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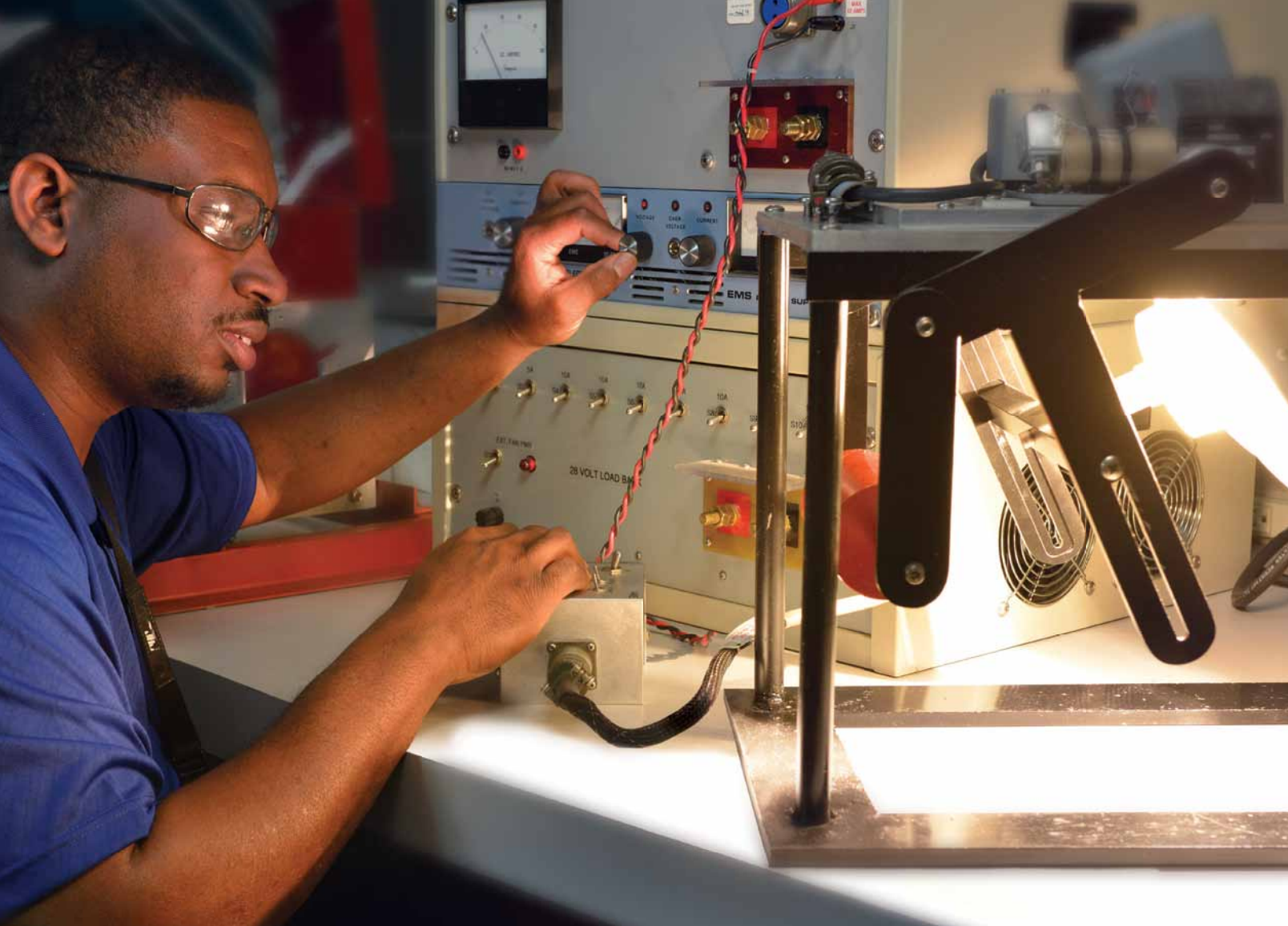
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# cover

**COVER** Children's Healthcare of Atlanta's new Airbus Helicopters EC145e soars near metropolitan Atlanta. Operated by Metro Aviation, the aircraft is the first of its kind in service.

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by Tony Kern



# In the Blink of an Eye

A few years ago, I read a sad story about a tragic auto accident where two normal people lost control of their decision-making at a stop light. The short version is that a retired Marine got angry when a young woman tried to cut in front of him at a stop light out of the “right turn only” lane. They both hit the gas when the light changed and less than 10 seconds later the young woman lost control and hit a tree, killing herself and her four-year-old son. In less than 10 seconds, life went from routine to out of control.

This case study is ideal to introduce the need for a re-evaluation of our approach to human error in the emergency medical services environment, where things change fast and decisions have immediate consequences. Two apparently rational adults at different points of highly successful lives meet at a crossroads. In the blink of an eye, both lose control and flood their bodies with powerful and mind-altering chemicals induced by the stress of the moment. The result of this tragic combination snuffs the life out of a completely innocent victim and devastates two families.

Like all avoidable tragedies, one wishes to be able to turn back the clock, and

provide the tools to recognize, understand, and manage the moment in the time when things began to spiral out of control. We call this moment of truth a *trigger event*. Recognizing and controlling these critical moments in our lives is a vitally important component of safe operations both on and off the job.

In his excellent book, *Preventing Chaos in a Crisis*, author and researcher Patrick Lagadec describes the problem of lack of recognition or preparation for an unexpected event as it unfolds:

*... the event can in some ways be considered an abrupt and brutal audit: at a moment's notice, everything that was left unprepared becomes a complex problem, and every weakness comes rushing to the front.*

Of course, this insight comes too late for the two families in our story, but it's not too late for you and me if we choose to prepare ourselves to manage these critical moments.

## AVOIDING SUDDEN LOSSES OF JUDGMENT

Human error experts from many fields call these type of events *sudden losses*

*of judgment*, and we've learned a few things about them that can help us manage the moment.

First, these events often occur when we have allowed frustrations to build up inside of us. The stresses accumulate over time, waiting for a moment of release. When some small trigger event occurs, we snap into modes of poor decision-making and risky behavior. In the case of our retired Marine, he confessed in court that he'd been cut off at that light before and was just “fed up with it.” What internal frustrations do we have building inside of us? They might be related to work or family, or something we are not even consciously aware of. But when we allow internal frustrations to build, things can turn ugly quickly and without warning.

Secondly, sudden losses of judgment are often precipitated by certain *cognitive biases*, modes of thought common to all of us. One of the most severe is the *need to be right*. Emergency responders work in dynamic and challenging environments that require many life-and-death decisions to be made quickly. Unfortunately, not all of our decisions are correct, but far too often we get defensive when our decisions are challenged, or when things don't go as planned. At this point, our judgment can be severely compromised if we are unable to admit our first decision might have been wrong. We press on to prove our point, and find ourselves in a trigger moment with little in our toolkit to rely on to pull us back from the edge.

A great decision-maker is one who can change her or his mind as a situation evolves. As one wise old-timer once shared with me, “the only *final* decision you ever make is the one that puts you in the grave.”

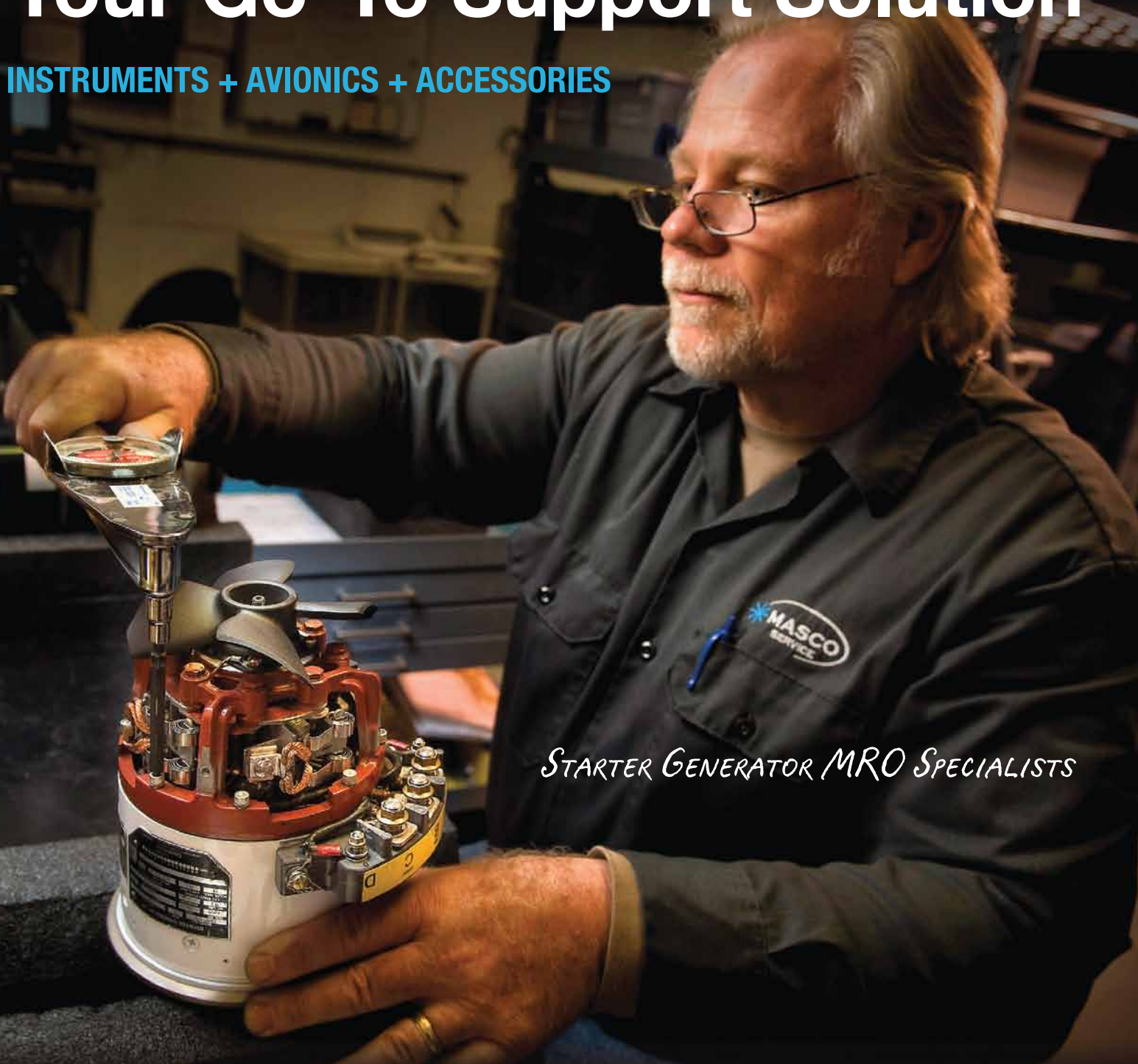
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by Bill Winn



# The View From the Middle

As the safety officer for an air medical provider organization, many people feel that my primary responsibility is to manage the safety of our operations. But it is not. That's not even possible.

I try to emphasize to our flight crewmembers and aircraft maintenance technicians that *they are the only ones who can manage safety*. This is because they are the ones who must directly interact with the risks that can cause an accident. They are the ones who must recognize each hazard encountered during every flight or maintenance operation, and then apply the appropriate controls to eliminate or reduce the risks associated with those hazards.

So I tell our crewmembers and maintenance techs that it is their job to manage safety. My job is to manage the safety *system*.

The development, implementation, oversight, and continuous improvement of an effective safety management system, or SMS, is way beyond the scope of this short article. But the diverse processes and daily activities that comprise management of the safety system are the bedrock for the proper management of the physical safety of every flight, every day.

I don't mean to suggest that a safety officer, or director of safety, has all responsibility for the management of the SMS. He doesn't, and couldn't. This is a responsibility that falls on the shoulders of all of those boys and girls that we typically refer to as "middle management." Middle managers directly supervise, and often

participate in, the activities of a number of people in a particular functional domain of the organization. In the structure common to mid- and large-sized organizations, middle managers are directed by and answer to executives at a higher level of the hierarchy. So they often experience all of the downsides of being a subordinate, combined with all of the downsides of having to tell the people they manage things that they don't want to hear.


Whether they are called managers or supervisors, these people are positioned in a place that naturally empowers them to have a very strong influence on the quality of the actual safety management decisions made every day by pilots, crewmembers, and maintenance technicians. Like the safety officer, they are also managers of safety management.

Depending on the size, structure, and culture of the highest levels of an air medical service organization, middle managers may also find themselves between the proverbial rock and a hard place. As an example, let's suppose that the upper echelons of an organization are more "medical-centric" than aviation-oriented, and include a strong and verbal business analysis department. A few years ago, I reviewed an actual accident investigation report from the National Transportation Safety Board based on just such an organization.

That report made it clear that middle managers responded to pressures from

upper management to increase dwindling transport volumes and passed those pressures on to the flight crewmembers. The report indicated that the pressures placed on crewmembers included the threat of termination if the "numbers" did not improve. The report documented that a normally conservative pilot elected to accept a flight into marginal weather in the middle of the night. That decision resulted in the destruction of the aircraft and the deaths of all on board.

But it doesn't have to be that way. My own program is one of the relatively few air medical providers across the U.S. where the operator's certificate is held by the health care organization and all members of the flight crew and maintenance team are employees of that same company. It is the culture of our parent organization that makes the difference. The lines of communication are truly bi-directional at all levels of the organization, as well as between the various functional domains within any given level. This open and responsive system of two-way learning facilitates an understanding and advocacy of operational safety that extends through all levels of management.

Perhaps no one is unaffected by the economic pressures bearing on nearly all segments of industry in the U.S. today. But with a well-established culture of safety and with middle managers who are trained and prepared to balance the needs of the various domains and hierarchies that make up an air medical service, the decisions made by the people who come in direct contact with the risks inherent to air medical operations will be made on the basis of *safety always*. 

“Middle managers often experience all of the downsides of being a subordinate, combined with all of the downsides of having to tell the people they manage things that they don't want to hear.”

*Bill Winn is the general manager for NEMSPA and the safety officer for Intermountain Life Flight in Salt Lake City, Utah.*

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## Heliport rule interpretation puts Canadian HEMS at risk

Transport Canada's "changing interpretation" of H1 heliport performance requirements has left some helicopter emergency medical services operators unable to land at the hospitals they serve.

**By Oliver Johnson**

Publicly funded air ambulance services in Canada are being put at risk due to the national regulator's "changing interpretation" of H1 heliport performance requirements, according to Helicopter Association of Canada (HAC) president Fred Jones.

The issue came to widespread attention earlier this year after Transport Canada informed EHS LifeFlight in Nova Scotia that it could no longer land its Sikorsky S-76A (operated by Canadian Helicopters) at H1 helipads at the

QEII Health Sciences Centre and IWK Health Centre in Halifax, or at the Digby General Hospital, as the aircraft didn't meet the performance requirements for H1 heliport operation.

This was then followed by a similar decision for B.C. Emergency Health Systems' (BCEHS's) Helijet-operated fleet of S-76C+ aircraft, which meant flights to seven hospital helipads in the province were suspended.

As an interim measure, both organizations were forced to land their aircraft at alternate

sites, and then ferry patients to hospitals by ground ambulance.

On Aug. 26, BCEHS air ambulance flights resumed at four hospital helipads following an exemption order from Transport Canada, which is in place until Jan. 31, 2017. BCEHS said the order would provide Helijet time to work with Transport Canada and Sikorsky to resolve outstanding regulatory requirements.

However, the restriction on Helijet flights to two other hospital helipads — Royal Columbian



Helijet provides emergency medical services (EMS) transport for BCEHS with three Sikorsky S-76C+ aircraft. The fleet was temporarily forced to land at alternative sites near hospitals following a restriction imposed by Transport Canada. **Heath Moffatt Photo**

Hospital and Surrey Memorial Hospital — remains in effect, with Transport Canada having identified additional issues with the size of those two helipads. BCEHS said it is actively working with Fraser Health and Transport Canada to resolve the helipad issues.

“BCEHS will continue to work with Helijet and Transport Canada to fully resolve the outstanding regulatory issues that Transport Canada has identified,” said Linda Lupini, executive vice president of BCEHS, in a statement. “As part of our agreement, we expect Helijet to take the necessary action to fully comply with Transport Canada’s requirements, including any necessary equipment or fleet enhancements.”

The Canadian Aviation Regulations (CARs) define H1 heliports in Standard 325.19(1.a) as being located within an obstacle environment where there is no emergency landing area within 625 meters from the final approach and take-off areas (FATO), and the helicopters using the heliport can be operated at a weight, and in such a manner that, in case of an engine failure at any time during approach or take-off, the helicopters can either land and safely stop on the FATO or touchdown and lift-off (TLOF) area, or safely continue the flight to an appropriate landing area.

But it’s the interpretation of the performance requirements for operating from an H1 heliport that is causing a rift between operators and the regulator. CARs Standard 325.19(2.a) states:

“Helicopters permitted to use an H1 heliport shall be multi-engined and capable of remaining at least 4.5 meters (15 feet) above all obstacles within the approach/departure area in accordance with subsection 325.29(3) when operating in accordance with their aircraft flight manual with one engine inoperative.”

According to the HAC’s Jones, while these regulations have been in place since 2007, it’s only recently that Transport Canada’s interpretation of this section has become an issue.

“The way Transport Canada is currently interpreting the standard, they are applying a CAT A [Category A] requirement, which is a certification requirement for the aircraft,” he said. “But CAT A isn’t called for in [CARs] 325 — it only calls for 15 feet above all obstacles, [which] is not even the CAT A performance requirement. CAT A performance calls for 35 feet above obstacles. What’s more, the aircraft flight operations manuals don’t mention H1 — they only contain CAT A performance charts.”

Jones said CAT A operation also triggers a raft of associated requirements, setting a very high bar for operators.

“It’s a high bar in many ways: a high bar in terms of the helipad infrastructure; the capital cost of CAT A compliant aircraft; and a very burdensome requirement in terms of operational limitations and equipage requirements as well.”

He argued that if Transport Canada had meant to say CAT A in the standards, they should have written them that way, and said operators needed more predictability around the interpretation of the rules as they make large capital investments based on them.

“We believe it’s a problematic and uncertain interpretation and it’s certainly not clear to the industry how it’s supposed to be applied,” he said. “And when I say ‘supposed to be applied,’ I mean based on a reasonable reading of the regulations and standards — because Transport Canada seems to have adopted an interpretation that we believe may be inconsistent with [that].”

The wider impact of Transport Canada’s interpretation would be enormous, on a number of different levels, said Jones — especially due to Canada’s largely publicly funded model of air ambulance service. “More powerful [and] more costly aircraft may put air ambulance service beyond the reach of some of the provincial ministries of health, and probably beyond the reach of small communities that would otherwise have benefitted from EMS service,” he said. “Because once you’ve started getting into those very costly aircraft, it’s difficult for the customer to support those significantly higher purchase and operating costs.”

Ultimately, Jones said the issue was about giving Canadians access to EMS helicopters. “Canadian EMS helicopter operators have a 40-year safety record that is second-to-none,” he said. “We believe strongly that Transport Canada needs to revisit its interpretation of [CARs] 325 in the context of our long-standing safety record in Canada, or the health and safety of Canadians will be negatively impacted by reductions in EMS service availability across the country.”

To help resolve the issue, HAC held a recent meeting with Transport Canada representatives and five operators to discuss the current problems and possible solutions.

“The meeting was productive because Transport Canada started to understand some of the problems the industry is facing with this and they started to understand what’s at stake, which is really getting people to lifesaving facilities and care in a safe and timely way from a serious accident,” said Jones. “So, they gained some appreciation for the dilemma that industry was facing, and we’ve agreed to talk again to discuss a reasonable way forward on this.”

When reached for comment, Transport Canada issued the following statement: “Transport Canada has established a national policy tied to a regulatory standard on heliports that has been in place for a number of years. The department maintains its decision to require the appropriate performance and procedures necessary to comply with the current standards. It is up to the operator to select an aircraft that complies with the requirements for the intended operation. In all cases, the safety of the flight operations, the passengers, and crew remains the top priority, and the department continues to work with affected organizations regarding this matter.”

For now, Jones said the only advice HAC can give its members is to comply with the interpretation that Transport Canada has applied, and to work to identify ways to provide an equivalent level of safety with their existing aircraft.

“We are in the process of obtaining a [legal] interpretation of our own to see if the wording of [the standard] can reasonably support a requirement for full CAT A compliant aircraft,” he said.

And, while the current debate is focused on air ambulance operations, Jones emphasized the issue concerns all general aviation and commercial operations to all H1 helipads.

“Everybody has a vested interest in this,” he said. “We’re trying to work through it on a national level, because even though Canadian Helicopters and Helijet have been at the pointy end of this process, depending on how Transport Canada ultimately interprets the standard, the uncertainty will affect anyone operating multi-engine aircraft to H1 facilities.”



# ACCT set to roll out Critical Care Transport Standards

By **Elan Head**

When the Association of Critical Care Transport (ACCT) was launched in 2010, its founding members had a pretty good idea of what they meant by “critical care transport.” But there was no national definition for the term, because no clear consensus existed in the medical community.

There were best practices and recommendations published by professional societies, such as the American Academy of Pediatrics. And there were voluntary accreditation standards established by organizations such as the Commission on the Accreditation of Medical Transport Systems (CAMTS) and the European Air Medical Institute (EURAMI).

But there are significant variations in these guidelines, allowing for considerable differences in the equipment and capabilities of providers who claim to provide “critical care transport.” Now, ACCT is hoping to introduce some consistency and clarity with the release of its new Critical Care Transport Standards, the culmination of a four-year effort to define exactly what critical care transport is and what it should entail.

“There’s such a variation from state to state, and even within a state, in what people consider critical care,” said Sherry McCool, director of Critical Care Transport for Children’s Mercy Hospital in Kansas City, Missouri. As co-chair of the ACCT Standards Committee, McCool helped lead the effort to consolidate existing guidelines and best practices into a single, comprehensive set of standards. “It was taking all of that [information] together and looking at, how do we create a comprehensive standard?”

As part of that process, the Standards Committee engaged numerous ACCT members and professional organizations to review drafts and provide feedback. Guiding them was an ideal in which “critical care transport extends

a majority of the critical care capabilities of the tertiary receiving facility out to the patient, is initiated at patient contact, and is provided throughout the transport.”

The Version One Standards document that ultimately emerged is about 65 pages in length, and covers the scope of practice and clinical capability of critical care transport providers; minimum medical equipment, technology, and formulary; and minimum vehicle configuration and equipment necessary to support patient care. It also includes documentation standards, quality measures, and other recommended metrics.

While the standards are intended to provide the basis for a consensus understanding of critical care transport, McCool acknowledged that some elements will likely be controversial and stretch goals. “Some of the things we’re aiming for, not all programs are there,” she said.

For example, the standards for critical care transport teams call for at least two medical providers who have documented training and extensive experience in critical care transport medicine, with at least one of those providers being a registered nurse, physician, or physician’s assistant with experience in the provision of critical care in a tertiary critical care unit. According to McCool, the Standards Committee felt strongly that the higher level of qualification was necessary to ensure the full scope of critical care practice and continuity of care between hospitals.

The standards are patient-centric and primarily clinical in nature, and were developed to be independent of transport modality (whether ground ambulance, airplane, or helicopter). However, they do stipulate vehicle requirements that are relevant to patient care, including an adequately sized patient compartment, environmental control system, and sufficient electrical supply.

To minimize the need for refueling with a patient on board, the standards call for vehicles to have adequate range to meet the 95<sup>th</sup> percentile transport profile of the provider’s service area. They also call for helicopter fuel systems to meet the crash resistance standards of Federal Aviation Regulations 27.952 or 29.952.

The standards are intended to serve multiple purposes. “I think the first and most important piece is to give providers a defined path to a defined level of care,” said ACCT member Tom Judge, executive director of LifeFlight of Maine.

By aiming high, rather than bending to the lowest common denominator, the standards will encourage providers to always be “reaching a little bit more,” said McCool. The inclusion of quality metrics is another way of fostering continuous improvement. “Health care everywhere is focused on quality; it’s focused on metrics,” she said. “We have to hold ourselves to standards and quality metrics.”

According to Judge, the standards document can also serve as a resource for educating regulators and requesting agencies on the differences in capabilities between transport providers. In the realm of helicopter emergency medical services, that means distinguishing between critical care transport providers and “medevac” operations.

“For the average person in the U.S., including EMS and health regulators and payors, a helicopter is a helicopter,” said Judge. He noted that existing practices don’t provide higher reimbursement for higher levels of clinical care, despite the significant associated financial investment by true critical care transport providers. “We have to move beyond the idea of a fast, fancy ambulance and focus our efforts on making sure we can always meet undifferentiated patient need,” he said, explaining that ACCT members are making “a focused effort on assuring the continuity of tertiary critical care for every age of patient with every disease process.”

The Critical Care Transport Standards will be announced at this year’s Air Medical Transport Conference, Sept. 26-28 in Charlotte, North Carolina, and formally rolled out at ACCT’s annual meeting, Oct. 12-13 in Dallas, Texas. Despite the effort invested in making the standards as comprehensive as possible, with “Version One,” ACCT is acknowledging that this will always be a dynamic process as medicine changes.

“This will always be a living document,” said Judge. “Further work in quality measures and medical oversight is already underway.”

With its new Critical Care Transport Standards, ACCT hopes to provide clear guidance on what critical care transport is and what it should entail. **Skip Robinson Photo**



# Metro Aviation launches West Michigan Air Care service



WMAC will use an EC145e until deciding on its permanent aircraft configuration. **Metro Aviation Image**

Metro Aviation has welcomed West Michigan Air Care (WMAC) to the Metro family with the delivery of an Airbus Helicopters EC145e and assumption of operations of the Kalamazoo-based air medical program as of Sept. 1.

“West Michigan Air Care has provided quality service since 1993, and we are happy to help them continue their legacy,” said Metro president Mike Stanberry. “They

were among the first 25 programs in the nation to receive the CAMTS [Commission on Accreditation of Medical Transport Services] certification, and we believe WMAC and Metro share a commitment to excellence that will be the foundation for a lasting partnership.”

Until now, WMAC has operated under its own Federal Aviation Regulations part 135 certificate, but contracted with Metro to

allow staff to solely focus on the excellent level of care they’re known for, while also reducing overhead operating costs.

“Metro Aviation has an excellent track record of providing safe, high-quality air transport services and will be an excellent partner for Air Care as we continue the important work of stabilizing and transporting critically ill and injured adults, children and infants from our region,” said Charles Zeller, M.D., WMAC board chair. “We look forward to this new partnership with a great deal of enthusiasm.”

WMAC currently flies an Airbus Helicopters Dauphin, but will utilize the EC145e until making the final decision for its permanent aircraft configuration. WMAC is a cooperative program sponsored by Borgess Medical Center and Bronson Methodist Hospital.

Specializing in inter-hospital transfers, specialty team transports and scene calls, WMAC operates within a 75-mile radius and 200-mile secondary radius of its Kalamazoo base.



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# AMGH, Aviators Air Rescue take delivery of H130 for India operation



From left, Chris Emerson of Airbus Helicopters Inc. presents an H130 model to AMGH CEO Fred Buttrell and Arun Sharma of Aviators Air Rescue while Mike Platt of Lease Corporation International looks on. **Airbus Helicopters Photo**

Leaders of Air Medical Group Holdings (AMGH) and Aviators Air Rescue Ltd. on Aug. 29 accepted delivery of the first of three Airbus Helicopters H130s, which the companies will use to launch the first affordable single-engine helicopter emergency medical services (HEMS) operation in India.

Dallas, Texas-based AMGH, a leading U.S. air medical transport and EMS provider with hundreds of aircraft in operation, has joined forces with Aviators to bring the first economical HEMS to India utilizing Airbus Helicopters aircraft. It is a trailblazing effort for the three companies in the world's seventh-largest country geographically with the second-highest population.

AMGH and Aviators began preparations for the India operation earlier this year

following the release of regulatory guidelines by the Indian Directorate General of Civil Aviation (DGCA). The regulations allow the use of more economical and fuel-efficient single-engine, dual-pilot helicopters for HEMS operations.

The new venture will primarily be run by Aviators management, with technical expertise and standards oversight provided by AMGH.

"This is a bold venture that AMGH and Aviators are undertaking, one that has great potential to save lives in India, and the Airbus Helicopters team is excited to play a role in helping to develop the opportunities there," said Chris Emerson, president of Airbus Helicopters Inc. "Hundreds of helicopters produced by Airbus Helicopters are used daily

to rush critically ill and injured patients to emergency medical care facilities in the U.S. and around the globe. Airbus Helicopters pledges its full support for the long-term success of the AMGH-Aviators enterprise in India."

AMGH-Aviators placed an initial order for three EMS-equipped H130s, which will launch the new Indian operation during the fourth quarter of 2016. Airbus Helicopters Inc. in Grand Prairie, Texas, is completing the aircraft on a tight delivery timeline.

"AMGH and Aviators are delighted that the Airbus Helicopters team responded to the challenge of quickly producing these specially equipped H130 helicopters for service in India," said AMGH CEO Fred Buttrell. "Our company has an outstanding track record of providing safe, high-quality air medical transport services and we will join with Aviators to bring life-saving service to the people of India."

The Airbus Helicopters team will conduct pilot training in Grand Prairie and technician training in Marignane, France. Airbus Helicopters India will provide additional training, service, and support for the aircraft in the country.

The H130s produced for India include dual-pilot flight controls as required by Indian law, as well as specialized emergency medical care equipment. The helicopters were sold and will be equipped by Airbus Helicopters Inc. of Grand Prairie. AMGH and Aviators have options to acquire additional Airbus Helicopters aircraft for their Indian operations.

"Aviators will provide the people of India with emergent, high-quality air medical services that will be affordable and accessible for everyone," said Arun Sharma, managing director of Aviators Air Rescue. "We will provide the high level of service that AMGH is known for in the U.S."

Aviators will offer EMS through state governments, rescue groups, hospitals, clinics, public and private companies, and to individuals through subscriptions. Aviators is soliciting individual and family membership subscriptions.

# Industry groups welcome FAA response to single-engine IFR proposal

The Aircraft Electronics Association (AEA), American Helicopter Society International (AHS), General Aviation Manufacturers Association (GAMA), and Helicopter Association International (HAI) are welcoming the Federal Aviation Administration's (FAA's) acceptance of industry recommendations to propose an alternative acceptable means of compliance for single-engine helicopters to meet instrument flight rules (IFR) certification requirements for Federal Aviation Regulations part 27 rotorcraft.

In his response to an industry white paper submitted in 2015, Lance Gant, manager of the Rotorcraft Directorate, wrote that the FAA "has begun the process of adopting some of the concepts and recommendations of the white paper into a proposed Safety Continuum for Part 27 Systems and Equipment Policy Statement."

Gant noted the proposed policy statement — which the FAA expects to release for public comment by December — will create "classes" of part 27 rotorcraft up to 7,000 pounds (3,175 kilograms) based on factors including weight and passenger capacity.

The recommendations came after 18

months of collaboration among aircraft and avionics manufacturers, operators, and industry safety experts, and was co-signed by senior leadership from AEA, AHS, GAMA, and HAI.

They addressed issues — such as reducing the cost and complexity of certifying single-engine rotorcraft — which the industry views as key to increasing the number of IFR operations and improving safety. One of the longstanding concerns within the industry is that the current means of compliance with Advisory Circular 27-1 is viewed as an impediment to single-engine IFR certification due to requirements that essentially make routine single-engine certification economically impractical in spite of obvious safety benefits.

"We are very encouraged that the FAA not only appears to be supportive of the white paper, but is adopting a much more tenable overall approach to leveraging advances in technology for safety and efficiency," said AHS executive director Mike Hirschberg.

"We are very pleased that the FAA is moving forward to make it easier for general aviation manufacturers to provide IFR capability for

part 27 single-engine rotorcraft," said GAMA president and CEO Pete Bunce.

"This change will better enable equipage of safety-enhancing technology in part 27 rotorcraft, similar to the improvements we are supporting for part 23 airplanes. It will also reduce certification times and costs for rotorcraft operators and manufacturers, and we look forward to seeing these alternate methods of compliance being put into place quickly."

AEA president Paula Derks added, "This is an example where legacy prescriptive regulations were being applied to modern advanced technology resulting in a more restrictive certification environment than was ever intended. We look forward to the proposed modernization being offered in the Safety Continuum."

HAI president and CEO Matt Zuccaro said, "I am sincerely appreciative of the FAA's support of this very important initiative. By recognizing the technological advancements the industry has undergone and the outdated regulatory requirements being applied to single-engine IFR certification, we are now able to move forward with improvement of industry safety and operational efficiency."

Industry associations hope that FAA policy changes will make it easier and more cost-effective to certify single-engine helicopters for IFR operations. **Bell Helicopter Photo**





■ RotorBits

**CAMTS AWARDS FULL ACCREDITATION TO AIR EVAC LIFETEAM**



Air Evac Lifeteam was first accredited by CAMTS in 2008, and has earned continuous reaccreditation ever since.

**Air Evac Lifeteam Photo**

Air Evac Lifeteam has announced it recently earned full accreditation from the Commission on Accreditation of Medical Transport Systems (CAMTS).

CAMTS is composed of nonprofit organizations dedicated to improving the quality and safety of medical transport services. CAMTS-appointed surveyors visited 25 air medical bases within the Air Evac Lifeteam system in June 2016.

Surveyors also spent a week at the company's corporate headquarters in O'Fallon, Missouri. The surveyors look for compliance with accreditation standards. Seth Myers, president of Air Evac Lifeteam, said Air Evac was first accredited by CAMTS in 2008, and has earned continuous reaccreditation ever since.

"Earning this prestigious accreditation is an external validation of Air Evac Lifeteam's commitment to quality and safety," said Myers. "Air Evac is the largest company-wide, CAMTS-accredited program. We have met — and often exceeded — industry-wide standards."

The CAMTS standards include patient care, medical personnel education, medical equipment, and the safety of pilots, maintenance staff, communication centers and management.

"We believe the CAMTS process and accreditation speaks volumes about our quality and safety, and we believe our customers and patients will appreciate the hard work and dedication of each employee to maintain CAMTS accreditation," said Myers.

**United Rotorcraft receives AW169 EMS contract**

United Rotorcraft has received a contract from Specialist Aviation Services Ltd. (SASL) of Gloucestershire, England, for seven Leonardo Helicopters AW169 emergency medical services (EMS) interior kits.

The kits will be manufactured at United Rotorcraft in Englewood, Colorado, and installed at SASL's facility at the Gloucestershire Airport.

The interior kits will include a United Rotorcraft Translating Patient Loading System (TPLS), which allows for a patient to be safely and efficiently loaded into the aircraft. The patient is then positioned longitudinally for flight while still providing adequate clearance at the head end of the patient for an attendant seat.

"The head attendant seat is critical to patient access and lifesaving care. Our ability to provide this capability is unique to our medical interior and a feature that is not available from any other equipment provider," said Frank Graham, senior director of global sales and marketing.

In addition to the patient loading system, United Rotorcraft's standard litter has been upgraded to include rollers, which further



United Rotorcraft's medical interior for the AW169 features its Translating Patient Loading System. **United Rotorcraft Photo**

ease the loading process. Equipment racks are to be installed in the aircraft window wells to maximize storage and provide locations to secure medical support equipment.

Also included in the kit is a free standing equipment rack. The operator can install it at any location in the existing seat track, maximizing flexibility and providing additional configuration options.

"Specialist Aviation Services Ltd. has been a long-time valued customer of United Rotorcraft and we are thrilled at the opportunity to support them with this EMS solution," said Graham. "We plan to make the most of this experience to expand our presence in the AW169 market."

**Hospital Wing takes delivery of second H130**

Hospital Wing, a Memphis, Tennessee-based non-profit air medical transport service, has taken delivery of its second Airbus Helicopters H130, which will augment the service's fleet of seven other Airbus Helicopters aircraft. The H130 acquisition is part of Hospital Wing's strategy to transition its entire fleet to that model helicopter.

Hospital Wing also operates three earlier model H130-series helicopters and three AS350 B3 AStars.

"We're transitioning to the H130 because of the large cabin size and the service record," said John Butora, CEO of Hospital Wing. "The H130 is an excellent aircraft. It has fewer maintenance requirements and has an added safety margin, which is important. This helicopter just works for us."

Hospital Wing serves a consortium of Memphis-area hospitals. It operates from five bases in the mid-south, serving 27 hospitals and provides service to residents in a 200-nautical-mile circle,

including West Tennessee, and parts of Arkansas, Mississippi, Missouri, Alabama, and Kentucky.

Six of the eight helicopters are staffed 24 hours a day, seven days a week. "The Wing" transports an average of 250 patients per month, 35 percent of them trauma-related cases.



Hospital Wing CEO John Butora, left, and director of maintenance Nick King took delivery of Hospital Wing's eighth Airbus helicopter, an H130. **Airbus Helicopters Photo**

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# Waypoint leases AW139 to Ornge

Waypoint Leasing (Ireland) Limited, the largest independent global helicopter leasing company, has announced that it has acquired a pre-owned Leonardo Helicopters AW139 in emergency medical services (EMS) configuration on the open market and placed it on long-term lease to Ornge in support of EMS operations in Ontario, Canada. The aircraft is additional to Waypoint's current AW139 fleet and order book, and will operate out of Ornge's Moosonee, Ontario, base in support of the company's EMS operations in the province.

"Ornge is a valuable customer to Waypoint, and we are excited to support an operator whose mission it is to provide critical care for patients and transport to health care facilities across Ontario," said Ed Washecka, Waypoint's CEO. "Expansion into the Canadian HEMS [helicopter emergency medical services] market further diversifies our customer base and expands our EMS business, which has been a strategic focus since our inception in 2013. Waypoint's ability to provide liquidity, regardless of market cycle, is an increasingly valuable component of the global helicopter services market and Waypoint



Ornge is supplementing its existing fleet with an AW139 leased through Waypoint. **Mike Reyno Photo**

will continue to maintain our ability to support operators' fleet growth by offering tailored lease solutions."

"Our ability to identify and acquire a uniquely well configured pre-owned helicopter so close to Ornge's mission requirements along with detailed input from our highly experienced technical team allowed us to respond to the customer's request with added value in what was a very competitive tender process," said Jarrod

Burton, VP of sales and relationship management, North America.

"After undergoing a fully transparent public procurement process, Waypoint was selected as our leasing partner," said Dr. Andrew McCallum, president and CEO of Ornge. "This additional AW139, operating in Moosonee, will have considerable capacity to serve the people of the James Bay region, resulting in tangible benefits for our patients and their families."

## Life Link III expanding air medical services in Minnesota



Life Link III is adding a seventh base in Brainerd, Minnesota, where it expects to commence operations in mid-2017. **Life Link III Photo**

Life Link III has announced the establishment of a new base of operations in Brainerd, Minnesota, to serve the increasing health care needs of this rapidly growing region.

The new base will provide critically needed additional air medical service to the Brainerd Lakes region, which is currently underserved in relation to call demands. Rapid access to therapeutic intervention

and definitive care improves patients' chances for a better outcome.

Life Link III helicopters serve as flying intensive care units providing critical care pre-hospital services from accident scenes and from one hospital to another.

Edward Eroo, president and CEO of Life Link III, said: "Our nine consortium member-owners recognized the need to provide the very best air medical service possible to the people of this vital, growing and central part of Minnesota. With the support of our board of directors, Life Link III is pleased to be able to enhance air medical transport for residents and visitors in the Brainerd Lakes region. We are committed to always providing the best patient-centered care."

While the company's expansion plans are in the early stages of development, the Brainerd base is expected to operate 24/7

from the Brainerd Lakes Regional Airport starting mid-2017.

"We are looking forward to partnering with many organizations as we move to the area and it will be great to get actively engaged in Brainerd and the surrounding communities," said Eroo.

The Brainerd base will be the seventh joining Life Link's system in Minnesota and Wisconsin.

Through its "One Call" system, Life Link III will continue to work collaboratively with other air medical transport services to dispatch the most appropriate helicopter, whether it is Life Link III's or another service.

"This translates to doing what's best for the patient on every transport," said Eroo.

As one of the largest hospital-based non-profit consortium programs in the United States, Life Link III has a 31-year history of demonstrating its dedication to improving patient care and transport safety.

ASU's 1,000th night vision cockpit modification was completed on a Med-Trans Bell 407GXP at Wysong Enterprises in Tennessee. **ASU Photo**



## ASU completes 1,000<sup>th</sup> FAA-approved NVIS modification

Aviation Specialties Unlimited (ASU) has announced that it recently completed its 1,000<sup>th</sup> Federal Aviation Administration (FAA)-approved night vision cockpit modification. This modification was completed on a Bell 407GXP at Wysong Enterprises Inc. in Blountville, Tennessee, for Med-Trans Air Medical Transport.

"Achieving our 1,000th FAA-certified cockpit modification is a major milestone for Aviation Specialties Unlimited," said ASU director of training and chief pilot Justin Watlington. "In more than 20 years we have modified aircraft all over the world. We could not have reached this milestone without the support of companies like Wysong Enterprises and customers like Med-Trans Corporation."

In 21 years, ASU has modified 47 Bell 206 helicopters and 127 Bell 407s. The Bell 407GXP is the latest upgrade to the best-selling Bell 407 platform, with avionics improvements and added value through enhanced performance, payload capability, and operating economics.

"ASU is like us in many ways. As a small, privately owned company, we take pride in delivering superior customer service," said Wysong Inc. founder and owner Steve Wysong. "We go above and beyond for our customers. We understand operators have a choice and we work hard to make sure that every completion that is done at

Wysong is handled with the utmost care and customer service.

"Likewise, ASU is a company that has provided extraordinary customer service to Wysong. ASU is a great company to work with. They have been a good partner for us and we are happy to be able to continue to work with them. We want to thank ASU for this recognition today [Aug. 3] and congratulations to them on their 1,000th FAA-certified cockpit modification."

Med-Trans Corp. was among the first air medical organizations to have its entire fleet night vision imaging system (NVIS)-compatible.

"We were pleased to learn that our new aircraft was the 1,000th FAA-certified cockpit modification completed by ASU," said Med-Trans Corporation director of maintenance Josh Brannon. "ASU has been a long-standing source for all of our NVG [night vision goggle] needs. Over the years we have had numerous aircraft modified by ASU.

"The experience they have and the support they provide are critical to our operation. We have a diverse fleet of aircraft and ASU has an extensive STC [supplemental type certificate] list. That is why we continue to request that they modify our aircraft. Congratulations to the entire team at ASU for achieving this milestone."

### ■ RotorBits

#### FAA CERTIFIES BELL 407GX SIMULATOR

The Frasca Bell 407 Level 7 flight training device at the Helicopter Flight Training Center (HFTC) is now Federal Aviation Administration (FAA)-certified as a BH407GX with night vision goggle (NVG) capabilities.

The new certification allows the training center to take the cockpit from analog to glass, a change that will occur about once a month for students flying Bell 407GX aircraft.

The cockpit allows for inadvertent instrument meteorological conditions (IIMC) training with eight projector screens providing outstanding visuals, including low, medium, and high illumination NVG training.

"We are looking forward to training pilots flying both the BH407 and BH407GX in our flight training device," said HFTC director Terry Palmer. "It takes just four hours to go from an analog cockpit to a glass cockpit, and we will schedule training so that we can accommodate operators using either airframe."

The flight training device is available to operators for dry lease, which allows operators to use their own instructors and training curriculum. Programs that do not have an instructor can request a referral from the HFTC or take advantage of its "train the trainer" program.



The Helicopter Flight Training Center's Bell 407 FTD is now also certified for Bell 407GX instruction. **Metro Aviation Photo**





# Helicopters respond to historic Louisiana floods

A U.S. Coast Guard crewmember scours flooded areas of Baton Rouge, Louisiana, for people in distress on Aug. 15. **USCG/Petty Officer 1st Class Melissa Leake Photo**



Sandbags are attached to a Louisiana National Guard UH-60 Black Hawk on Aug. 17 as part of the response to record floods in the state. **National Guard/Sgt. 1st Class Glenn Childress Photo**

Historic flooding in Louisiana stranded motorists and forced thousands of people from their homes in mid-August, prompting a massive rescue effort in which helicopters played a key role.

Air units from the Louisiana National Guard, Louisiana State Police, U.S. Coast Guard, and local agencies such as the East Baton Rouge Sheriff's Office conducted hoist rescues, delivered food and water to stranded motorists, and provided aerial surveillance and support during the record-setting floods.

Louisiana Governor John Bel Edwards declared a state of emergency on Aug. 12 due to severe weather, which dumped more than 30 inches (76 centimeters) of rain on parts of Louisiana from Aug. 10-13.

Two days later, the federal government declared a major disaster for four Louisiana parishes — Tangipahoa, St. Helena, East Baton Rouge, and Livingston — with a total of 20 parishes receiving federal declarations by the end of the month.

According to the governor's estimates, more than 20,000 people were rescued by all participating agencies and volunteers since flooding began. The Louisiana National Guard deployed more than 3,800 personnel and nine helicopters over the course of flood response operations.

The U.S. Coast Guard reported that its crews rescued 245 people and assisted more than 3,000 people in distress. Among the Coast Guard assets deployed for rescue efforts were two MH-65 Dolphin helicopter

aircrews from Coast Guard Air Station New Orleans and two MH-60 Jayhawk helicopter aircrews from Coast Guard Aviation Training Center Mobile, Alabama.

In a video interview released by the Coast Guard, Lt. Mike Hennebery, a pilot at Air Station New Orleans, described some of the challenges associated with the search-and-rescue (SAR) operations, many of which took place in conditions of wind, rain, and low clouds.

"This is the first time I've flown inland SAR," he said. "Normally we operate offshore, so flying up in Baton Rouge [there are] additional obstacles that we're not used to flying around every day — downed powerlines; there were some houses on fire; you have to stay above the treeline to stay safe."

He added that with two Coast Guard and five Army National Guard helicopters on scene, interagency coordination "to make sure that we're all staying out of each other's airspace and remaining safe" became critical.

Helicopters, including aircraft from the National Guard and Louisiana State Police Air Support Unit, also flew food and water to motorists stranded along Interstate 12, some of whom were on the highway for more than 24 hours before they could be evacuated.

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■ RotorBits

**STEPHAN/H LAUNCHES  
NEW FLIGHT SUIT LINE**

Canadian flight clothing manufacturer Stephan/H has launched a new line of fire-resistant flight suits.

Announced at HAI Heli-Expo 2016, the line was created with functionality and safety in mind. The flight suits feature fire-resistant and abrasion-resistant stretch inserts at the arms, knees, ankles, back, shoulders, and waist, with a shell composed of approximately 93 percent Nomex, 5 percent Kevlar, and 2 percent P-140. The material will not melt, drip, or burn, and there are no metal components in the gear, so the pilot doesn't have to worry about any type of heat transfer.

According to Stephan/H, its new flight suits offer twice the lifetime of some other flight suits. "We strategically put an abrasion-resistant fabric from Schoeller in high-wear areas in order to increase its durability. This stretch fabric also allows greater movement, which reduces the pilot's fatigue and increases safety," said Carolyne Lemelin, product manager.

The company, founded by a helicopter pilot, created the collection after gaining input from numerous professional helicopter pilots. Stephan/H developed its unique stretch parts after extensive research into movement within the work environment.

"Ergonomic-wise, we incorporated a stretch, so when you sit down it expands, and when you stand up it comes back to a natural position," said Lemelin. "We chose the inserts to minimize point pressure, to ease the work for pilots and to make it safer. It becomes a tool for the helicopter industry."

The fire-resistant flight suits are compliant with industry standards including National Fire Protection Association (NFPA) 2112. They are available in one or two-piece options, with pricing varying depending on suit style and level of customization.

Stephan/H's new fire resistant flight suits are available in one or two-piece options.  
**Stephan/H Photo**



The Martin Jetpack was on display at this year's Airborne Law Enforcement Association Expo in Savannah, Georgia, in July. **Mike Reyno Photo**

# Martin Jetpack makers target first responders

Originally created to fulfill dreams of personal flight, the Martin Jetpack could find its first role serving public safety.

**By Elan Head**

The Martin Jetpack is not, technically, a jetpack. With an empty weight of around 440 pounds (200 kilograms), this one-person aircraft is something that you step into rather than strap on, and it relies for thrust on belt-driven ducted fans, rather than the streams of hot gases that propel the rocket-packs familiar from science fiction movies. But while purists may quibble with the name, the Martin Jetpack offers all of the excitement of flying a jetpack, while also providing notable safety features including structural protection for the pilot and a ballistic parachute. Unlike most jetpack prototypes, it also has a realistic path to market.

To get it there, the investors behind Martin Aircraft Co. are targeting an unexpected audience: first responders and homeland security agencies. Those aren't the customers that the aircraft's inventor, Glenn Martin, had in mind when he began tinkering with his first prototypes in Christchurch, New Zealand, in the 1980s and '90s. As Martin has explained in other interviews, he always intended for his aircraft to serve a recreational market,

delivering on the promise of personal jetpacks in 1960s-era science fiction.

Martin Aircraft's current management maintains that it hasn't abandoned that dream — indeed, the company recently teamed up with sporting equipment manufacturer Oakley and pro golfer Bubba Watson to develop the concept of a Golf Cart Jetpack. In the near term, however, the company's directors see a more promising launch market among police, fire, and other public agencies, which are likely to have the resources as well as the regulatory flexibility necessary to operate a never-before-certified aircraft type.

To court that market, Christchurch-based Martin Aircraft and its U.S. partner, Avwatch Incorporated, brought a Martin Jetpack prototype and simulator to this year's Airborne Law Enforcement Association (ALEA) Expo, July 20-22 in Savannah, Georgia. There, interested attendees received a quick introduction to the aircraft's flight controls — the left hand controls altitude, while the right hand joystick uses intuitive movements to control

pitch, roll, and yaw — then went for a spin in the full-motion simulator with the aid of a virtual-reality headset.

Once in the sim, some potential applications for the Martin Jetpack were immediately apparent. As Michael Read, Martin Aircraft vice president of flight operations, explained, “Our specialty is flying in and around people and buildings.” The Jetpack is a speedy way for first responders to reach the tops of tall buildings, including some ledges that would be inaccessible by helicopter. Without a large-diameter rotor disc to worry about, they can hover directly in front of windows, while the stability built into the aircraft’s fly-by-wire flight control system allows them to free their hands for other tasks — such as placing plastic explosives around a window frame in order to effect entry.

According to Avwatch’s Clay “Jungle” Bernardi, however, these examples are just the tip of the iceberg, as agencies are likely to find new and innovative uses for the aircraft in the field. “We think the use cases will be developed around the technology,” he said.

Martin Aircraft is currently working with New Zealand’s Civil Aviation Authority (CAA) and the U.S. Federal Aviation Administration (FAA) to develop a certification pathway for this unique aircraft type. In May, the CAA awarded Experimental Airworthiness Certificates for two prototype Jetpacks (ZK-JMK and ZK-JML). According to Read, because the aircraft does not fit into existing regulations, the company is aiming to obtain a restricted category type certificate using a blend of Federal Aviation Regulations (e.g. part 27 – normal category rotorcraft), eventually followed by full type certification.

“We’re working very closely with regulators to pave the way for this technology,” Read said. “The big thing for us long-term is to create a new category [for this aircraft or similar].”

In the meantime, the company is also modifying the aircraft to incorporate a 200-horsepower Rotron rotary engine from U.K.-based Gilo Industries Group Ltd., which will replace the two-stroke V4 engine used in previous prototypes. “The rotary engine really makes sense for this aircraft,” said Read, predicting that the high power-to-weight ratio of the Rotron engine — an adaptation of engines now being used in unmanned aerial vehicles — will boost the aircraft’s performance. In 2017, Martin Aircraft is aiming to meet the maximum takeoff weight for the Jetpack of

705 pounds (320 kilograms), giving it a payload of 265 lbs (120 kg). Its range is estimated at 18 to 30 miles (29 to 48 kilometers), with a maximum airspeed of 40 knots and a cruise speed of 31 knots.

The maximum ceiling for the Jetpack is presently established at 3,000 feet above sea level. However, that’s really “a conservative line in the sand,” said Read, noting that further flight testing should expand the Jetpack’s flight envelope. The aircraft’s fly-by-wire flight controls also open the door for remotely piloted applications, making the aircraft an

optionally piloted vehicle. With multiple Jetpacks potentially able to fly in formation via electronic tether, first responders could conceivably use fleets of Jetpacks to evacuate victims in natural disasters and other emergency situations.

The estimated price for the Martin Jetpack is currently around US\$300,000. Although the certification and delivery schedule has slipped from original targets, the company is projecting first deliveries in early 2017. Said Read, “It’s going to be great for the industry and great for society to get this technology out there.”



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# CMC Rescue introduces new certified Helitack AirBag

CMC Rescue has announced availability of its new Helitack AirBag, designed for rapid extraction of a subject by means of a single-point suspension from a helicopter by short-haul or hoist evacuation.

The device is constructed in the U.S. from heavy-duty 1,000-denier Cordura nylon reinforced with a Rhinotek fabric bottom for long life and durability in harsh environments. It features steel D-ring attachment points, and machined aluminum Cobra Buckles for fast and secure loading. It has a load limit of 2,500 pound-forces (11 kilonewtons).

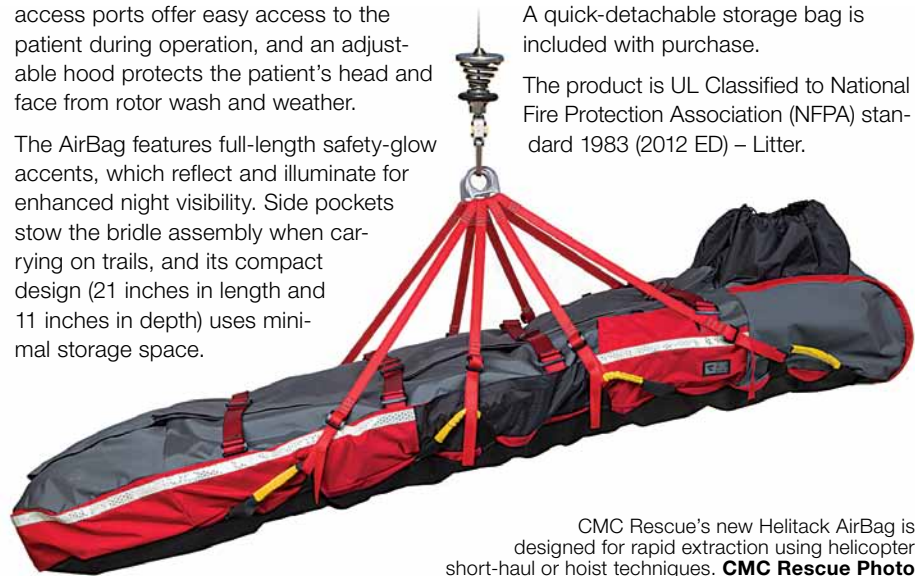
The AirBag is compatible with backboards, litters, or vacuum body splints. High-visibility support handles aid in carrying, positioning, and loading the subject, while internal patient packaging straps are color-coded for ease of use. Bi-lateral patient

access ports offer easy access to the patient during operation, and an adjustable hood protects the patient's head and face from rotor wash and weather.

The AirBag features full-length safety-glow accents, which reflect and illuminate for enhanced night visibility. Side pockets stow the bridle assembly when carrying on trails, and its compact design (21 inches in length and 11 inches in depth) uses minimal storage space.

A quick-detachable storage bag is included with purchase.

The product is UL Classified to National Fire Protection Association (NFPA) standard 1983 (2012 ED) – Litter.



CMC Rescue's new Helitack AirBag is designed for rapid extraction using helicopter short-haul or hoist techniques. **CMC Rescue Photo**

# MD Helicopters partners with Howell Instruments

MD Helicopters, Inc. (MDHI) has announced the selection of Howell Instruments Inc. to engineer a customized engine instrumentation system for use in new production units of its full range of single-engine helicopters. The engine instrumentation system, comprised of a data acquisition unit (DAU), two Aspen display units and a configuration model, will

provide precise data in an easy-to-use all-glass format to enhance both pilot safety and performance.

To support customer requirements, the MD 600N and MD 530F will be the first aircraft to feature the newly developed displays. Designed with a modular architecture to maximize flexibility and increase

functionality, the system will deliver advanced features such as enhanced exceedance monitoring and notification; digitized and prioritized CAS messaging; dual-channel design with full segregation, which ensures no single point of failure for the system; and software certification to DO-178B DALA.

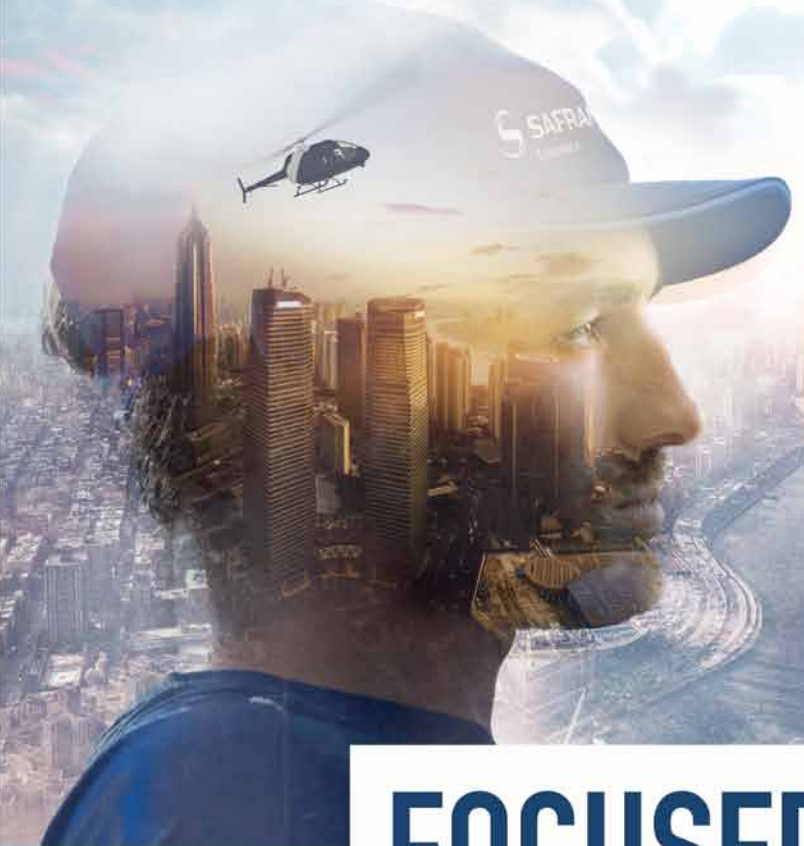
"We are excited about this partnership with Howell Instruments, and the opportunity to deliver advanced technologies and enhanced aircraft performance to MD operators worldwide," said Craig Kitchen, chief commercial officer for MD Helicopters. "Upgrading to the all-glass cockpit will provide a platform baseline for a range of future performance enhancements for our single-engine fleet."

"Howell's relationship with MD Helicopters is a great opportunity to combine our expertise in data acquisition and analysis with an industry leader in vertical aviation," said Bill Milton, VP of business development and team lead for the DAU project. "Our shared customer-centric focus ensures we are providing an innovative product based on customer input to increase operational efficiency."

"Additionally, the capacity for future system expansion promises real potential for the aviation community."



MDHI announced its partnership with Howell Instruments at this year's Airborne Law Enforcement Association Expo in July. **Mike Reyno Photo**



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**EAGLE COPTERS 407HP RECEIVES FAA APPROVAL FOR IBF**



An FAA-certified inlet barrier filter is now available for the Eagle 407HP, a re-engined version of the Bell 407. Sheldon Cohen Photo

Eagle Copters Ltd. has announced that its Eagle 407HP, powered by the Honeywell HTS900 engine, has received United States Federal Aviation Administration (FAA) supplemental type certificate (STC) approval for the company's inlet barrier filter (IBF).

This will allow U.S. operators to tackle various parapublic missions including law enforcement, fire suppression, cone harvesting, aerial seeding, and power and pipeline patrols, as well as operate in sandy conditions.

"This is certainly an important milestone for the maturing Eagle 407HP program," said Stephane Arsenault, vice-president, Sales and Marketing, Eagle Copters Ltd. "Operators have been looking forward to this feature since the inception of the program and by providing this level of engine protection, the Eagle 407HP will continue to expand into both new parapublic and traditional general utility helicopter markets."

Arsenault also added: "The design for the 407HP needed to be all-encompassing for the various inlet configurations that could be received with customers' helicopters. The IBF was optimized for the Honeywell engine installation while accommodating previous inlet modifications. The new inlet barrier filter design exceeds the performance capabilities of prior certified systems with more filter area, multiple flow paths, and a far less complicated bypass system."

The newly certified IBF was developed with consideration for evolving Transport Canada Civil Aviation and FAA certification guidance. A significant strength in this project was assistance from Honeywell in developing the installation and the inlet performance analysis.

All aspects of the IBF installation were investigated and performance verified. The performance charts for the aircraft reflect the verified engine installation losses and reflect the strong performance capability of the Eagle 407HP.

# Airbus recognizes Baltimore County Police Department aviation team

Baltimore County (Maryland) Police Department's aviation team began operations in 1983 with a small Cessna aircraft that it leased for \$1 a year. Today, the elite team responds to some 5,000 calls annually using its fleet of three Airbus Helicopters H125 AStars, the most widely purchased helicopter by U.S. law enforcement agencies.

Airbus Helicopters Inc. recognized the outstanding police aviation unit on July 21 at the Airborne Law Enforcement Association Conference and Expo in Savannah, Georgia. Baltimore County has totaled 15,000 accident-free flight hours in H125 series aircraft since putting its AStars into service in 2007, and has recorded 36,000 accident-free hours since 1983.

The Baltimore County aviation team provides 16 hours of patrol coverage each day with 24-hour on-call availability, participating in a range of airborne police missions, including daily patrol and neighborhood crime fighting.

"Helicopters are crucial to the safety of officers on the ground because they provide situational awareness for command and control, as well as valuable intelligence-gathering capability during critical and

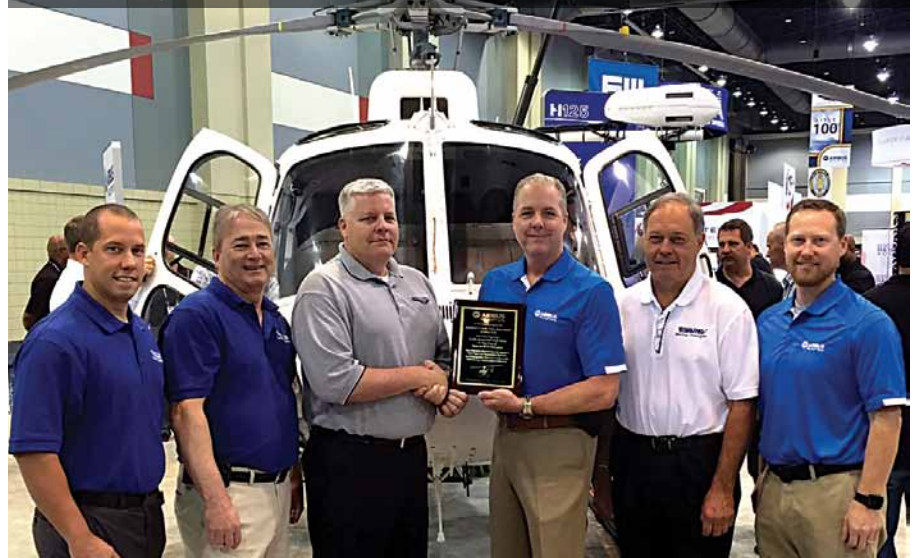
fast-moving incidents such as barricaded or fleeing suspects, missing persons and crimes in progress," said unit commander Sgt. David McVey.

"I attribute our accident-free safety record to the professionalism and commitment to excellence of our sworn police officers and tactical flight officers, quality training, and great maintenance and management support," he added. "Safety is the foundation of all operations and the major consideration in all of our operational decisions."

In addition to in-house training, pilots attend annual recurrency training at Airbus Helicopters Inc., in Grand Prairie, Texas. Sterling Helicopter, in Philadelphia, an Airbus Helicopters service center since 1985, has provided routine and more extensive maintenance for Baltimore County for nearly two decades with its factory-trained technicians.

"Frequent and open communication among our technicians, Baltimore County PD and Airbus Helicopters Inc. is the key to quality service," said Jason Smith, general manager of Sterling Helicopter. "Safety is the driving force behind our work, and we are committed to ensuring safety through comprehensive maintenance."

Airbus Helicopters recognized the Baltimore County Police Department's aviation team for 15,000 accident-free flight hours in its AStar helicopters. Airbus Helicopters Photo





The Afghan Air Force now has 27 armed MD 530F Cayuse Warriors in service. **SSgt Perry Aston Photo**

# MD Helicopters completes delivery of Cayuse Warriors to Afghan Air Force

MD Helicopters, Inc. has announced the delivery of three additional MD 530F Cayuse Warrior light scout attack helicopters to Hamid Karzai International Airport.

With the August delivery, MD Helicopters has fulfilled — in less than 10 months — all requirements of an October 2015 contract awarded by the U.S. Department of the Army Non-Standard Rotary Wing Program Office for 12 additional aircraft.

The total number of armed MD 530F Cayuse Warriors now in service with the Afghan Air Force (AAF) is 27.

“The versatility of this aircraft for attack, scout and escort missions has been proven in theater since the first Cayuse Warriors arrived in Kabul in 2015,” said Lynn Tilton, chief executive officer of MD Helicopters. “Whether as a primary training helicopter or when delivering a critical fast-attack capability to support the Afghan National Army’s ground fight, the MD 530F Cayuse Warrior plays a significant role in the war on terror, and the protection of both U.S. and Allied forces.”

The Afghan Air Force has been operating the MD 530F as a primary rotary-wing training aircraft (PRWT) since 2011. In October 2014, the first 12 MD 530F Cayuse Warrior gunships — featuring two FN Herstal .50 caliber HMP 400 machine gun pods — were ordered to support the 2015 fighting season.



MD Helicopters delivered its final Cayuse Warriors for the Afghan Air Force on Aug. 25. **USAF/Tech. Sgt. Christopher Holmes Photo**

These aircraft were delivered to theater within nine months of the contract award and recorded several successful missions within the first three months. According to MD Helicopters, these gunships continue to perform mission critical exercises and meet or exceed operational expectations.

In January 2016, MD Helicopters announced the contract for an additional 12 Cayuse Warrior helicopters to include an enhanced mission equipment configuration, as well as the retrofit of all previously delivered MD 530Fs. The enhanced mission equipment package (EMEP) features an M260 2.75-inch seven-shot rocket pod, and the Dillon Aero fixed-forward sight system.

The capabilities provided by this new mis-

sion package allow the warfighter to tailor the configuration of the aircraft to better meet mission needs. With the ability to provide both suppressive fire and precision strike of down-range targets, aircrews are able to increase the number of effective rounds on target fired from greater stand-off distances.

This functionality minimizes the potential for collateral damage, improving both the lethality of the aircraft and the safety of the aircrew.

“With the proven 530 airframe at its heart, the Cayuse Warrior delivers to the warfighter unmatched safety, reliability, and a customizable aerial fires capability to meet a full range of mission profiles. As a fast attack asset, there is no better solution than our MD 530F Cayuse Warrior,” said Tilton.



# U.S. Marine Corps to repair 147 CH-53E helicopters

The U.S. Marine Corps (USMC) has begun a full reset of its Sikorsky CH-53E Super Stallion heavy lift helicopters, an effort aimed at significantly increasing the number of operationally fit aircraft and addressing systemic issues, which in recent years drove the platform's readiness level to unsustainable depths.

The issue first came to light following the January 2014 crash of an MH-53E Sea Dragon — the Navy's version of the aircraft — off the coast of Norfolk, Virginia, during a routine training exercise. Three of the five sailors onboard were killed.

The subsequent investigation determined that electrical wires inside the aircraft had chafed against and breached a fuel line, sparking a fire that flooded the cabin and cockpit with thick smoke. The crash prompted an inspection of all CH/MH-53s for signs of chafing between cabin fuel tubes and electrical wiring.

"What was discovered was that the material condition of the aircraft, both the CH-53E and the MH-53E, was degraded," said Col. Hank Vanderborght, program manager for the H-53 Heavy Lift Helicopters Program Office (PMA-261) at Naval Air Systems Command.

"Those helicopters have been around since the early '80s, so 30-plus years, and we've been at war [on terrorism] for the last 15 years, so the machines had been used pretty hard."

When LGen. Jon Davis took over as the USMC's deputy commandant for aviation in June 2014, one of his first acts was to order independent readiness reviews for each of the Corps' aviation platforms. The CH-53E was the second platform examined, after the AV-8B Harrier.

The CH-53E's report, titled the *Super Stallion Independent Readiness Review* (SSIRR), "had a lot of findings that were causal to this low readiness," said Vanderborght. "Part of it was material condition of the aircraft, supply system agility, and issues with maintenance publications, support equipment, and training. There



While it waits on new Sikorsky CH-53K helicopters now in development, the U.S. Marine Corps is undertaking a full reset of its CH-53E Super Stallions. **Skip Robinson Photo**

were a lot of different issues that compounded the problem."

In response to the SSIRR's findings, the Corps "put together a two-step strategy to attack readiness," Vanderborght said, the first step being a complete "reset" of all 147 aircraft, a process expected to take three years.

"We're going to put every airframe through an on-average 110-day process of stripping the aircraft down completely, rebuilding it and changing out any high-time components," he said.

The reset validation aircraft was completed in April at Marine Corps Air Station New River, North Carolina, and flew back to the West Coast in June. The next five CH-53Es have begun the process — three at New River and two at Marine Corps Air Station Miramar, California.

Vanderborght said the plan is to eventually have 16 aircraft being reset at any given time — seven at both New River and Miramar, and two at Marine Corps Air Station Kaneohe Bay, Hawaii.

Though only the validation aircraft has been completed thus far, its results have Vanderborght optimistic about the remaining CH-53Es. After not flying for four years, the validation CH-53E required only 12 days of functional check flights to be deemed operational, a significant reduction from the three to four months of check flights that are typically needed for Super Stallions that spend that much time grounded, Vanderborght said.

"The reset process it went through did everything right," he added. "I've been around 53s for 22 years, and with the exception of picking up a brand new one from the Sikorsky factory — which doesn't exist anymore because the line is shut down — the validation CH-53E is the nicest one I've ever seen."

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**Damain Pawłowski** captured this beautiful shot of a U.S. Army Sikorsky UH-60M Black Hawk.



U.S. Coast Guard San Diego search-and-rescue demonstration during L.A. Fleet Week, Port of Los Angeles, California. **Francisco Canet Photo**





An Airbus Helicopters EC135 P2+ operated by PHI on the rooftop pad at UVA Medical Center in Charlottesville, Virginia.  
**Steven Black Photo**



Martin County Sheriff's Office's Air1 helicopter safely back at the hangar just before a storm arrives.  
**Edward M. Stagmiller Photo**



# EJECTION

# DECISION

The pressure to continue a life-saving mission can be overwhelming. When the stakes are high but the risk is higher, how do you make the decision to abort?

**By Dan Foulds**

**I**t was the last hour of the last night of a week's worth of work. I had rolled out of bed, cleaned up, straightened up, and was making coffee. A week off beckoned. In my mind, I was already on the boat.

Alert tones sounded across all three radios in our quarters.

"Crap."

I listened to the scene-flight assignment, and told the comm-center I would check weather. I didn't want to go, but the ceiling and visibility weren't bad enough to get out of the flight. The forecast was okay. No mention of fog, but we had a conjoined temperature and dewpoint.

"Base, LifeStar responding."

My nurse that morning was Jillian. She is a veteran of trauma-centers in South Africa. Real trauma centers. Don was the medic. We had worked together for a couple of years. I had helped him work on dead people, who then proceeded to be undead. We had a bond of trust. He had skills. I had skills. We liked each other.

We headed northwest from Savannah into the country. Once you cross I-95, it's a different Georgia. Rural. Two-lane roads. Pastures and plows and pine trees. Daylight was fresh upon the world, and the air was still and heavy. The vents for the air conditioning were streaming a cool, moist fog; the system in a BK117 cools the air, but doesn't remove moisture. The air outside was saturated, but still clear. Heavy gray clouds hung low overhead. "At least it's daylight..."

Thirty miles northwest and we came to our scene, a country cross-road at which a truck and car had arrived simultaneously, neither stopping. The truck won. I got the landing zone briefing over the radio, did a recon, and landed in a field. My crew tromped off to get the victim. I started working on forms.

Don came back.

"Can we take two?"

"What's their total weight?"

"400."

"Yes."

"Okay, it's going to take a few minutes — the lady is entrapped pretty badly. These people are circling the drain."

"Roger that." I set up the GPS, and entered frequencies into radios. I called the comm-center and advised "two patients, both trauma-alerts." After a 20-minute delay, the procession headed to the helicopter: firefighters, medics, and my crew — one per patient. We loaded with the engines running, and after the helpers were clear I advanced throttles and asked for the before takeoff checklist.

Don called off the checks. I responded and asked him to clear us left, right, and overhead.

We blasted off.

As soon as I cleared the trees, I could see tendrils of mist coming up out of them. The atmosphere had become sufficiently saturated to produce fog, and it was happening rapidly.

I was now in a race.

I could hear Don and Jill working, talking about what to work on first. Blood was coming from multiple injuries. They were very busy. I gave a short report to the comm-center and said that the crew might be too busy to call. "Please have help at the heliport." As we neared the coast, the visibility got worse. I began to feel the gut-ache of pressure. I heard a Delta pilot tell Savannah that he needed to hold west of the airport for some weather.

"Crap."

I called Savannah approach, used "Lifeguard," and asked for direct routing to the hospital. The weather got worse. The patients got worse too. I could hear fatalism in the crew's voices.

Then the voices in *my* head started. "Go faster. Faster. You have to get them to the hospital — now!" This was countered with, "The weather is going south. You need to stop somewhere — now."

We rolled across I-95, and I changed to the tower frequency. The tower controller announced two miles of visibility and said, "What are your intentions, LifeStar?"

"I need a special VFR clearance across the airport at 500 feet, I have two crash victims on board. I am trying to get them to Memorial."

I was totally caught up in the drama. Patients dying. Not enough weather. Not enough time. No good choices. What to do, what to do, what to do?

I was in a "naturalistic environment." These require "naturalistic decision making." Making choices when a lack of time to think is coupled with extremely high consequence is hard. It's excruciating.

My crew and I and those two dying patients? We were between a rock and a hard place. I could sense that I wasn't making good decisions. Human factors were working against me.

We blew across the runways at Savannah International. A safe landing was right there for the taking. My head said, "Land! Call for an ambulance. Stop!"

My heart said, "They will die." I was very uncomfortable. I called the comm-center to update them. Jill could hear the anxiety in my voice. She said, with her accent, "Daaaan, you are doing a wonderful job..."



I didn't feel wonderful. Another pilot flying a helicopter 10 miles ahead came on the frequency and advised that the weather was much better where he was.

The runways disappeared behind us.

I was down to 300 feet. Only five miles to go. I was thinking aloud, "Okay, where are the towers between the airport and the hospital. Don't hit a tower. Don't hit a tower." I was leaning forward, almost to the glare-shield. The visibility was getting worse and worse. I could see the ground below me, but not much to the front. I had taken us into the clouds in a visual flight rules (VFR) helicopter without an instrument flight rules (IFR) clearance.

"Man. What a mess."

I wasn't worried about flying in the clouds, because I did that frequently both in military service, and while flying for Penn State and Geisinger's IFR flight programs. I was, however, acutely worried about hitting something. I knew I could climb and get a clearance and shoot an approach. A part of me wanted to. But that would take time. And blood.

The pressure was like a piano on my back.

But it was all in my head. The entire situation was something that my cognitive and emotional selves had concocted, but that my behavioral self was having a hard time resolving. I was taking my crew and those two patients further and further into an untenable situation. Why?

Good helicopter emergency medical services (HEMS) pilots don't earn their pay for always saying yes. Good HEMS pilots earn their pay for having the wisdom and courage to say no. And we can say no (further) at any stage of a flight. We don't have to press on. The fact that the patient might die is not a valid justification for us all to die. Or to accept undue risk. It's okay to stop. It's a harsh truth, but truth it is... even if there is a kid involved.

I know this now. I learned that lesson that day. I lived because of dumb luck. I didn't hit a tower by sheer chance. I flew by a crowd of them. I stumbled across a military airfield near the hospital and finally came to my senses.

"Tower, LifeStar declaring an emergency, landing at Hunter Base Ops."

"Comm-center, send two ambulances to Hunter Base Ops please. I am landing for weather."

I shut down, climbed out, and felt horrible. What a mess. I opened the clamshells and the back of the aircraft looked like a combat hospital. Blood dripped off the floor onto the cement. Jill and Don were both sweating, working, trying.

The ambulances arrived with reinforcements. Grim faces.

Both of those patients died. They would have died no matter what I

did, and I could have killed us all trying to save them. This is a hard lesson. It's okay and understandable to feel compassion for our patients. But our prime directive is to save *the crew*. Every decision we make should be with an eye to that end — that our crew goes home safe at the end of their shift. *Save the crew*. Let the crew save the patient. They can work toward this either in the air or on the ground. You don't have to keep going.

In an excellent old U.S. Air Force training film *Ejection Decision – A Second Too Late* (available on YouTube), the Air Force explored the phenomenon of fighter pilots waiting too long to eject from a crippled jet. This happens less often in combat environments, perhaps due to less worry about destroying an aircraft. They show graphic images of planes crashing, sometimes accompanied by a blossoming parachute, sometimes not. The message is clear. When the jet fails, you should eject. Don't wait. Don't try to sort things out. Remove yourself from that situation. There isn't time for reflection. There is too much pressure. There is too heavy a price for hesitation.

More than one pilot being interviewed stated that his decision to eject wasn't made in the heat of the moment. The decision was made years before, in training, after careful thought. "If I encounter these conditions, I will take this action." These guys made their decision early. When they encountered the conditions they acted. Without thought. Without hesitation.

If you are a HEMS pilot, you should to make your "decision to eject" now. Before you are sitting in the hot seat with someone dying next to you. Weather, maintenance, fuel state? It is going to happen to you. And if you hesitate, you may not be as lucky as I was that morning, all those years ago.

HEMS flight teams: When a patient is on board, are the crew absolved of any obligation to monitor the man-machine-environment? What could/should the crew have done when they heard the obvious anxiety in my voice and saw the low altitude I was flying at to avoid the clouds? It is easy for a team to become so focused on the objective that they accommodate to excessive risk, as one. When this is happening, *someone* must think and speak rationally — it may have be you.



**Dan Foulds** began his flying career in the United States Army in 1985. He volunteered for duty with the 160<sup>th</sup> SOAR in 1989, serving as a flight lead and instructor pilot. After retiring from the Army in 1998, he spent 17 years flying EMS helicopters across the U.S. with several different operators, as a line pilot, base-lead pilot, and training captain. Dan began teaching CRM/AMRM in 2011 after a friend crashed and killed his crew and himself. Dan is an author, a multi-year instructor at Air Medical Transport Conferences, and a member of NEMSPA's board of directors. Contact him at [foulds.daniel@gmail.com](mailto:foulds.daniel@gmail.com).





# *Hope* *Will* BY AIR

With its new Airbus Helicopters EC145e, Children's Healthcare of Atlanta is now better equipped than ever to bring lifesaving care to the children of Georgia.

**Story by Elan Head | Photos by Skip Robinson**





Download this wallpaper [here](#)



Children's Health Care of Atlanta is the launch air medical customer for the EC145e, a modern, lighter-weight version of the EC145.



In March 2007, a tornado ripped through the small rural town of Americus, Georgia, severely damaging its hospital, Sumter Regional, as well as an outpatient medical building, a number of doctors' offices, and more than 200 homes. Although no one at Sumter Regional was killed in the tornado, the damage left the hospital's staff scrambling to evacuate existing patients while coping with new emergencies.

In the days and weeks following the disaster, physicians and nurses provided urgent care from tents and, later, modular buildings. With the next closest hospital 40 miles away, many residents whose cars had been destroyed in the storm had no way of accessing other medical facilities.

It was in the aftermath of this destruction that a Children's Healthcare of Atlanta (CHOA) medical flight crew was called to Americus to retrieve a month-old infant in cardiorespiratory distress. The baby was afflicted with a myxoma, a rare benign tumor, in his heart's right atrium.

"His mother was terrified," recalled flight paramedic Rick Roemer, who worked on the infant along with flight nurse Nancy Constable. "We were struggling to keep him alive."

Upon arrival at a CHOA hospital in Atlanta, the infant underwent surgery to remove the myxoma — and immediately began a recovery. As Roemer explained, "It was just a matter of pulling the tumor out of his heart, and he was fine. He went home a few days later."

Americus's recovery wasn't quite as swift, but the town also pulled through. An interim medical facility began serving the community in April 2008, and the hospital, after extensive repairs, reopened the following summer. In 2010, construction began on a new, permanent hospital facility, which has been open since December 2011.

A few years after the tornado, Roemer was back in Americus on another call when he thought to ask whether anyone at the hospital remembered the boy with the myxoma. "Yes," someone told him, "they're in the waiting room." Roemer, confused, assumed he had been misunderstood, but in fact the same child — now a happy, healthy toddler — happened to be at the hospital with his mother for some lab work. The reunion was emotional.

"I thought I was going to lose it," said Roemer. "Having that kind of impact on a patient's life . . . it's powerful."

While reunions like the one in Americus don't happen every day, CHOA's life-saving interventions do. And its Transport Team — which completes more than 5,000 ground and air transports per year — is vital



CHOA's distinctive mascots, "Hope" and "Will," wave to viewers on the ground from the belly of the new EC145e.



"Our mission, our dedication, our focus is all about that sick or injured child."

— **Transport Team manager Nancy Constable**



CHOA is relatively unusual among pediatric medical programs in responding to scene calls as well as conducting interfacility transports.



Family portrait: CHOA's new EC145e poses with its BK117 (center) and legacy BO-105 (top).



to the success of many of them, delivering timely critical care to sick and injured children across the state of Georgia. “The mission for Children’s has always been to take the ICU [intensive care unit] to the child,” said Constable, who is now the Transport Team’s manager. “If we can get there quick enough and intervene, we can change the outcome. I think that’s the best present that our teams can get.”

That may be true, but the CHOA Transport Team unwrapped another present recently: a brand-new Airbus Helicopters EC145e, completely customized for its mission by Metro Aviation, which also operates the aircraft for the program. With it, CHOA has become the launch customer for the EC145e, a reduced-weight version of the EC145. In advance of the 2016 Air Medical Transport Conference in Charlotte, North Carolina, where the aircraft was scheduled for display at the Metro Aviation booth, *Vertical 911* visited CHOA at its facilities in the Atlanta metropolitan area to learn more about the program and its impressive new ride.

## CRITICAL CAPABILITIES

The nonprofit Children’s Healthcare of Atlanta was created by the 1998 merger of two longstanding pediatric medical centers: Egleston Children’s Health Care System, which was originally founded in 1928, and Scottish Rite Medical Center, which first opened in 1915. The year after the merger, the newly unified healthcare system introduced its distinctive girl and boy mascots “Hope” and “Will” (who are now prominently featured on its new EC145e).

In 2006, CHOA took over management of Hughes Spalding Children’s Hospital, growing its healthcare system to three hospitals and 27 neighborhood locations. Today, CHOA treats more than 360,000 unique patients per year, with a team of more than 10,000 employees and 7,000 volunteers committed to the mission of “making all kids better today and healthier tomorrow.”

With only about 65 employees under its umbrella, the Transport Team is relatively small, but it plays a vital role in accomplishing





(LEFT) CHOA's patients range widely in size and age, and its helicopter must carry enough equipment to accommodate all of them. "Everything we have we have in the tiny sizes up to the bigger sizes," said Transport Team manager Nancy Constable.

(BELOW) The BK117 that CHOA operated for many years was large enough to accommodate parents and specialty medical teams. Those capabilities were factors in CHOA's selection of the EC145e, which offers a similarly spacious cabin.

CHOA's mission. Operating a fleet of seven pediatric ambulances and two helicopters (one primary, one backup), the team provides timely transport and lifesaving care for the most critically ill and injured patients. About 700 of its 5,000 annual transports are done by air, making its full-time helicopter "the busiest medical helicopter in the state," according to director of Trauma and Transport Greg Pereira.

CHOA's helicopter program was launched soon after the 1998 merger, originally in partnership with MedServ. Metro Aviation took over the contract in 2004, and since then has provided all aviation services for the program under a traditional hospital-based model. While the program's four full-time pilots and two full-time maintenance personnel are Metro employees, and its flight nurses and flight paramedics work for CHOA, most of them describe the integration of the crews as "seamless." Said Constable, "I really feel like we're a very tight-knit program. I think our medical teams and we the management have a lot of respect for the pilots [and mechanics]."

The program utilized Eurocopter (now Airbus) AS350 series helicopters and a Bell 407 at early stages of its history, but for the past decade, it operated a Eurocopter BK117 as its primary helicopter, and an MBB BO-105 as its backup. While CHOA's patients may be small — as tiny as a few pounds, in the case of some neonatal transports — their needs are not, and the BK117 provided plenty of room for medical teams and equipment. Perhaps as importantly, it also offered enough space for a parent to ride along, which is "absolutely imperative to our mission profile," according to Roemer. It's easy to understand why — just imagine being the mother of the Americus myxoma patient, and having to watch your child, at death's door, fly away without you.



As the operator of the only dedicated pediatric helicopter in Georgia, CHOA conducts air medical transports across the state. "We'll go 150 miles without a question," said flight paramedic Andrew Burkhart. "If it's over 150 miles, we want to make sure the patient warrants that long of a flight . . . but usually if we get calls from that far away the patient really is sick." A large majority (around 90 percent) of the program's helicopter transports are interfacility transfers, but CHOA is relatively unusual among pediatric helicopter air ambulance (HAA) programs in respond-

ing to scene calls such as motor vehicle accidents, too. In these urgent trauma cases, CHOA has found that another advantage of a larger helicopter is the ability to transport two patients when the occasion demands it.

“The two-patient capability is so huge, I think, to a lot of us,” said Roemer, noting that first responders on scene calls “have used us for everything in the world because they know we can carry siblings.” While CHOA may only conduct simultaneous helicopter transports of siblings six to eight times per year, the capability is as valued as the ability to carry a parent. That, too, is easy to understand — because if watching your child fly away without you is hard, seeing another one of your critically injured children denied that specialty transport is even harder.

## CHOOSING THE EC145E

All in all, said Constable, the BK117 “was an awesome aircraft for us — we really got spoiled on it.” But with the aircraft aging, it became clear that CHOA would eventually need to replace it. According to Pereira, the U.S. Federal Aviation Administration’s new equipment mandates for HAA operators provided an additional incentive to upgrade to modern technology.

CHOA considered a number of possible replacements for the aircraft, hiring an independent aviation consultant to assist with the evaluation process. They determined that anything smaller than the BK117 — such as the Airbus Helicopters H135 — simply wasn’t large enough for the program’s mission profile. However, most of the larger twin-engine helicopters on the market were certified for instrument flight rules (IFR) operations, with a price tag reflecting that capability. After evaluating the relatively low number of calls it had missed due to weather, and mindful of competition in the region from for-profit air medical providers, CHOA determined it could not make a financial case for transitioning its visual flight rules (VFR) program to an IFR one.

Enter the EC145e. Around the same time that Airbus Helicopters was developing the latest version of the EC145 — the Fenestron-equipped, high-performance H145 — the manufacturer was experimenting with a lighter-weight version of the legacy EC145 (which is itself an evolution of the BK117). By removing the EC145’s single-pilot IFR package and associated ballast weights, Airbus was able to reduce the aircraft’s weight by 330 pounds (149 kilograms). But initial interest in the model from the utility market was lukewarm. It wasn’t until Metro Aviation discovered the program, and placed an order for six of the aircraft, that the future of the EC145e

was assured (see p.62, *Vertical*, Oct-Nov 2015).

Metro Aviation has now taken the lead on the EC145e program, and is able to sell the aircraft directly to customers under the terms of its unique agreement with Airbus Helicopters. With its need for a modern, twin-engine VFR helicopter, CHOA was an ideal candidate for the aircraft, and it was announced as the launch customer for the EC145e at HAI Heli-Expo 2016 earlier this year. Drawing on its capabilities as a full-service completion center, Metro then worked closely with CHOA to customize the aircraft for the pediatric mission.

Like its predecessor, the BK117, the EC145e has a spacious, flexible cabin that is large enough to accommodate a specialty medical team or a second patient when required. For most missions, however, the cabin of CHOA’s new EC145e is configured with a single Stryker stretcher and three seats — for the flight

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CHOA is now using the older BK117 as a backup aircraft, allowing it to carry a parent or second patient even when its primary helicopter is down for maintenance.

nurse, flight paramedic, and a parent. The nurse's seat alongside the stretcher can easily slide back and forth to adjust for patients who vary dramatically in size, from tiny infants in isolettes to strapping 17-year-old athletes.

In keeping with the Transport Team's goal of bringing the ICU to the patient, the aircraft is equipped with a wide array of specialty medical equipment. "Children's doesn't spare any expense with equipment," observed flight nurse Dan Tillett. "We're bringing the same level of care that [the patient] is going to experience when they get back to the hospital."

Because CHOA transports many children with breathing difficulties, the helicopter carries heliox, a breathing gas composed of helium and oxygen that requires less effort to breathe in and out of the lungs. The medical crews can also administer heated humidified high-flow therapy, in which a warmed, humidified breathing gas is delivered to the patient at a high rate through a nasal cannula — an alternative to more invasive forms of ventilation.

Another specialized therapy that is possible on the aircraft is neonatal therapeutic hypothermia, in which an infant's body



CHOA's primary helicopter is based at its Egleston hospital northeast of downtown Atlanta. The hospital was the first state-designated Level 1 trauma center in Georgia.



As CHOA's Greg Pereira noted, "It takes a special kind of person who wants to take care of kids all the time."



The EC145e's streamlined glass cockpit is proving popular with its pilots.





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Being based at the hospital allows CHOA medical crews to stay active in patient care even when they're not flying. Another plus is the ability to follow up with transport patients, according to flight nurse Dan Tillett.

temperature is lowered in an effort to prevent brain damage resulting from a loss of oxygen at birth. The CHOA helicopter also boasts equipment like a Medfusion 3500 syringe pump, which allows med crews to administer very precise dosages of medications to their sensitive young patients.

"She's everything we want," Constable said of CHOA's new EC145e, which was delivered in June 2016 and flew its first patient mission on July 22. "It gives me goosebumps every time I look at her."

The pilots are also happy with the upgrade. In the cockpit, the BK117's large panel of steam gauges has been replaced by a smaller, more streamlined panel incorporating Garmin GTN 650 and 750 touch-screen GPS/nav/comm units, and the Garmin G500H dual-screen electronic flight display, including helicopter terrain awareness and warning system (HTAWS) and weather displays. Also installed are a Garmin GTX 33H transponder with Automatic Dependent Surveillance-Broadcast (ADS-B) capability, GTS 800 traffic advisory system, and GDL 69 SiriusXM satellite weather receiver, as well as Outerlink's IRIS system for aircraft

voice, video and data recording, tracking, and communication.

Not only does the smaller panel provide better outside visibility, the integrated glass displays make it easier for pilots to take in critical flight information. "We've gone from looking at 20 gauges to looking at five screens," said Metro pilot Harry Marshall. "The scope of what we can do and what we can look at in a single glance is huge."

Although the EC145's single-pilot IFR-certified autopilot has been removed from the EC145e, CHOA opted to install a Genesys HeliSAS autopilot and stability augmentation system (SAS), which is "definitely very capable," said Marshall. "We do a lot of long trips, and with the SAS and navigation systems, it really takes a lot off your plate." Marshall also praised the aircraft's improved searchlight and

scene lights, which he said provide a great safety advantage on nighttime scene calls.

While the EC145e has now taken pride of place as CHOA's primary helicopter, its BK117 will be sticking around as a backup aircraft, allowing the program to finally retire its smaller BO-105.





That means that the program will, for the first time, have full capabilities — including the ability to carry a parent — even when its primary helicopter is down for maintenance.

### KEEPING FOCUS

At the time of *Vertical 911*'s visit in August, the CHOA Transport Team was still in the process of getting acquainted with its new helicopter, which had only been online for a couple of weeks. "We're just learning how the new girl flies," said lead mechanic Doug Martin, who has been with the program since 2004. Although Martin and the program's other full-time mechanic, Luis Flores, attended Airbus Helicopters factory maintenance training in advance of the EC145e's delivery, they still expected to spend some time getting used to the aircraft's systems and quirks. Martin was optimistic that the EC145e would prove to be as dependable as its predecessors, the BK117 and the BO-105: "The reliability has always amazed me, how good they've been in that department."

Martin also expected continued strong support from Metro, which helps maintain the program's high operational tempo by stocking plenty of parts at its maintenance hangar at Peachtree-DeKalb Airport. "Metro's always been top-notch on the support," he said.

As Tillett noted, few other helicopter air ambulance programs today can match CHOA's transport volumes. In one record month, the program with its single primary helicopter flew around 110 patient transports — all of them critically ill or injured children in need of urgent care. That a small team can sustain such a elevated level of activity is testament to the high level of professionalism and competence of everyone involved, and to the passion they bring to their mission.

"Our mission, our dedication, our focus is all about that sick or injured child," said Constable. "At the end of the day, that's what it's all about."



Outreach and education are part of CHOA's mission of using its resources and know-how to benefit Georgia's kids.



**Elan Head** | An FAA Gold Seal flight instructor with helicopter and instrument helicopter ratings, Elan holds commercial helicopter licenses in the U.S., Canada and Australia. She is also an award-winning journalist who has written for a diverse array of magazines and newspapers since the late-1990s. She can be reached at [elan@mhmpub.com](mailto:elan@mhmpub.com).









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USAF pararescuemen from the 57<sup>th</sup> Rescue Squadron take a knee as a 56<sup>th</sup> Rescue Squadron HH-60G Pave Hawk clears smoke at the landing zone.

Members of the U.S. Air Force 56<sup>th</sup> Rescue Squadron are experts at performing under pressure. This summer, we got a first-hand look at how they train for their missions.

**Story by Jon Duke | Photos by Lloyd Horgan/Vortex Aeromedia**



*That Others May*

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A Pave Hawk crew scoots at low level over the ocean towards RAF Lossiemouth after practicing and refining tactics on Tain Range during the Joint Warrior 16-1 exercise.



*Editor's Note: Due to current threats, full names and titles have been avoided in this article in order to protect the security of United States Air Force personnel.*

Combat search-and-rescue (CSAR) has to rank as one of the most iconic roles in aviation. After the British Royal Navy identified the necessity of rescuing downed aircrews during the First World War, the need for formal doctrine became apparent in the Vietnam War. This requirement was particularly highlighted by the rescue of Lt. Col. Icael "Gene" Hambleton, immortalized in the film *Bat\*21*.

Based at Royal Air Force Lakenheath in Norfolk, Great Britain, the 56<sup>th</sup> Rescue Squadron (RQS) of the United States Air Force (USAF) provides its expertise across the European and African theaters, and is ready to deploy on operations far beyond. In 2015, the squadron was recognized as the top-performing USAF rescue unit, an accolade it retains today. *Vertical 911* was offered exclusive access to the 56<sup>th</sup> RQS as the squadron trained throughout the summer of 2016, to see first-hand how the professionals go about what they call "personnel recovery."

## A TRADITION OF SERVICE

Having been originally constituted in 1952 as the 56<sup>th</sup> Air Rescue Squadron, the unit flew a variety of types throughout southern Europe and northern Africa from Sidi Slimane in French Morocco before being discontinued in 1960. Re-activated in 1972 and deployed to Korat Air Base in Thailand, the newly titled Aerospace Rescue and Recovery Squadron was equipped with the unusually configured HH-43 Huskie — an intermeshing-rotor design by Kaman used for short-range overland SAR — and the Lockheed HC-130, with which the squadron took part in Operation Eagle Pull, the evacuation of Phnom Penh in Cambodia.

After its service in Far East Asia, the unit was again discontinued until 1988, when it was equipped with the HH-3E "Jolly Green Giant," a moniker that is still close to the heart of the squadron. (The footprints of each member of the aircrews are printed in green paint on the ceiling tiles of the operations room, and the Green Giant adorns much of their unofficial badging.) In 1989,



A 57<sup>th</sup> RQS pararescueman works on a simulated casualty in the back of a HH-60G Pave Hawk.



The iconic "Pedro" mustache was derived from the Pedro call sign that was used by the CSAR crews in Afghanistan.



The STANTA training area provides valuable training to both the 56<sup>th</sup> & 57<sup>th</sup> RQS.



the unit reverted to its original title, before being re-designated in 1993 as the 56<sup>th</sup> Rescue Squadron.

During this time, the unit provided SAR support to the Icelandic Defense Forces from a base at Keflavik, in Southern Iceland, with a search area in excess of one million square miles, reaching right up to the North Pole. Since 2006, however, the 56<sup>th</sup> RQS has been based in the U.K. From Lakenheath Air Base in the picturesque rural county of Suffolk in East Anglia, the squadron supports U.S. Air Forces Europe and Africa operations as part of the 48<sup>th</sup> Fighter Wing, the "Liberty Wing." The squadron maintains readiness to deploy across these theaters and beyond, as it did in support of Operation Enduring Freedom in Afghanistan, and Operation Odyssey Dawn in Libya during 2011.

By the late 1980s, the venerable Jolly Green Giants were showing their age in an era of rapidly accelerating technology and an ever more expeditionary approach to warfare. While the USAF needed the capability to deploy rapidly and operate in an environment opposed by modern threats, the requirements implicit in executing combat search-and-rescue missions hadn't changed

a bit. The aircraft needed to be able to fight its way in and out of a rescue site, be tough enough to withstand enemy fire, and resilient against the elements. On top of all this, it needed to have the cabin space to receive casualties and house the equipment required to treat them, yet be small enough to fit into tactical air transport such as the C-130. The solution was found to be the Sikorsky UH-60A Black Hawk, already in service with the U.S. Army, and modified through a multi-stage program to meet the requirements of the USAF in the CSAR role.

The final result was the HH-60G Pave Hawk. "Pave" is the moniker given to USAF special-purpose electronics; the term here represents the significant upgrade to navigation and avionics systems in the aircraft. Inertial gyro, Doppler, and GPS-derived navigation systems were fitted in addition to secure radios and satellite communications. The cockpit was made night vision goggle (NVG)-compatible, with an additional forward looking infrared (FLIR) system fitted to the aircraft's chin and displayed to the pilot on a look-down monitor. A weather radar completed the sensor fit, giving crews the ability to avoid the worst storms, while rotor



anti-icing systems allowed certification for flight into known icing conditions, and the addition of an in-flight refueling probe gave additional range and endurance.

For defense of the aircraft, a radar warning receiver and missile approach warning system alert the crew in the event of attack from guided missiles, automatically scheduling the release of pre-programmed chaff and flare sequences. An infra-red countermeasure jammer may also be fitted. Offensively, the Air Force chose to replace the 7.62mm M60 machine guns fitted to the A-model Black Hawk with .50cal GAU-18A guns, while retaining the option to mount 7.62mm M134 miniguns instead — either one being a step up in firepower. The guns can either be fired by the two special mission aviators (SMAs) who work in the aircraft's cabin, or locked into the forward position and boresighted to the aircraft's nose, allowing the pilot to fire them electronically from the cyclic. This frees up the SMAs to carry out other duties in the cabin, and often they can remain secure while they do so, thanks to a modular track system that allows them to move their crashworthy seats around the forward area of the aircraft's cabin, reconfiguring the seating arrangement on the fly.

Space is at a premium in the back of the aircraft, and what real estate there is quickly fills up with pararescuemen and their associated gear. While the pilots and the SMAs are responsible for getting the aircraft to and from the scene of the rescue — the “terminal area” in CSAR parlance — the crux of the mission is the insertion and extraction of up to three other crew members on board. These are the pararescuemen, or “PJs,” whose job it is to get from the helicopter to the casualty and execute the rescue. This might mean receiving a casualty from troops on the ground, or it could mean

locating isolated personnel in a contested area, recovering them from an immediately hazardous situation such as an aircraft wreckage, and finally stabilizing them and packaging them for rescue. PJs are also trained to administer life-saving medical care, including advanced techniques such as intraosseous infusion — in which a needle is drilled straight into bone to administer drugs and fluids in the fastest way possible. Along with all the medical equipment that the PJs may need, the interior of the aircraft rapidly fills with gear, including high-power rescue cutting tools.

“It looks like there's a lot of room back there,” said “Shim,” a captain pilot and one of the 56<sup>th</sup>'s weapons instructors. “But once the PJ's get in, they really like to take over.”

There are a variety of methods available to the PJs for getting out of the aircraft and safely onto the ground, as it's not always possible to find a suitable landing site. The aircraft's cabin floor has attachment points for rappelling (abseiling), or from which a rope ladder can be deployed. When greater speed of deployment is required, fast-ropes can be hung from lift webs across the cabin ceiling; however, this technique carries far greater risk of injury to the operators. Where these options are not appropriate, or where the helicopter cannot be safely hovered, PJs are trained to deploy by parachute. In early 2015, the 56<sup>th</sup> RQS PJs were split from the squadron and established as the 57<sup>th</sup> RQS, which brought them into line with the structure standard to the rest of the USAF.

As ‘Shim’ and I walked away from an HH-60G, I couldn't help but ask about the cartoon moustaches painted on the nose. “From Afghanistan,” he explained. “Our call sign was ‘Pedro,’ so all the tails [airframes] got a commemorative moustache — they're all different styles.”



A Pave Hawk flies over the rugged landscape of Scotland in typically gloomy weather during the first Joint Warrior exercise of 2016, which saw the squadron basing out of RAF Lossiemouth and working extensively on Tain Range.

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(LEFT) Special mission aviators reload the twin .50 caliber GAU-18 guns at Tain Range during a live fire exercise.

(BELOW) Bringing in the HH-60G after the PJs successfully rescued two casualties from an overtured vehicle.

(BOTTOM) 56<sup>th</sup> Rescue Squadron pilots go through their pre-flight checklist prior to a night sortie at their home base, RAF Lakenheath.

“

“We can’t use a matrix-based, situational approach. No two rescues are the same, we need that flexibility. As long as you can accurately identify and assess the risks, you’ll make a good decision regardless of the precise situation.”





## TRAINING FOR THE MISSION

The 56<sup>th</sup> Rescue Squadron's high operational tempo demands the capability to operate in a variety of theaters and from a variety of locations, as was the case in Libya, where the squadron flew from the deck of the American warship *USS Ponce*. This means constant training and a commitment to make that training as realistic as possible. *Vertical 911* was fortunate to be invited along as the squadron took part in Exercise Joint Warrior — the largest military exercise in Europe — and conducted a variety of local training sorties over summer that culminated in a large personnel recovery exercise.

In that final exercise, two “casualties” were placed in separate locations in the Stanford Training Area nearby, simulating ejection seats from a Boeing F-15E. One was assumed to be injured or incapacitated as he had not made contact with friendly forces. His buddy had, however, and reported hearing voices nearby and seeing a vehicle driving up and down a road in the vicinity — time was clearly of the essence. With two other F-15E Strike Eagles in the air and two Fairchild Republic A-10C “Warthogs” also available, the 56<sup>th</sup> RQS launched a pair of Pave Hawks with PJs on board to effect the rescue.

As they arrived in the terminal area, the F-15Es were able to declare the enemy vehicle as hostile, and simulate destroying it with precision guided munitions. The helicopter crews were able to identify a landing area from which to deploy the PJs and their associated gear. At the critical point, their radios burst into life and the workload ramped up as the crew worked the radios to avoid becom-

ing task-saturated at a critical moment. After the PJs exited the aircraft, they were soon engaged by the simulated enemy forces — who were armed with marking ammunition for increased training value — and as they fought their way to the casualties were able to call on .50 caliber fire from the orbiting helicopters as well as support from the always impressive A-10Cs. (In a real scenario, the ‘Hogs would bring withering fire from their 30 mm GAU-8 Avenger cannon, as well as white phosphorus rockets for instantaneous smoke screening as the casualties were packaged and loaded back into the Pave Hawk for extraction.)

Back in the ops room after the mission, the response to the difficulties faced during the insertion was sanguine. “That’s why we train, we have to be able to respond when things aren’t going to plan,” said Major Uberuaga. As the squadron’s director of



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57<sup>th</sup> Rescue Squadron pararescuemen carry and drag simulated casualties towards the waiting 56<sup>th</sup> Rescue Squadron HH-60G Pave Hawk.



Special mission aviators are instantly recognizable by the "Darth Vader" lower face mask that is worn to protect the face from dust and debris.

operations, Uberuaga shoulders the responsibility for core business, and his passion to see the unit grow and improve is tangible. "Since Vietnam, the mission philosophy has really developed," he observed. "And we have developed much better tactics in the terminal area, resulting in better weapon effectiveness and greater safety, with the upshot of a far lower chance of suffering losses."

Indeed, in Afghanistan attrition was much lower than anticipated, and the Pave Hawk crews found themselves being tasked with an increasing number of casualty evacuation and medical evacuation missions as a result.

### LOOKING TO THE FUTURE

In 2017, the 56<sup>th</sup> RQS is programmed to leave the U.K. for Aviano Airbase in Italy. Uberuaga said the squadron will be sad to leave Britain, but he's upbeat about the future.

"As well as supporting combat search-and-rescue tasking, we provide a lot of expertise in personnel recovery to partner nations throughout the theater," he explained. "Being south of the Alps will mean that we have a much more central location, and we will be less reliant on strategic airlift, which will mean a much shorter response time."



Further into the future, the squadron expects to see HH-60Ls being introduced to replace operational losses, and beyond that they are looking forward to the next-generation HH-60W — which the USAF is referring to as the Combat Rescue Helicopter program, but which the operators have dubbed the “Sixty-Whiskey.” It will bring many improvements, not least of which will be a glass cockpit from Rockwell Collins to replace existing “steam” gauges, as well as Lockheed Martin’s mission planning suite.

Combat search-and-rescue has always been a subject of fascination for the media, whose portrayal, whether for reasons of expediency or incomprehension, is often one of airmen undertaking rescues no matter the odds, and without regard to the dangers. While the crews and PJs of 56<sup>th</sup> and 57<sup>th</sup> RQS are undoubtedly valorous, the reality is, unsurprisingly, far more nuanced. CSAR operations demand a clear-eyed acknowledgement of the risks involved. Their prime task, after all, involves recovering airmen downed by enemy action — a situation which in itself confirms the anti-aircraft capability of the opposing force in the precise area that the CSAR unit must operate.

This places a far greater demand on aircrews than simple courage. It involves the accurate assessment of a complex and rapidly changing situation, identification of the hazards involved, and application of the correct tactics, training, and equipment to mitigate the risks to the greatest extent possible. Ultimately, the story of CSAR is that of 14 lives weighed potentially against a single life — the life of the colleague they are there to save. The situation presents an almost inestimable pressure to which no-holds-barred heroism is no solution; thoughtless action will, at best, only add several more to the list of those in need of rescue.

Instead, these aviators and PJs, some still in their early 20s, must consider numerous factors: the threat to their lives, the status of the casualty, the enemy’s capability and their own. They must communicate with the rest of their team and other supporting assets, employ weapons while remaining within their rules of engagement, apply complex tactics and, along with everything else, safely fly and operate a helicopter or carry out life-saving treatment.

Among this maelstrom of mental activity, stress, and the pressure that comes with immediate jeopardy, they must make *the* decision — one of life and death in the most real sense.

As a squadron member with responsibility to train young men and women to make these decisions, “Shim” was unequivocal in stating, “We can’t use a matrix-based, situational approach. No two rescues are the same, we need that flexibility. As long as you can accurately


identify and assess the risks, you’ll make a good decision regardless of the precise situation.”

So in those situations, under that stress, is it possible to enjoy his job? “Absolutely,” was his unhesitating response. “Combat SAR was always a vocation for me, because bottom line, it’s about helping people, no matter who they are. Whether you agree with the politics, the reasons for being there or not, you’re there to save lives. That is always honorable.”



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Enloe Medical Center was the U.S. launch customer for Airbus Helicopters' single-engine H130 in air medical configuration, thanks in large part to its improved performance, excellent visibility, and mission flexibility.







# Mission CAPABLE

As the launch air medical customer for the Airbus Helicopters H130, California's Enloe Flight Care has found the aircraft to be a good fit for its unique program.

**Story and Photos by Dan Megna**

**A**leda White recalls little about her horrible accident that October morning just days before her 23rd birthday. She was driving a delivery van along a narrow section of Highway 70 in northern California's ruggedly scenic Feather River Canyon. As she rounded a bend in the road, a vehicle traveling the opposite direction abruptly swerved into her lane.

White successfully avoided a collision, but overcorrected and ultimately lost control. Her van plummeted over 300 feet down a rocky, nearly vertical cliff, coming to rest mid-slope above the rushing river.

The accident was not witnessed, but fortunately an off-duty search-and-rescue specialist passing by spotted the skid marks and stopped to investigate. His phone call initiated the emergency response of local fire and rescue assets, including a FlightCare Airbus Helicopters AS350 BA from nearby Enloe Medical Center (EMC) in Chico, California.

"I remember I was kind of perplexed when we first got on scene," said Marty Marshall, the Enloe emergency medical services (EMS) program director who piloted the FlightCare helicopter that day. "We had been dispatched to a vehicle over the edge but when we arrived on scene we couldn't figure out what we were looking at. There were boxes and packages scattered all over the cliff. We began to realize the wreckage was a UPS delivery van that had pretty much disintegrated halfway down the slope. It was hard to believe that whoever was driving that truck was still alive."

White had remained belted into her seat; however, she was unconscious, having sustained numerous critical injuries including a broken neck, pelvis, femur, internal injuries and severe head trauma.





With over 9,000 members, the Enloe FlightCare's subscription membership plan assures that members will not be billed for out-of-pocket expenses when transported by FlightCare or any of eight reciprocating air medical programs.

For EMS first responders, it was a race against the clock. Stabilizing and extracting White may have been routine compared to the daunting prospect of hauling her back up the steep canyon wall in a Stokes litter.

From the air, the FlightCare crew knew it was necessary to get their personnel into the scene to make a first-hand evaluation, but the steep terrain afforded no options for landing the helicopter. However, a large boulder protruding from the side of the cliff did provide suitable rotor clearance and skid purchase for Marshall to execute a one-skid landing, allowing for the safe deployment of flight paramedic Randy Kemp.

Kemp and rescue personnel agreed that White was in critical condition and might not survive the rigorous ordeal of being pulled up and out of the canyon. The FlightCare crew believed they could provide a better alternative.

When White was readied to be moved, the FlightCare helicopter returned to the boulder, where Marshall skillfully executed another one-skid landing. "I moved into position and placed my left skid on the boulder," said Marshall. "They [Kemp, EMS, and rescue personnel] lifted [White] up and into the aircraft. The flight nurse, Donna Knapp, who was still on board, secured [White] and the flight medic climbed back aboard." A short 15-minute flight and White was delivered to the medical professionals at EMC.

### THIRTY YEARS OF SERVICE

Specialized mission capabilities like one-skid and toe-in landings, and the operational latitude to perform them, set FlightCare apart from other more traditional helicopter emergency medical services (HEMS) operators.

FlightCare has over 30 years of serving the northern Sacramento Valley and the mostly rural mountain communities throughout the Sierra Nevada foothills. To date, they've provided timely medical transport for nearly 19,000 critically ill or injured patients.

EMC is a 298-bed, independent non-profit hospital with a legacy spanning over 100 years, and serves a population of more than 400,000 throughout eight counties.

It's also the only hospital in the state to own and operate its HEMS program. EMC owns and maintains the aircraft and the Federal Aviation Regulations part 135 certificate. The pilots, medical crew, and maintenance technicians are all employees of EMC.

The FlightCare program was launched in July 1985 after EMC earned the designation as California's first Level 2 Trauma Center. EMC teamed up with a small helicopter operator who had a single HEMS contract for a hospital-based program in Idaho.

The operator committed an AS350 B and a maintenance technician for the EMC program and hired just two pilots (one being Marshall, who had been flying helicopters offshore in the Gulf of Mexico). The program was ambitious, expected to provide 7/24/365



“

When time is the factor between life and death, they give people a chance. This FlightCare crew will always be my heroes.”

— **crash victim Aleda White**



The FlightCare H130's intercom system includes a jack for an electronic stethoscope, allowing nurses and paramedics to listen to blood pressure, lung sounds, or heart tones while in flight.



Clockwise from top left:

Flight nurse Eliza Anderson and paramedic Sean Abrams demonstrate the convenience of the H130 patient loading.

A portion of the Enloe FlightCare team: Jenny Humphries, Roger Srouji, Marty Marshall, Sean Abrams, Eliza Anderson, Jennie Grant (FlightCare program assistant), Neil Cline, and Jim Cuneo.

The EMS dispatch center for Enloe Medical Center handles a high volume of calls for the FlightCare helicopter and the many ground ambulances throughout a three-county region.

Kevin Lindley, piloting the H130, prepares to launch on a night mission. In addition to being one of the first HEMS operators to utilize NVG technology, Enloe FlightCare was the second authorized by the FAA to use NVGs for landings all the way to the ground.



coverage with what might be considered a skeleton crew.

Perhaps it was the enthusiasm and can-do attitude of the crews that made it seem the new FlightCare program was becoming a successful expansion for EMC. Unfortunately, this would prove not to be the case. Within six months, the operator's financial difficulties became apparent and shortly thereafter the company filed for bankruptcy.

In spite of the operator's failure to keep FlightCare financially solvent, EMC recognized the tremendous potential of HEMS. So, the hospital developed a plan to absorb the program itself, offering the pilots positions as EMC employees.

EMC crafted a deal with the previous operator to lease the AS350 B. The hospital also approached another local commercial HEMS operator and arranged to temporarily operate the aircraft under that company's part 135 certificate.

By 1989, EMC had obtained its own part 135 certificate and completed the outright purchase of the AS350 B (which was later upgraded to an AS350 BA). In June 2001, FlightCare earned the distinction of being one of the first HEMS programs in the U.S. to be certified by the Federal Aviation Administration (FAA) to operate using night vision goggle (NVG) technology.

Sadly, that same year, FlightCare experienced an unthinkable tragedy that took the life of the program's beloved chief pilot, Ron Jones, and severely injured the two onboard members of the medical crew.

Just after dark in late September, FlightCare responded into the mountains for a single-vehicle accident. Jones chose a familiar grassy, unimproved area as the landing zone (LZ). What he didn't realize was how the dry weather conditions and recent off-road vehicle activity had torn up the turf.

As the helicopter descended into the LZ, dirt and loose vegetation were stirred up. The aircraft quickly became engulfed in the whirling debris and Jones lost outside visual reference. He aborted his approach and attempted to climb back up, but just as the helicopter emerged from the dust it drifted into the tops of the nearby trees.

An AS350 B2 replaced the aircraft lost in the crash and proved to be a reliable workhorse for the next 10 years. By 2012, however, the B2 was approaching the original equipment manufacturer's required 12-year inspection.

FlightCare understood the inspection downtime would mean four to eight months without the aircraft. Marshall said, "We knew we'd better make a plan. We're going to either be down using a leased aircraft, or we're [going to] be out of service for a long time, which will kill our momentum and our business."

The program considered the purchase of a new aircraft — an AS350 B3e. But rumors were beginning to circulate throughout the industry about a new variant of the popular single-engine EC130.

The EC130 T2 (now the Airbus Helicopters H130) was originally targeted at the helicopter tour industry and promised more power, an improved cabin and air conditioning, and a quiet, smooth ride.

One big selling point for the T2 was the reported reduced noise signature. Marshall said, "Since we operate off the rooftop in the center of a very a noise-sensitive neighborhood, we've always promised our neighbors, when we had the opportunity, we would buy something that was less noisy."

For the pilots and crews, the T2 offered many other improvements over just the acoustics. Marshall said, "We were also able to begin to start talking about the safety features like the crash-worthy seats, crashworthy fuel system, patient comfort, the size



"Many medics and nurses feel working on a flight program is one of the pinnacles of their career path; one of the most demanding, challenging roles and lots of adventure," said Marty Marshall.



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When the H130 (foreground) came online in 2015, the original plan called for the existing AS350 B2 to be sold. Enloe ultimately determined that to maximize the program's capabilities, the AStar should be completely rebuilt and maintained as a backup.

of the work space, the air conditioning, the cockpit design ... It's all a tremendous improvement over what we had before."

During the HAI Heli-Expo held in Dallas, Texas, in February 2012, American Eurocopter (now Airbus Helicopters, Inc.) announced the EMC FlightCare program had inked an order for an EC130 T2, making it a launch customer and the first to operate the model in a HEMS role.

By October, after careful consideration of completion options, EMC had chosen Colorado-based United Rotorcraft to create the HEMS interior for the new aircraft. A major consideration for FlightCare was United Rotorcraft's ability bundle the 121 installations to into a single supplemental type certificate (STC).

The new EC130 T2/H130 entered service with FlightCare in February 2015, and quickly earned high praise. "The T2 was absolutely hands-down the right aircraft," said Marshall. "The United Rotorcraft STC was just beautiful. The pilots loved the way everything was positioned over on the left side [of the cockpit] instead of leaving things in the original configuration. They incorporated the synthetic vision and the [Garmin] 500H, 750 and the 650, satellite phone ... Everything was built in and goes through your helmet."

In addition to dual rear cabin sliding doors, the FlightCare H130 has a right front cabin door that has been modified to open wider to facilitate patient loading. The standard rear seating configuration has also been modified. The four forward-facing "passenger" seats were replaced by three more comfortable and robust pilot chairs. This created a gap for the patient's head to rest between the attending medical crew. The third chair also provides seating, for example, to allow a parent to ride along with their child.

As for the medical crews' perspective of the H130, FlightCare

senior flight nurse Neal Cline said, "We love that aircraft. It's quiet. It's roomy. It has an incredible air conditioner. It has incredible visibility. Most everything is easy to get to. Even though now it seems my partner is so far away as opposed to being on your lap in the AStar. But there's so much room!" When pressed for a criticism of the H130's medical configuration, Cline smiled and said, "Well, I suppose it could use a better trash can."

Once the H130 came online, the B2 was overhauled and placed back into service. Now, for the first time, FlightCare has a backup aircraft. During the first six months of H130 service, when it was unavailable due to inspections or maintenance, the B2 covered 56 revenue flights that otherwise would have been lost.

### **A HIGH-PERFORMING TEAM**

Because EMC is an independent nonprofit hospital and FlightCare is an integrated department of the hospital, they have a unique approach to how flight crews are selected and managed.

All medical personnel are chosen from among tenured EMC professionals: nurses from the emergency department and paramedics from the ground ambulance program.

Those hoping to one day make the jump to FlightCare understand that every day is a job interview, and making the grade takes much more than fantastic medical skills. Potential candidates are scrutinized — in most cases for years throughout their day-to-day hospital duties — for their professionalism, interpersonal skills, and decision-making ability, as well as their clinical skills.

The medical personnel and pilot candidates who are selected to undergo interviews are in for a rigorous and intimidating process. They face a lengthy roundtable interview with all members of the





The H130's dual sliding doors allow Enloe's medical crew members, like chief flight nurse Jenny Humphries, the ability to clear the tail when landing off field.



Former Enloe chief pilot Ron Jones will forever be remembered; this solemn tribute is affixed to the H125's rear cabin window.

Enloe FlightCare has been accredited by the Commission on Accreditation of Medical Transport Systems (CAMTS) since 2008.



# Birds!

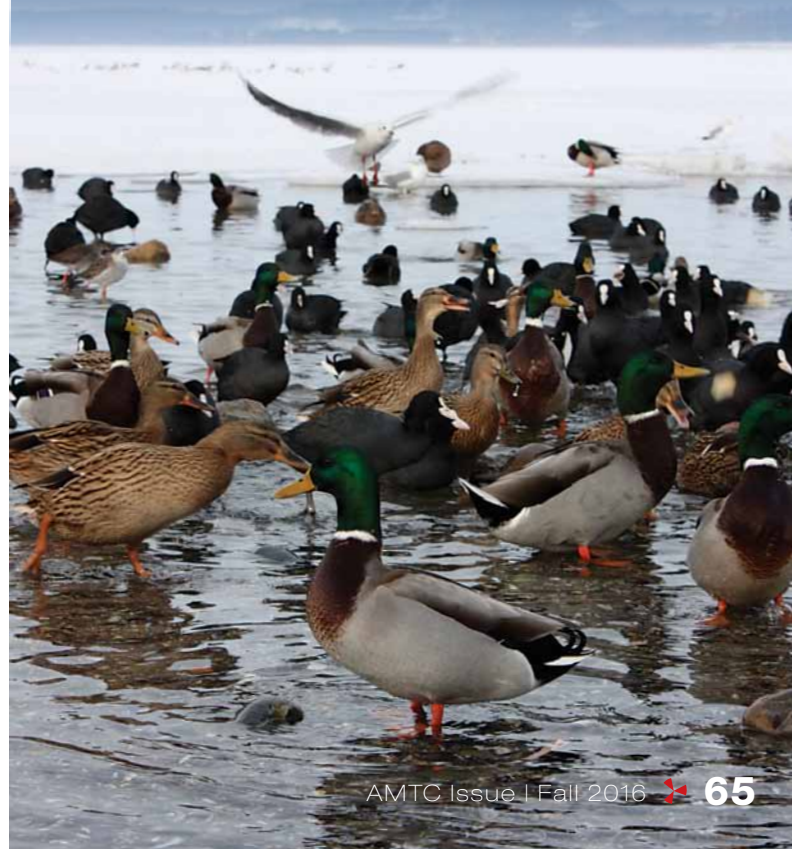
Enloe FlightCare operates in a somewhat unique environment, one in which aircraft and crew are subjected to danger from an unpredictable adversary.

One of the busiest migratory bird flyways in the country traverses the Sacramento Valley. Twice each year, an estimated one billion birds — from large ducks and geese to small songbirds — fly through the region, posing a serious threat to aviation.

"There are so many birds migrating through here in the wintertime it's absolutely unbelievable," said senior flight nurse Neal Cline. "We've actually had to pull into a hover and stop because there were so many birds flying past us that it was impossible to go forward without a bird strike."

"In the old days I didn't even know the birds flew at night," said program director and pilot Marty Marshall. "We didn't have goggles back then and we didn't fly with our search lights on. Now that we have goggles, it's freaky. Holy crap! There are birds everywhere!"

Over the years, FlightCare has had three serious bird strikes (involving damage to the aircraft or breach into the cabin). Two of them occurred at the same location and altitude (800 feet above ground level), at night, in a rain storm. Both came through the canopy and into the cockpit. Fortunately, no one has been injured. But during the migratory seasons, flight crews have adopted the practice of flying with the aircraft search lights on to perhaps provide a warning to migrating birds in the hope of guarding against further collisions.





FlightCare crew, in which each has an opportunity to question and pass judgment on all candidates.

“Because of the unique nature of what we do, it lends itself well to having the high-performing and integrated team that we have,” said Jenny Humphries, FlightCare chief flight nurse. “We only have 17 or 18 of us, which allows us to raise the bar for our expectations, skill sets, our communications, how we deal with one another. I think that results in a really highly functioning team. We can teach someone the technical skills to do our jobs, but we really look for the human qualities a crewman brings to the team.”

FlightCare nurses have added requirements to maintain and improve their clinical proficiency. “When we’re not flying, our nurses work in the hospital’s emergency department, which provides a clinical expertise that’s really second-to-none,” said Humphries. Paramedics are also required to perform clinical rotations in departments throughout the hospital, or pick up shifts on EMC ground ambulances.

Today’s FlightCare team comprises five pilots, five paramedics, and seven flight nurses. They operate around the clock, averaging three missions a day, flying 750 to 800 patients annually. The aircraft are maintained by a full-time director of maintenance, Dan Dawson, and supported by two part-time, per-diem mechanics.

EMC FlightCare, being hospital owned and operated under its own part 135 certificate, is the last of its kind in the state of California. Nationally, these types of models are becoming increasingly rare.

But operating this way does afford the flight crews the freedom to operate with a degree of autonomy, with the latitude to expand their operating profile to meet a unique mission situation. And in the case of Aleda White, this may very well have made the difference in her survival.

After three weeks of care at EMC, White was transferred to another hospital near her parents’ home in Nebraska. There, she underwent three months of care and rehabilitation followed by four months of daily outpatient physical and occupational therapy.

Thankfully, White made a complete recovery and today is enjoying a fulfilling life with her husband and three daughters, just miles from the scene of her accident.

“Without FlightCare, many of the positive outcomes wouldn’t even be possible,” said White. “When time is the factor between life and death, they give people a chance. This FlightCare crew will always be my heroes. They gave me a starting point for my second chance. I honestly believe I wouldn’t have had one if not for them.”



**Dan Megna** | Retired after nearly 30 years with one of Southern California’s sheriff’s departments, Dan’s last 18 years were spent serving in the department’s aviation unit, where he logged over 8,000 hours in helicopters as a tactical officer, pilot and flight instructor.



FlightCare crews are accustomed to night missions in their largely rural service area. “One of the things I love is the fact we’re able to put so much trust and faith in our crew members,” said pilot Kevin Lindley. “We utilize everyone inside the helicopter to clear the scene and make sure we’re safe to continue down into an LZ and [the H130] has such good visibility, it allows all three of us aboard to be able to see the same thing.”

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Operating two Airbus AStars, the DeKalb Police Aerial Support Unit helps keep metropolitan Atlanta safe.


**Story and Photos by  
Skip Robinson**

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The DeKalb Police Aerial Support Unit covers a large area, and when requested will help around downtown Atlanta.

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Flying two well-equipped AS350 B2s, DeKalb feels it now has a capable airframe, but looks forward to a new H125 for additional capability.

In April 1986, the ASU traded two Hughes 300Cs and the one 500D for two 1986 Hughes 500E models, which allowed it to continue to expand its EMS and police operations. In March 1990, the two 500Es were traded for one new and one more recent factory demonstrator model with upgraded searchlights. Retired former Unit Commander Rodney Rancifer lobbied for more advanced navigation and mapping systems that were then in development, along with what was at the time a fairly new technology, forward-looking infrared (FLIR) cameras. In 1992, the unit purchased a used FLIR system and incorporated it into normal patrol operations.

### A MODERN FLEET

In the early 2000s, the ASU began looking for a true law enforcement mission-capable aircraft, as its existing 500Es still suffered from density altitude restrictions in the summertime, which limited patrol mission times due to fuel constraints. Moreover, the unit was unable to equip the helicopter with up-to-date technology due to weight and the amperage required to support the technology. The unit began working with numerous aircraft



Helinet Technologies' data video downlink system is a new addition to DeKalb's fleet. The equipment allows video and digital data to be streamed to ground commanders in real time.



Both AStars can be quickly equipped with Tyler benches when SWAT team support is required.



manufacturers, avionics manufacturers, and airborne computer-oriented flight system companies to develop a modern police avionics suite and determine the right platform for its operations.

In February 2002, the DeKalb ASU selected the AS350 B2 AStar and customized the aircraft in cooperation with what was then American Eurocopter (now Airbus Helicopters, Inc.). Another 21 entities — including manufacturers of navigation equipment, tactical radio systems, tactical traffic avoidance systems, avionics, night vision systems, EMS equipment, microwave downlink, and other systems — contributed to the completion project. DeKalb ASU took delivery of its first customized, state-of-the-art AStar in late July 2002. Two years later, it traded the last of its 500Es toward the purchase of a second fully equipped AStar.

DeKalb's helicopters have the radio call signs of "Eagle 1" (N90DK) and "Eagle 2" (N91DK). Both are similarly equipped with AeroComputers moving map systems and Helinet Technologies video downlink systems, giving each the ability to provide ground commanders with real-time views from above. The system provides a camera view and standoff capability during SWAT and hostage operations, large fires, and other situations in which com-

manders don't want or need to put personnel in harm's way.

The aircraft also feature Spectrolab SX-16 Nightsun searchlights with infrared filters, and night vision capable cockpit modifications to integrate with the unit's night vision goggles (NVGs) and night vision image stabilized binocular systems. Each aircraft has a gyro-stabilized camera system with infrared and daytime capabilities, one of them an Axsys V14HD and the other a FLIR 8000. Either helicopter can be quickly retrofitted with external Tyler platforms to transport SWAT personnel and equipment. "Eagle 1" can be configured to transport critically injured persons when required, although the unit ceased most of its EMS operations in the late 1990s, as more commercial EMS providers moved into the local area. "The unit will do medical transports and one AStar is set up for it, but these days we will fly our own wounded officers or in other extreme cases that require immediate attention," said Williams.

Today, the ASU's primary mission is to provide helicopter support to DeKalb's ground patrol officers, and other specialized units in the Atlanta metropolitan area. "The DeKalb Police Aerial Support Unit is typically the first asset the officers on the street request when responding to in-progress crimes," observed



From left, TFO B.A. Spradling, pilot L.E. Vulb, Sgt. Chief Pilot D.S. Williams, TFO C.A. Inges, and pilot D.B. Veasey.



The data link pod is mounted under the nose of the aircraft.



The Aerial Support Unit works with DeKalb Police special operations teams at least a few times a year.

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The use of NVGs has given the unit the capability to routinely work at night with a high degree of confidence. NVGs have also proven critical during night searches for crime suspects and lost children.



DeKalb's Aerial Support Unit works closely with its SWAT team. Working from the same location helps with integration between the units.

Lieutenant Greg S. Ivanov. "The unit is well known for their expertise in scene management and affording officers and supervisors on the ground with essential information to govern critical incidents. The unit receives regular calls from local, state and federal agencies throughout the metro Atlanta area to provide assistance, and they have developed a very distinguished reputation in the region as a result of the outstanding services they provide."

The unit provides transport and aerial support for the SWAT team when required, and will perform surveillance for special operations and drug cases. It performs crime scene photography for detectives, and provides aerial support and traffic control for special events. The ASU also receives many requests to search for children and other people who become lost in the dense wooded areas of DeKalb and surrounding counties. "The FLIR doesn't always work in the dense vegetation, so sometimes it's just our eyes and binoculars when looking for people," said Senior TFO Bart Spradling. Even these unaided aerial searches can be very productive, and the unit is credited with quickly locating many people who might have taken days to find with ground searches.

Finally, the ASU undertakes many proactive patrols. "Proactive patrols reduce response times to in progress calls and aids in

discouraging those contemplating criminal activities,” said Senior Pilot Luca Vullo. “Additionally, we keep track of crime analysis and research reports which indicate certain crimes as [having] occurred and likely to reoccur, such as residential and business burglaries and armed robberies.” This information helps the unit target its efforts in the areas where they are most likely to do good.

### A PASSION FOR WHAT THEY DO

The DeKalb ASU has three full-time officer/pilots, including a sergeant. Recently a reserve pilot position was filled by a retired sergeant, bringing the unit up to a total four pilots. The unit also has two full-time officer/TFOs, although all of the unit’s pilots are cross-trained in TFO duties. Explained Williams, “This allows us to maximize [use of] the personnel assigned to the unit.”

TFOs who aspire to do so can transition into pilot positions if they satisfactorily complete flight training. In recent years, the ASU has been using an outside vendor at nearby Peachtree DeKalb Airport for primary flight training. “Once the student pilot obtains their commercial rating in a Robinson R44, their training begins in the AStar,” said Williams. “After the student becomes familiar with the AStar, the student is sent to Airbus Training Center in Grand Prairie, Texas, for the AStar transition course. After completing the transition course, the students begin training full time with our in-house CFI [certified flight instructor] to obtain their pilot-in-command status. All personnel receive annual recurrency flight training from an outside vendor.”

Williams noted that the unit plans to bring primary flight training back in-house in the future, and is in the process of training an additional senior pilot as a CFI to help with bring TFOs through their initial pilot training.

The unit’s maintenance is done by Rotor Resources Inc., under a contract it has held since 2006. Its maintenance manager, Paul Reese, has been overseer of the ASU’s maintenance program for over a decade. Rotor Resources ensures all safety regulations are strictly adhered to in accordance with Federal Aviation Regulations and Airbus Helicopters and Safran Helicopter Engines (formerly Turbomeca) requirements. According to Vullo, DeKalb has been satisfied with this arrangement, and believes that the long-term relationship with Rotor Resources has helped ensure a deep understanding of each airframe and its particular issues and maintenance concerns.

Although the AS350 B2s have served the unit well, in the future, DeKalb Police hopes to replace one of the aircraft with a new H125 model (formerly known as the AS350 B3e). The unit would like

this new acquisition to be hoist-equipped, which would provide greater flexibility during search-and-rescue operations.

Ivanov noted that the unit has enjoyed “immense support from the police department,” as evidenced by support for the training of new and existing pilots, and the development of a helicopter replacement schedule. He emphasized, however, that “the individual successes of the unit are 100 percent attributable to the personnel who work as pilots and tactical flight officers and have an obvious passion for the work they do. With the new pilots and TFOs the Aerial Support Unit has recently trained, I feel confident the unit will continue to be a source of great pride not only for our police department but within the police aviation community as a whole. Being involved in the unit as a supervisor has been one of the most distinct honors of my career, and I am thankful to have such a talented and dedicated group of officers to work with.”

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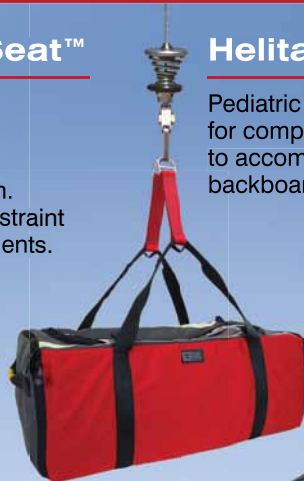
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Interviewed by Jen Boyer



# Miles Dunagan

## President, National EMS Pilots Association

*AirCare 3 line pilot Miles Dunagan will officially take the reins of the National EMS Pilots Association (NEMSPA) as president at this year's Air Medical Transport Conference. A 27-year rotor-wing and fixed-wing veteran with 9,000 hours of pilot-in-command time, Dunagan has 10 years of helicopter air ambulance pilot experience and has served on the board of NEMSPA since 2014.*

*Dunagan is a certified flight instructor and a graduate of the Transportation Safety Institute course on safety management systems. He is also a graduate of the Association of Air Medical Services (AAMS) Safety Academy, is a certified medical transport safety professional, and has served on the AAMS safety council since 2014. A member of the NEMSPA board of directors since 2014, Dunagan works to increase awareness of safety initiatives and plans to continue that work in his new NEMSPA role.*

### **Vertical 911: Tell us a little about your history in helicopter aviation and emergency medical services (EMS).**

**Miles Dunagan:** I'm a second-generation EMS pilot. My father is a retired helicopter pilot who taught me to fly. He was a Memphis Police helicopter pilot in the early '70s. Back then they flew a Bell 206 for EMS, and all the pilots were dual-role; they were all required to become EMTs [emergency medical technicians]. It was dual crew with two pilots. One pilot would fly out while the other would be in the back seat getting things ready, then load the patient up. The pilots would switch seats and the first pilot would then ride with the patient as the other flew to the hospital. That was all before I was born.

I learned to fly with my father when I was 12. I worked for a lumber company here in Memphis with him, flying Gazelles and AStars. I learned to fly fixed-wing as well. I've had some pretty cool jobs. I flew with the lumber company, with a construction company and a TV station, building experience. I went to work for Dale Earnhardt two weeks before he was killed and worked for his son for six months before

going to work for another NASCAR driver, Bobby Labonte, for three years. I started working for Memphis Medical Center Air Ambulance Service, or Hospital Wing as they're known, in 2006. Then in April of this year I left to fly with PHI for the University of Mississippi at the AirCare 3 base in Columbus, Mississippi.

### **V911: What interested you in running for president of NEMSPA?**

**MD:** It was an opportunity to make a positive impact on the industry. I've had some pretty cool jobs and worked for some pretty unique and interesting people, but helicopter air ambulance has got to be the coolest job because we're given the opportunity to help people. There are people all over the world doing this job and with NEMSPA it's an opportunity to help make what we do safer so everyone goes home at the end of their shift.

### **V911: Building on that, given recent accidents in the EMS industry, how are you planning to address this accident trend?**

**MD:** Right now we're taking a look at several different aspects of the industry — mainly culture and human factors — seeing if we can find a correlation between the way people act and respond to certain situations, and see if we can come up with ways to track those errors. Back in the early 2000s, NEMSPA came up with the No Pressure Initiative. The initiative builds awareness of various pressures that occur during a transport where there is more than normal risk, and offers tools to mitigate [that risk]. I feel it's imperative to go back and revisit that initiative. It came out with a great deal of fanfare, but it's been out roughly 10 years and it might be worth revisiting. There are people in the industry now who were in high school 10 years ago, or not in EMS at the very least, and don't know about it. There are three parts to it: culture, risk assessment, and enroute decision points.

Additionally, we're re-evaluating the Cultural Health Assessment and Mitigation

Program for Safety (CHAMPS) program, making sure it is doing what it set out to do and if there are things we need to do to make it successful. We also have the Enroute Decision Points piece of the No Pressure Initiative and we want to assure the trigger points in this program are valid. The data is starting to stream in and correlate with what we were thinking. And another program I want to look into is LOFT, line-oriented flight training. I think it will really help our industry trap these errors and keep them from happening to start with. We're looking at how it's used inside and outside of our industry, how has it evolved, and in the end take lessons learned and implement that training for successful outcomes for each flight.

### **V911: What is your goal for your two-year presidency at NEMSPA?**

**MD:** I work with some remarkable people in this industry, not just the pilots but the clinicians, mechanics, and op specs. Everybody involved with helicopter air ambulance comes into work and wants a positive outcome to every flight. My goal with NEMSPA is to do everything I can to make that happen. I work with the U.S. Helicopter Safety Team, International Helicopter Safety Team, the folks from the FAA [Federal Aviation Administration] and the NTSB [National Transportation Safety Board], and combing files from past accidents to try to be predictive of new ways to track those errors. I'd also like to build an acceptance for LOFT in our industry, or at the very least a willingness to evaluate it to see how it can relate to our industry.

The air ambulance industry is a remarkable part of aviation. Our section of aviation is filled with smart, talented people. NEMSPA needs more professional pilots to step forward and be part of our organization. Our ultimate goal is to represent pilots while making the industry safer.

*This interview has been edited and condensed.*

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