDEO**

The island-hopping shuttle service provides the majority of trade for the AW139s in their domestic role, but they are also used for survey flying and sling-loading.







Hans Erik Jakobsen joined the company as a pilot in 1994 and is now the manager of helicopter operations.



Both AW139s are fitted with a dual winch system.



The company's engineer apprenticeship program lasts for approximately four years.

The engineer apprenticeship program lasts for approximately four years. For rescue swimmer training, medical theory alone takes approximately a year, then it's a year of training on the job. "We try to train new rescue swimmers in the aircraft as the best way to learn is to do the job," Davidsen said.

Rescuers who are also technicians will usually conduct maintenance on the helicopters, to get a better understanding of the helicopter and its systems. "Because we don't have a rescue swimmer that is fully licensed on the helicopter at the moment, a fully licensed technician is accompanied with the rescue swimmer for the maintenance of the helicopter," Davidsen said.

Pilots are also expected to be versatile in their role, Jakobsen noted. "On a daily basis we are busy with the island-hopping flights, but of course the SAR and EMS flights fluctuate depending on the season. We could have 10 call-outs in a week or almost nothing for a month," he said. "Around 60 percent of our emergency jobs are EMS, that is the transfer of patients between hospitals. The rest are split equally between rescues from ships — some quite far out at sea — and people injured or in distress in the mountains."

AN AIRCRAFT FOR ALL ENVIRONMENTS

Jakobsen is very happy with the choice of AW139 for such a multi-role environment. In a previous job he was invited to consult on specifications for a SAR helicopter, and identified some features of the Leonardo design as being particularly noteworthy.

"The 139 is a major upgrade from the 412. Having a full glass cockpit and the avionics give us automatic search patterns and an excellent autopilot, which reduces the pilot's workload significantly," he said, adding that the physical properties were just as important. "It has a large, square cabin, dual hoists, and is FLIR [forward looking infrared]-equipped with almost no performance loss.



The full glass cockpit and excellent autopilot in the AW139 enable automatic search patterns, reducing pilot workload significantly.



Rescue swimmer David Sand Davidsen said he relishes the physical nature of his job, which "does get the adrenaline pumping!"



In common with all of Atlantic Airways' other aircraft, both of its AW139s were named after significant Faroese citizens.

"The AW139 is an amazing helicopter. It flies like a fixed-wing in forward flight, and is very stable and easy to fly, even in turbulence, but is versatile enough to do all the tasks that we need it to do here in the Faroe Islands."

The FLIR image can be viewed in the cockpit on the fifth screen, and the SAR interior is easily fitted or removed, a huge benefit for an operation that may require a rapid reconfiguration of the aircraft after a passenger flight. While the company operates two helicopters to maintain its 24/7 SAR commitment as well as its utility and public transport operations, both tasks are fulfilled by a single airframe when one is in maintenance. According to Jakobsen, the aircraft can be reconfigured to SAR role fit within 15 minutes.

"The search-and-rescue operations put some interesting constraints on the company because we have to have the crew numbers to support a 24/7 operation," he said. "Even though our island-hopping role is only six hours per day for four days a week."

If a rescue occurs at night or while the crew are away from the airfield, the Maritime Rescue Coordination Centre (MRCC) will call the captain and "Rescuer 1" — the rescue crewmember who lives farthest from the hangar. These crewmembers will then alert the second rescue crewman and the first officer.

Davidson explained the pre-mission protocol: "We brief on the way, and if anybody feels uncomfortable with the level of risk, we can discuss it as a crew," he said. "Of course, the captain has final responsibility for the aircraft and the crew, but we are a team so decisions are made together."

Those decisions revolve largely around the weather, and the severe hazards that the unpredictable and often violent northern Atlantic climate can inflict on such an exposed land mass. Island weather the



Proven results
millions of dollars saved!

Technician induced damage results in lost time, insurance costs, and brand damage.

Our program can fix this!

For more information on our **Aviation Maintenance Never Events®**
convergentperformance.com/amne

Aviation Maintenance
Never Events®

Eliminate the six most common aviation maintenance errors.



Contact us today:

411@convergentperformance.com
1.719.481.0530



DOWNLOAD THE WALLPAPER!



Snow is lifted into the air from the AW139's rotorwash as the crew bring in another group of skiers on a rare heli-skiing charter.



Three of the company's six rescuers are drawn from its cadre of maintenance personnel, with the other half being from the ground-handling team.



This small but extremely diverse operation demands not only a multi-purpose aircraft but also a flexible and capable crew.

world over depends upon air mass and direction, and on the Faroes it is notoriously changeable, even between islands.

"The challenging thing is the weather," said Jakobsen. "We can have sunshine here but a few islands to the south or north it might be foggy or very windy."

Being able to read the weather and understand what constraints it will impose on the mission is a skill necessary for any aviator, but predicting how those conditions will change demands not only sound meteorological knowledge but also familiarity with the local area. In an island environment particularly, it is all too easy to put one's self in a position from which the weather will make it impossible to escape by the time a rescue has been effected.

Predicting dangerous weather phenomena on the Faroe Islands is even more difficult given the lack of forecasting infrastructure, as Jakobsen explained.

"Until Atlantic Airways bought a weather radar recently, we didn't have one on the Islands," he said. "Now we can see what

the weather is doing moment by moment, and this is a major improvement because the weather is ever-changing here. That is what requires the most experience."

THE CREW'S 'THIRD MEDIC'

With the weather catered for and the rescue under way, the Atlantic Airways aircraft carry all the equipment necessary to locate and recover a casualty in both maritime and onshore environments, as well as being equipped to monitor and stabilize them once on board.

The company's rescue crews were the first customer of Lite Flite's Quick Release Box Mk5, a highly corrosion-resistant method of safely connecting the crewman to the hoist cable, while giving them the capability to detach rapidly should safety or the situation demand it. Pairing with their existing flight harness, it is designed to guarantee safe separation, even under tension of up to 330 pounds (150 kilograms).

Once the casualty is on board, a Physio-Control LifePak 15 monitor

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.

and defibrillator is used to supervise vital signs, and a LUCAS chest compression device is also carried. Cardio-pulmonary resuscitation is a largely mechanical activity that is not only extremely fatiguing but occupies a member of the crew that might otherwise be better utilized.

"The LUCAS machine is like the third medic on board," said Davidsen. "It will automatically do chest compressions, which increases our capacity to complete other essential tasks."

Rescue crews are provided with 120 hours of advanced medical training per year, conducted in six modules.

"We do have different courses that we have to complete to continue flying," Davidsen explained. "We also have a doctor that trains us on pharmacology twice a year. An inspector from Norway will also visit each year to make sure we are up to date with best rescue practices."

"There's a lot of training of course; as well as the rescue swimmer training there is a medical element that is a year of theory, and then a year to build the experience necessary to treat patients on your own."

Simulator training and technical training is done in house under the Atlantic Airways approved training organization.

"Because we only are seven pilots we had some difficulties obtaining reliable simulator slots from established simulator operators," Jakobsen said. "Because most of our pilots previously worked for Gulf Helicopters, we decided to approach Gulf Helicopters with a request for a long-term simulator dry lease, which has been a success for many years now."

Both Jakobsen and Davidsen relish the challenges their roles provide them with, as well as the atmosphere in which they work.

"There is also a lot of variety in the operation, which presents interesting and exciting challenges," said Jakobsen. "I have worked

abroad a lot, but I've never had this level of variety. Here you are able to do a lot of jobs for one organization. From the perspective of a helicopter pilot, this is very desirable."

For Davidsen, it is the physical nature of the job that motivates him. "What I enjoy most about the job is of course helping people and the challenge. It's interesting and it does get the adrenaline pumping!"

THE ART OF SURVIVAL

The mindset necessary to survive on a remote archipelago has ingrained itself in Faroese culture. The success of Atlantic Airways has been due not only to an ability to understand the long-term benefits that aviation can bring to the small nation, but also to the creativity and versatility to make success possible.

The company offers a lifeline, at a very individual level, to those in peril. Beyond that it connects communities through its shuttle service, provides employment in technical jobs, and links the islands to the outside world. No person or piece of equipment has a single purpose. Versatility and resilience are built into the fabric of its operation. Having been safeguarded from financial ruin in its early years by the collective sacrifice of the community it now serves, Atlantic Airways exemplifies the survival spirit that rests in the heart of the Faroe Islands. 🚁

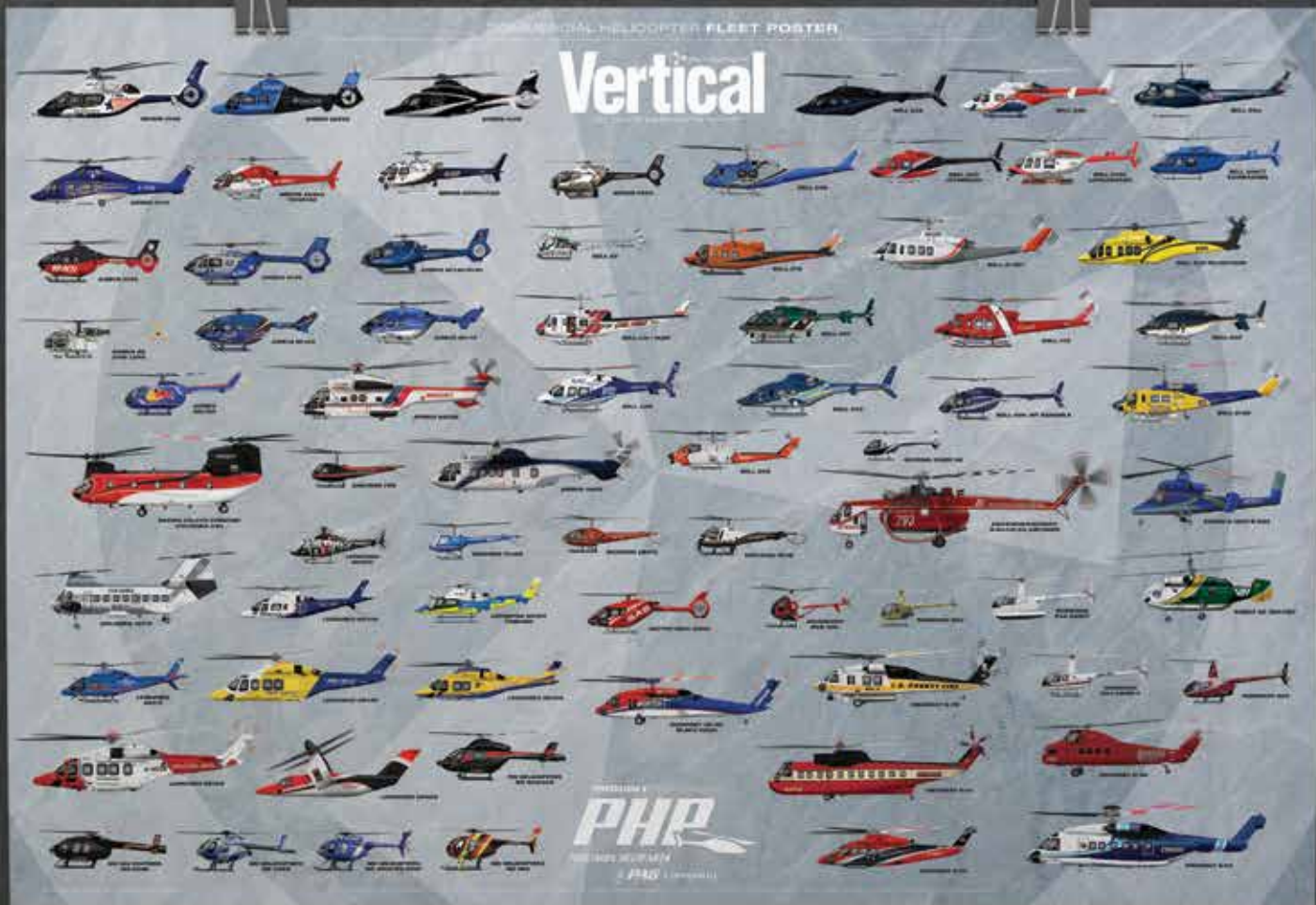


Jon Duke & Lloyd Horgan | Vortex Aeromedia provides specialist media services for the aviation, defense, and aerospace sector. Formed in 2015 by photographer Lloyd Horgan and helicopter pilot Jonathan Duke, Vortex Aeromedia draws on their unique blend of military aviation and media experience to deliver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



A joint training sortie for both the Atlantic Airways and Faroese Coast Guard crews allowed new members of the Coast Guard crew valuable exposure to helicopter operations.





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





CHANGING
THE WAY
YOU MOVE
YOUR HELICOPTER



**WIRELESS
REMOTE CONTROL
LANDING DOLLY**



HELIWAGON

(877) 435-4946 | brad@heliwagon.com | www.heliwagon.com



**Installs in
under 5 minutes
with no modification
to the ship**

TSOP
Tyler Special Operations Platforms

Fast Roping Systems
and Benches for
Line Maintenance & Repair

Since 1964

- H125/AS350
- Bell 407
- OH58
- MD500
- EC145/EC135
- BK117



Tyler Technologies
(818) 989-4420 • www.tylertech.net



YOUR EXPERTS IN HYDRAULICS

Bell 206 // 407 // 212 // 214 // UH-1H
Sikorsky S-76 // S-70 // UH-60
FAA ZS4R711M // EASA 145.6670

COMPLETE OVERHAULS // SEAL CHANGE
EXCHANGE UNITS // COMPONENTS AVAILABLE



(850) 456-8339

paul@hase-fl.com

10102 Aileron Avenue, Pensacola, Fla.

www.hase-fl.com

MRO

PRODUCTS

SERVICES

SALES & LEASING

EMPLOYMENT

I SEE YOU LOOKING!

**MARKETPLACE ADS
DO GET NOTICED!**

TO ADVERTISE, CONTACT CARLA MCKAY
AT CARLA@MHMPUB.COM
OR 1.866.834.1114

Vertical
THE PULSE OF THE HELICOPTER INDUSTRY

KENDRIC PROJECTS

SPECIALIZED AIR MEDIC APPAREL & ACCESSORIES

Kendric Projects specialized air
medic and tactical apparel are
designed at the highest level of
durability and functionality.



Custom-built components to suit every organization's requirements
info@kendricprojects.com | www.kendricprojects.com | 1 888 399 2226



HELICOPTER HANDLER
MANUFACTURED BY MAIN LINE HELICOPTER, LLC

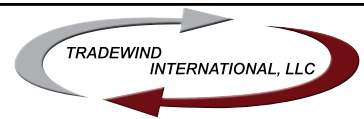
THE BEST WAY TO MOVE SKID TYPE HELICOPTERS



[HEAVY DUTY XL MODEL]

251-928-2771

info@helicopterhandler.com
helicopterhandler.com



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



HELICOPTER GROUND HANDLING

30

YEARS

**STILL A
BETTER IDEA**

ChopperSpotter.com
15124 Business Parkway, Rosemount, MN 55068
1-608-537-2049 | info@chopperspotter.com

ChopperSpotter

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

Vertical **911**

SAR

EMS

FIRE

POLICE

MILITARY

THE **ONLY** HELICOPTER
PUBLICATION DEDICATED
TO THESE FIVE SECTORS

How do you reach **30,000+**
parapublic/military professionals?

With **Vertical911**.

Raising Brand Awareness

+ Generating Leads

+ Increasing Your Sales

= Vertical911

CARLA MCKAY | Marketplace Sales Manager

p: 519-748-1591, ext: 4400

e: carla@mhmpub.com

verticalmag.com

Ergonomic Specialists Providing **S•A•F•E** working environments



**SAFETY FIRST CUSTOM MAINTENANCE
STANDS & HANGAR EQUIPMENT**

702-209-8811 | safestructuredesigns.com



THE PROFESSIONAL AIRCRAFT MOVERS

NOW WITH THREE SPECIALIZED COVERED TRAILERS FIXED & ROTARY WING



CONTACT US TODAY & START SAVING MONEY!


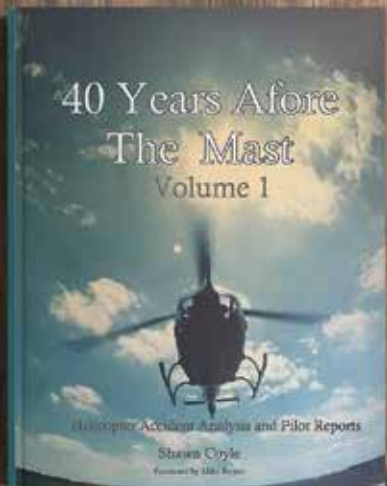
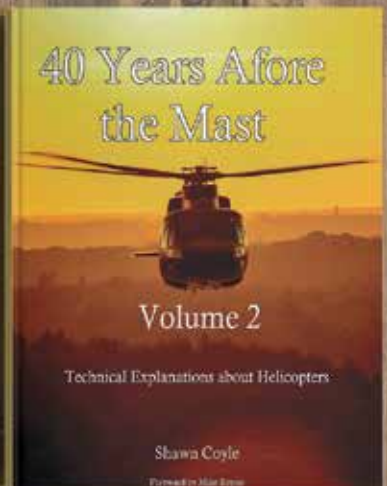
www.calgarygooseneck.com
403.266.2468 | 406.450.0170
doug@calgarygooseneck.com
dodie@calgarygooseneck.com

Driven by our Customers' Success



Calgary Gooseneck

A COLLECTION OF ARTICLES FROM SHAWN COYLE

SHAWN COYLE'S LATEST BOOKS
40 Years Afore the Mast
Volumes 1 & 2 are **NOW AVAILABLE!**

The two volumes cover Shawn Coyle's helicopter career as an operational civil and military pilot, an experimental test pilot and expert witness, as well as articles written for various helicopter magazines:

- Thirteen helicopter accidents analyzed, several not published before.
- Pilot evaluation reports ranging in size from the Dragon-Fly to the Mi-26 in countries from South Africa to Russia, and coverage of several attack helicopters and four Eastern bloc helicopters.

TO PURCHASE, VISIT **EAGLEEYESOLUTIONSLLC.COM** & USE DISCOUNT CODE **VERTICAL**

Final Approach

interviewed by Elan Head



GLEBER PENIDO

PILOT, CORPO DE BOMBEIROS
MILITAR DE MINAS GERAIS

Gleber Penido is one of the pilots with Corpo de Bombeiros Militar de Minas Gerais (CBMMG), the fire agency for the Brazilian state of Minas Gerais, who responded to the Brumadinho dam disaster earlier this year (see p.36). We asked him to tell us more about his agency and the work that he and his colleagues do on a regular basis.

VERTICAL 911: WHAT IS YOUR BACKGROUND IN AVIATION, AND WHAT IS YOUR CURRENT ROLE?

GLEBER PENIDO: I am a helicopter emergency medical services (HEMS) commercial helicopter pilot with 14 years of experience, all of it as a pilot in the state fire department. I have the following licenses under the Brazilian aviation authority (Agência Nacional de Aviação, or ANAC): flight instructor, flight authority examiner, flight safety officer certified, helicopter instrument flight rules, and multi-engine helicopters class.

I became a pilot before the CBMMG Batalhão de Operações Aéreas (air operations battalion) was created. For the last three years, I have been the heading officer of the operational training section and chief flight instructor of CBMMG air operations battalion. This section also is responsible for the minimum standards that all crews must meet to keep on duty.

V911: TELL US MORE ABOUT THE CBMMG'S AIR OPERATIONS BATTALION AND THE TYPE OF WORK YOU DO.

GP: The CBMMG air operations battalion conducts pre-hospital trauma life support operations (medevacs) and inter-hospital transports, including of newborns. We also have helicopters equipped with hoists and cargo hooks for search-and-rescue, and conduct aerial wildland firefighting operations.

The CBMMG Batalhão de Operações Aéreas has a 12-year history of operating in the riskiest environments, and no accidents at all.

V911: WHAT TYPES OF ENVIRONMENTS ARE YOU TYPICALLY OPERATING IN?

GP: We operate in very undesirable environments. The thing is that we operate over 3,000 feet above mean sea level, and the temperatures vary from 25 to 40 C (77 to 104 F), which are very intense temperatures.

Our state is located between the tropics, so we have tropical weather. That means we

have many convective hot air currents, but few horizontal wind currents, so we can't count too much on a headwind component to aid in landing procedures in restricted areas. The other problem is that Minas Gerais state is very hilly, and by the time we go below the tops of the hills that surround restricted landing areas we lose the relative wind component, which requires that we use more power from the engine. The problem about that is that we are always at the maximum takeoff weight.

V911: WHAT WAS IT LIKE FOR YOU BEING INVOLVED IN THE RESPONSE TO THE BRUMADINHO DAM DISASTER?

GP: Unfortunately, I was already a veteran in such disasters. I flew in the response to the last two tailings dam bursts, but none of them were so dramatic or had so many fatalities.

V911: WHAT ARE SOME OTHER MEMORABLE OPERATIONS THAT YOU HAVE BEEN INVOLVED IN?

GP: The 2015 tailing dam collapse in Mariana was the largest environmental disaster in Brazilian history. That one was memorable because several farms got isolated and we had to take food and water to the families while the roads were blocked.

Another personal favorite was a mixture of a HEMS and search-and-rescue operation. We were called up to find a missing person in a wild area, and we found him with a severe brain trauma and broken femur in a 300-foot deep waterfall pit. There was no way to do a human external cargo operation, because the winch was inoperative and we didn't have long-line equipment. So, we got into the pit and hovered over the small lake at the bottom while the medical crew and the other firemen were providing advanced life support.

V911: WHAT ADVICE DO YOU HAVE FOR NEW PILOTS WHO MIGHT WANT A SIMILAR CAREER IN PUBLIC SERVICE?

GP: HEMS pilots have the opportunity to help people in the most unbelievable locations with the most restricted landing areas. In this case, my advice is that the wind can be your friend or your enemy; is up to you to decide what it's going to be. Fly safe and be ready for every emergency possible and you will always come home after a day of work. We only do what we have practiced before, that is our policy. ✚

This interview has been edited for clarity.



ADVANCED INNOVATION SIMPLE SOLUTIONS



Introducing the Mission Equipment Bay for the AS350/H125

A partner should make your life easier, and the easily accessible, organized Mission Equipment Bay (MEB) does just that. No more searching for system components.

Experience the difference a true partner makes and discover why Metro Aviation is the chosen completion center for law enforcement agencies.

MA
METRO AVIATION
metroaviation.com



**GO ABOVE AND
BEYOND FLIGHT**

BELLFLIGHT.COM

