

April 2012

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Editor's Notebook

Dallas from 500 Feet



aparker@accessintel.com

By Andrew Parker



Looking out the window of the AS350 at the Dallas skyline. The demo flight included an obstacle avoidance exercise in flying toward control towers.

Honeywell provided *Rotor & Wing* the opportunity to experience its Sentinel and Observer displays up close as part of a Feb. 11 demonstration flight on a Eurocopter AS350BA during Heli-Expo in Dallas. Never one to turn down a chance to fly, I climbed in and sat next to senior test pilot Ronald Wayman, who started up the controls and booted up the avionics units.

Wayman described Sentinel and Observer as “multifunctional tools.” Sentinel is an MFD and navigation system designed specifically for helicopters. Its 5.7-inch screen is well-suited for operators that have little or limited space in the cockpit.

With Observer, he explained, “you can put flight plans in it directly into the system or you can build them on your laptop. It will show TCAS (traffic collision avoidance system) information, give you a graphic display of the terrain you’re flying over, and let you know if that

terrain’s going to be in conflict by a graph—not any type of audio, but we get that from an onboard EGWPS,” or enhanced ground proximity warning system.

Wayman demonstrated the capabilities of the TCAS system by flying



Honeywell Sentinel (left) and Observer screens in the cockpit of the Eurocopter AS350.

toward a series of tall control towers. When nearing the towers, an audio alert warned the pilot to take evasive maneuvers, while the display turned from yellow to red as we got closer. Wayman then displayed the functions of the EGWPS, slowly

losing altitude over a lake near Executive Airport. When we got close to the ground, audible alerts and warning lights told the pilot to pull up.

The company’s helicopter terrain awareness and warning system (H-TAWS) was also displayed on a Honeywell KMD-500.

Another interesting avionics unit aboard the AS350 was Sky Connect’s Tracker III, which supplies voice, text messaging and automated tracking for helicopters. “You can pre-program text messages in there to tell [ground controllers] how many passengers you’ve got and where you’re going. It’s another tool for tracking,” Wayman noted.

While airborne, he sent a message to the ground, receiving an immediate “Message sent successfully” notice, followed a few seconds later with a returned message from the ground: “We are watching you.”

Following the demo, representatives from Sky Connect showed our just-completed flight path on a laptop, noting the ease of viewing the tracking information post-flight. ✈



Honeywell’s experimental Eurocopter AS350BA on the tarmac at Dallas Executive Airport (RBD).

For more information and to view a video of the Honeywell AS350 test flight involving Sentinel, Observer and Sky Connect, visit www.aviationtoday.com/rw/heliexpo2012





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²Compared to standard Garmin TAWS database for fixed-wing aircraft.

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(Above) Eurocopter's EC175 mock-up during Heli-Expo 2012.
(Bottom) An inside look at the Bell 525's avionics panels.
(Right) U.S. Army Sikorsky UH-60 Black Hawk takes off after rescuing 11 people stranded in Calabaja, Afghanistan.

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On the Cover: Kamov Ka-3211BC in a firefighting application. See story starting on page 42. *Photo courtesy of Russian Helicopters*

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ONLINE



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HELI-EXPO 2012 COVERAGE

- Visit www.rotorandwing.com for Heli-Expo news, photos, videos and other reports from the show floor. There you will find a link to our Heli-Expo 2012 page, where all the show happenings can be found in one place: www.aviationtoday.com/rw/heliexpo2012. You'll also find links to *Rotor & Wing's* Facebook, Twitter and LinkedIn pages, where you can share your own commentary, photos, videos and insights about the event. 

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WHAT DO THE EXPERTS THINK?

- Ask questions to three experts on the topics of helicopter aerodynamics, AS9100 quality management systems audits and night vision goggle (NVG) certification at rotorandwing.com. Che Masters, certification engineer for NSF-ISR, discusses aerospace quality registration. Frank Lombardi, test and evaluation pilot, provides insights about the science behind helicopter flight. NVG certification expert Jessie Kearby fields questions about NVGs for both military and commercial uses.

DIRECT TO YOUR DESKTOP: CHECK YOUR E-MAIL

APRIL 2

- Digital edition of *Rotor & Wing* April 2012. Electronic version with enhanced web links makes navigating through the pages of *Rotor & Wing* easier than ever.

WEEK OF APRIL 2

- *Rotor & Wing's* Military Insider. Get the latest updates from helicopter defense companies around the world, from Military Editor Andrew Drwiega.

WEEK OF APRIL 23

- HOT PRODUCTS for Helicopter Operators—Latest in equipment upgrades, performance modifications, training devices and other tools for the rotorcraft industry.

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Meet the Contributors

CLAUDIO AGOSTINI, aerospace and defense consultant, has been engaged with helicopter market competitive intelligence for more than 20 years. He has been writing for *Rotor & Wing* about helicopters in Latin America since 1999. He has also been engaged with local helicopter events and seminars since 2002, and regularly provides support in some areas to the Brazilian Association of Helicopter Pilots (ABRAPHE) in São Paulo, where he is based. Although not a licensed pilot, he's had the opportunity to fly in a wide range of helicopters, from the Robinson R22 up to the Mil Mi-26, in many parts of the world.



DOUGLAS NELMS has more than 30 years of experience as an aviation journalist and currently works as a freelance writer. He has served as managing editor of *Rotor & Wing*. A former U.S. Army helicopter pilot, Nelms specializes in writing about helicopters.



CHRIS SHEPPARD is the Associate Editor of *Rotor & Wing*. Coming from a strong background in journalism and public relations, she was an editor for a leading online newswire for several years. She has covered a wide range of topics, both online and in print since 2002. Chris is currently pursuing her master's degree in Journalism at Georgetown University in Washington, D.C. She can be reached at csheppard@accessintel.com.



CHRIS BAUR is a dual-rated ATP with more than 11,000 flight hours, a certified aircraft dispatcher and flight instructor. He is a retired military pilot who served in the U.S. Army, Coast Guard and Air Force (ANG).

Chris is currently president of Hughes Aerospace.



ANDREW DRWIEGA, Military Editor, is a senior defense journalist with a particular focus on international military rotorcraft. He has reported on attachment from Iraq three times (the latest of which was with a U.S. Marine Corps MV-22 squadron), and three times with British forces in Afghanistan (Kandahar and Camp Bastion), as well as from numerous exercises. He has flown in a wide variety of rotorcraft including the MV-22B Osprey, AH-64D Apache, Rooivalk and many others.

DALE SMITH has been an aviation journalist for 24 years specializing in business aviation. He is currently a contributing writer for *Rotor & Wing* and other leading aviation magazines. He has been a licensed pilot since 1974 and has flown 35 different types of general aviation, business and WWII vintage aircraft.



FRANK LOMBARDI, an ATP with both fixed-wing and rotary-wing ratings, began his flying career in 1991 after graduating with a bachelor's of science in aerospace engineering, working on various airplane and helicopter programs as a flight test engineer for Grumman Aerospace Corp. Frank became a police officer for a major East Coast police department in 1995, and has been flying helicopters in the department's aviation section since 2000. He remains active in test and evaluation, and holds a master's degree in aviation systems-flight testing from the University of Tennessee Space Institute.



ERNIE STEPHENS, Editor-at-Large, began flying in the 1980s, earning his commercial pilot's license and starting an aerial photography company as a sideline. In his regular job as a county police officer, he was transferred to the department's newly established aviation unit, where he served as the sergeant in charge and chief pilot until his retirement in 2006. In addition to regular contributions in the pages of *Rotor & Wing*, Ernie (aka "Were-wolf") has written for Access Intelligence sister publication *Avionics Magazine*, www.aviationtoday.com/av well as *Aviation Maintenance*. He enjoys meeting our readers and flying a variety of helicopters. ✈

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■ PUBLIC SERVICE | GOVERNMENT AGENCIES

Japan Replaces Earthquake-Lost EC225

Eurocopter Japan has received an order from the Japan Ministry of Defense for a passenger-configured EC225. The helicopter will replace another EC225 that was submerged during the earthquake and tsunami of March 2011. The Japan MoD fleet includes another pair of EC225s, which have assisted with disaster relief efforts. Eurocopter Japan President & CEO Stephane Ginoux notes that several public operators have bolstered their helicopter fleets in the past year, including the Japan Coast Guard and Tokyo Fire Department. 轟

The Ministry of Defense for Japan is replacing a Eurocopter EC225 lost in the March 2011 earthquake and tsunami.



■ TRAINING | EVENT COVERAGE

Safety Takes Center Stage at Heli-Exp



Robinson R22 showcased at Embry-Riddle Aeronautical University's Heli-Exp display. For Training News see page 49 and visit www.aviationtoday.com/rw/training 轟

■ COMMERCIAL | AIRFRAMES

Indian Rotorcraft Breaks Ground on AW Facility



Artist's rendering of the new facility.

Representatives of AgustaWestland and Tata Sons were on hand March 14 to launch construction of a new helicopter production facility for Indian Rotorcraft at Hyderabad International Airport. The 10-acre facility will include a 9,000-square-meter (97,000-square-foot) hangar complex with the capacity to build up to 30 helicopters per year.

Plans call for Indian Rotorcraft to start producing the light AW119Ke in mid-2013, with other types to follow, up to the 16-ton AW101. Indian Rotorcraft intends to hire more than 70 people, who will receive training from AgustaWestland.

In other recent activity in the country, New Delhi-based Eurocopter India has secured agreements to provide three corporate-configured helicopters—an AS350B3e, EC135 and EC155—to various operators. G.R. Constructions purchased the AS350B3e, with the six-passenger EC135 and nine-place EC155 headed to undisclosed business aviation operators. 轟

■ TRAINING | SMS

Sikorsky Sponsors CHC Safety Summit

The CHC Safety & Quality Summit was held in Vancouver, Canada in late March with Sikorsky Aircraft agreeing to join as a sponsor of three-day conference. The event featured seminars on various training topics, including from three speakers—Tom Casey, Tony Kern and Stephen M.R. Covey. Capt. “Sully” Sullenberger was the keynote speaker. Look for more coverage of the summit in the May 2012 issue of *Rotor & Wing*. 🚁

■ PRODUCTS | AVIONICS

Universal Debuts EFI-890H Helicopter Display



Universal Avionics' flat panel EFI-890H display designed for helicopters.

Universal Avionics of Tucson, Ariz., has uncovered the EFI-890H, a helicopter flat panel display based on the company's EFI-890R. The display will include a collective cue and X-video night vision imaging system (NVIS). Universal is seeking approval for a number of helicopter types, including the Bell 212/412 and Eurocopter EC155/AS332, and the Sikorsky S-76 and S-61. 🚁 **For the full version of this story, please visit www.rotorandwing.com** 🚁

■ CORPORATE | PASSENGER TRANSPORT

VIP GrandNew Lands in Chile



Chile is home to an expanding AgustaWestland GrandNew fleet, with two recent purchases from corporate operators.

AgustaWestland has expanded its presence in Chile with Santiago-based Naviera Mistral's purchase of a GrandNew light twin. The helicopter will be used for corporate transport and VIP operations. AgustaWestland expects to deliver the helicopter this year. The manufacturer is reporting a second GrandNew delivery to a private customer as well. To meet the needs of the growing Chilean market, AgustaWestland has launched an authorized service center with Aviasur to provide maintenance and support for the GrandNew and the Carabineros de Chile (Chilean National Police) fleet, including a VIP transport AW119Ke and four AW109 Powers. 🚁

■ PUBLIC SERVICE | LAW ENFORCEMENT

Turkish Police Order 15 Bell 429s

Bell Helicopter has obtained an order from the Turkish National Police for 15 Bell 429s. The selection follows an evaluation process by the Turkish Undersecretariat for Defence Industries SSM and Turkish Aeronautical Industries (TAI), which considered various helicopters before choosing the 429. Deliveries of the law enforcement-configured 429s are scheduled to start in May 2013. 🚁



Photo by Ernie Stephens

Fairfax County Police displayed its Bell 429 at Heli-Expo. Turkey will receive 15 law enforcement-equipped 429s.

■ COMMERCIAL | OFFSHORE

Profile: Oil & Gas Helicopter Operators in Brazil

Brazil is one of the driving forces behind Latin America's emergence as a fast-growing market for helicopter support operations. The largest rotorcraft operator in Latin America is Lider Aviação, with a fleet of 61 helicopters—comprising the Sikorsky S-92, S-76A/C+/C++ and Bell 412/212—as well as 31 fixed-wing aircraft. Lider employs 250 helicopter pilots and recently purchased an S-76 simulator from CAE Simuflite that is scheduled to enter service this year. With 90 percent of the demand for oil and gas helicopters from State Oil Company Petrobras, the country's fleet is reaching around 105 units, compared with current estimated worldwide fleet of 1,700 helicopters servicing the Oil & Gas industry. There is still much to know concerning to the discovered fields but Petrobras alone estimates that national petroleum production will double by 2020, from the current 2 million barrels per day to 3.9 million. Within this increment, about 1.2 million barrels are expected to come from the pre-salt. The Oil & Gas boom and consequent proliferation mainly of platforms along Brazilian coast alone would justify the enlargement of the actual fleet of helicopters, which also



Lider Aviação's fleet of 61 helicopters includes the Sikorsky S-92.

supports other oil companies like Shell, Chevron and local OGX. But not only an increase in the number of aircraft is involved. The profile of the fleet as well as the pre-salt reservoirs are more than 300 kilometers of the Brazilian coast, and onshore operations like Urucu in the Amazonian region requires access by heavy-lift helicopters. —By *Claudio Agostini* For the full story, see the March 2012 issue and visit www.rotorandwing.com

■ PRODUCTS | AVIONICS

Becker Introduces AR6204 Transceiver, BXP6404 Transponder



Roland Becker at Heli-Expo.

During a Feb. 13 press conference at the company's Heli-Expo booth, Becker Avionics President Markus Schmitz uncovered two new avionics units—the AR6204 VHF transceiver and the BX6404 Mode S transponder.

"The AR6204 is a single-box-mounted VHF transceiver which provides 8.33 or 25-kHz spacing," Schmitz explained. "It has an integrated digital intercommunications system and also provides a dual-channel watch function." The radio incorporates automatic dependent surveillance-broadcast (ADS-B) technology "and

provides 10-watt output at 24 volts," he said, adding that the AR6204 features a simple design for retrofit installations.

Schmitz went on to unveil the BXP6404, describing it as "the only dismount Mode S transponder with ADS-B Out capabilities on the market." The unit will be available for Class 1 and Class 2 performance and will work with most major encoders in addition to Becker's encoder, which attaches directly to the BXP6404, according to Schmitz. The press conference also included an appearance from Roland Becker, chairman of Becker Avionics Group, which is based in Germany.

Following the show, Becker reached a deal to supply its DVCS6100 digital audio system to the Royal Australian Navy. Raytheon Australia will provide three Bell 429s to the Navy as part of the retention and motivation initiative (RMI) program.

For more on Becker's announcements and other photos and videos from Heli-Expo, go to www.rotorandwing.com

■ SERVICES | CERTIFICATION

MD Gains Approval for Garmin G500H

FAA has issued type certificate approval for installation of the Garmin G500H on the MD500E/F and MD520N. Retrofits are available through the MD factory service center in Mesa, Ariz. The manufacturer plans to make kits available soon at authorized MD service centers and Garmin dealer network locations.

■ COMMERCIAL | OFFSHORE

Era Boosts Offshore Fleet

Eurocopter has received an order for seven EC135s from Lake Charles, La.-based Era Helicopters. The purchase will raise Era's fleet of EC135s to 17. The fleet also includes AS350s, EC225s, AgustaWestland AW139s and Sikorsky S-76s (A++ and C++ variants). Era plans to deploy the new EC135s in the Gulf of Mexico.

■ COMMERCIAL | UTILITY

Canadian AS350B3e Enters Service with New Livery

Eurocopter Canada handed over a new AS350B3e to Canadian Helicopters during Heli-Expo in Dallas. The helicopter will primarily carry out utility missions and join a fleet that consists of 75 Eurocopter variants.

Canadian Helicopters is using the Turbomeca Arriel 2D-powered AS350B3e to showcase a new international rebranding effort, following its acquisition of Helicopters New Zealand (HNZ) in July 2011. The combined companies bolster a fleet of around 155 aircraft, with more than 800

employees spread across 49 locations worldwide and annual revenue of \$240 million.

At Heli-Expo, Eurocopter also announced that Fort Lutz Bertling and Canadian CEO Don Wall. McMurray, Alberta-based Wood Buffalo Helicopters has purchased an AS350B3e. The helicopter will join a fleet of four AS350B2s and two EC120s involved in environmental monitoring, fire suppression, equipment transfer, oil field surveying and other helicopter support operations. ✈



Photos by Emile Stephens

Eurocopter delivered an AS350B3e to Canadian Helicopters during Heli-Expo 2012 in Dallas.





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PEOPLE



Kaman Corporation has promoted five officers to parent company positions. **Gregory Steiner** (left), currently president of Kaman Aerospace Group, is taking on the additional title of executive vice president of Kaman Corp. Steiner has been with the company since 2008 after a 17-year career with Rockwell Collins. President of Kaman Industrial Technologies, **Steven Smidler** (right) is now an executive vice president of Kaman Corp. Smidler has been with the company since 2009, starting



out as COO. **William Denninger** (left) has also added the role of executive vice president to his current position of chief financial officer. Denninger has held this position since 2008, coming to Kaman from Barnes Group, Inc.,



where he held the same title. **Lowell Hill** (left) has been promoted to senior vice president of human resources. Hill joined the company in 2001 as vice

president of human resources. Kaman also promoted **Phillip Goodrich** (right) to senior vice president of corporate development. Goodrich joined the company in 2009 as senior vice president of business development. All five will report directly to **Neal Keating**, chairman, president and CEO of Kaman Corp. Finally, the company appointed **Shawn Lisle** vice president and deputy general counsel. Lisle has been with the company since 2011 as associate general counsel and reports to **Candace Clark**, senior vice president, chief legal officer and secretary.



Houston, Texas-based Bristow Group has promoted **Jeremy Akel** to senior vice president of global operations. A former NTSB accident investigator, Akel began working at Bristow in 2004. He was previously director of the company's Other International Business Unit (OIBU).



Rodger Bagwell, president of Broussard, La.-based Rotorcraft Leasing Company, has announced plans to retire. Bagwell, a 10-year employee

of RLC, will remain on board as an adviser. Current CEO **Dru Milke** will take over the role of president. Milke joined RLC in September 2011.



Patrick Fisher has joined Flightcom Corp. as director of federal programs. In his new role, Fisher will expand Flightcom's wireless communications within the government, homeland security and military sectors. Fisher was the former director of federal sales for e-Instruction and will be based in the Washington, D.C., area with Flightcom.

HAL and CAE joint venture Helicopter Academy to Train by Simulation of Flying (HATSOFF) has appointed Maj. Gen. **Ajit Hari Gadre** (Ret.) as chief executive officer. Gadre retired as the additional director general of army aviation after 37 years of service with the Indian Army.

FlightSafety International has named **Bob Reding** senior advisor to the CEO. Reding has 30 years of aviation management experience and was most recently the executive vice president of operations for AMR Corporation. ✈

coming events

2012:

April 3-6: 55th Annual AEA International Convention & Trade Show, Washington, D.C. Contact AEA, phone 1-816-347-8400 or visit www.aea.net/convention

April 22-27: Medical Transport Leadership Institute, Wheeling, W.V. AAMS, 1-703-836-8732 or visit www.aams.org

May 1-3: AHS Intl. 68th Annual Forum and Technology Display, Fort Worth, Texas. Contact AHS Intl, phone 1-703-684-6777 or visit www.vtol.org

May 17-19: 5th International Helicopter Industry Exhibition (HeliRussia), Moscow, Russia. Contact HeliRussia, phone +7 (0) 495 958 9490 or visit helirusia.ru/en

May 23-24: Heli & UV Pacific 2012, Queensland, Australia. Contact Shephard Group, phone +44 (0) 1753 727015 or visit www.shephard.co.uk/events

July 11-14: 42nd Annual ALEA Conference & Exhibition, Reno, Nev. Contact Airborne Law Enforcement Association, phone 1-301-631-2406 or visit www.alea.org

Sept. 4-7: European Rotorcraft Forum 2012, Amsterdam, The Netherlands. Contact National Aerospace Laboratory NLR, phone +31 88 511 3165 or visit www.erf2012.nl/nl/index.html

Sept. 26-27: The Helicopter Show, Luffield Abbey, England. Contact The Helicopter Show, phone +44 (0) 20 8330 4424 or visit www.thehelicoptershow.com

Oct. 22-23: Police Aviation, Kuala Lumpur, Malaysia. Contact Tagent Link, phone +44 (0) 1628 660400 or visit www.tagentlink.com/events

Oct. 22-24: 2012 Air Medical Transport Conference, Seattle, Wash. Contact AAMS, phone 1-703-836-8732 or visit www.aams.org

Oct. 30-Nov. 1: Helicopter Military Operations Technology Specialists' Meeting (HELMOT XV), Williamsburg, Va. Contact AHS Intl, phone 1-703-684-6777 or visit www.vtol.org

Nov. 6: High-Rise Aerial Firefighting & Rescue, Dubai, UAE. Contact Tagent Link, phone +44 (0) 1628 660400 or visit www.tagentlink.com/events ✈

■ TRAINING | SMS

IHST Seeks Feedback on Safety Toolkits

The International Helicopter Safety Team (IHST) is asking for feedback involving its web-based safety toolkits. In a letter sent out to more than 500 members, IHST is asking for responses to a seven-question survey regarding the organization's toolkits, analysis reports and safety videos. To take part in the survey, visit www.ihst.org 

■ PUBLIC SERVICE | POLICE

Broward Sheriff Renews Night Flight Training

Night Flight Concepts has received a contract extension from the Broward County Sheriff's Office in Florida for a night vision goggle (NVG) training program. Features of the training curriculum includes NVIO initial and recurrent computer-based training (CBT) for the Eurocopter EC135. 

■ TRAINING | SIMULATORS

EC225 Full Flight Simulator Passes UK Evaluation

Eurocopter's EC225 full flight simulator in Aberdeen, Scotland has logged more than 2,000 flight hours in its first 11 months of service, topping the number required in the UK Civil Aviation Agency's Recurrent Evaluation and extending its use through March 2013. The simulator has trained around 270 pilots involving various mission scenarios, including in offshore and SAR configurations. 



The EC225 simulator has trained more than 250 pilots in its first 11 months of service.

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Professional Aviation Associates, located in Atlanta, Ga., operates a 30,000-square-foot warehouse just minutes away from Hartsfield International Airport, with sales support staff in Greer, S.C. and London, England. "We are excited to extend our support offering of the EC155 fleet in addition to our Eurocopter support program for AS350/AS355," said Professional Aviation Associates President Glenn MacDonald. "Our sales force spans the United States, Spain, Latin America, Canada and the United Kingdom. It is a continuation of our goal to grow this part of the business and become the largest independent global supplier of parts for the rotor wing market." For more information in the U.S. and Canada, call 1-800-283-2015 or visit www.proavation.com



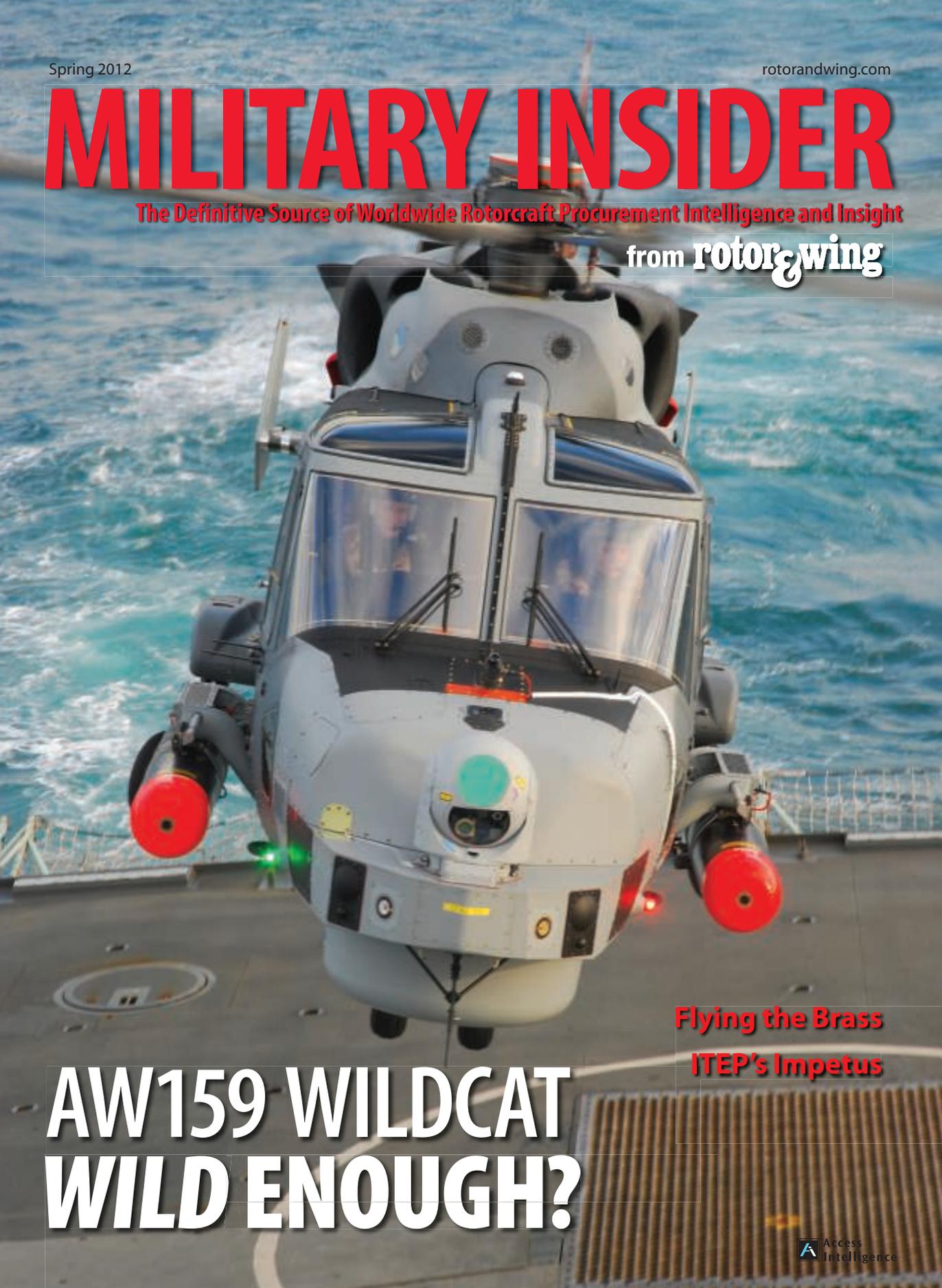
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AW159 WILDCAT WILD ENOUGH?

Flying the Brass
ITEP's Impetus

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Photo courtesy U.S. Air Force Senior Airman Christina D. Ponte

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Military Insider

By Andrew Drwiega



Herculean Task to Protect the London Olympics

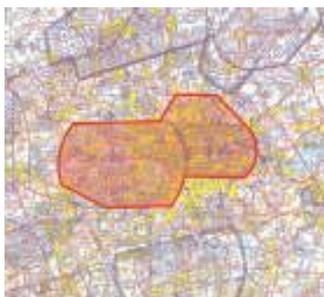
Protecting the Olympics and Paralympics from terrorism is a serious business. This summer, the Olympics arrive in London, and the armed forces are being made ready for the challenge. Leave has been canceled during the period of the games for those actually, and even potentially, involved in the huge security operation.

The largest warship in the Royal Navy, HMS Ocean, at 21,500 tons, and having recently returned from flying the UK's WAH-64D Apache attack helicopters in operations against the Libyan forces of Col. Gaddafi, will be based on the River Thames. The Royal Air Force's (RAF) newest fixed-wing interceptors, Typhoons, will be based at the Northolt airfield within the M25 London circular—the location more usually used by the Queen's Royal Flight. Ground-to-air missiles will protect Olympic sites, and around 7,000 military personnel will join thousands more security guards who will act as the visible on-site presence and reaction forces. Obviously special forces will be in the background, too.

Helicopters, with snipers onboard, will also be used to check out slow-flying aircraft and rotorcraft that penetrate the restricted airspace around the Olympic venues. The UK's Civil Aviation Authority has declared that a no-fly zone (see map at right) will be enforced from July 14 to August 15 for the Olympics and August 16 to September 12 for the Paralympics 2012, with a restricted zone outside of the no-fly zone. Restrictions will even apply to Farnborough Airshow, one of the biggest aviation gatherings

of the international aviation calendar. Exercises have already been staged to test the teamwork. At the end February, the Taurus Mountain 2 exercise staged in Yorkshire in northern England, brought together all three services to test their reaction to airborne threats. Fighters and helicopters were tasked to intercept suspicious aircraft, guided by air and ground controllers.

As politicians do on occasions like this, the UK's Minister for Defence Philip Hammond monitored the proceedings from an E3-D Sentry aircraft. His comment that there were "no specific threats" was to be expected. It is doubtful that threats would be made public given the stellar level of effort, investment and organization that goes into organizing any Games, not to mention the prospective boost to the UK's economy that staging such a global



Aircraft involved in Exercise Taurus Mountain 2:

- 2 x Typhoon jets, RAF Coningsby
- 2 x Puma helicopters, RAF Benson
- 2 x Lynx helicopters, RNAS Yeovilton
- 1 x Sea King Mk7 Airborne Surveillance and Control (ASAC), RNAS Culdrose
- 2 x Grob Tutor aircraft, RAF Leeming
- 1 x Sentry E-3D, RAF Waddington

event promises. Naturally the UK has an existing air defense plan that protects the nation's airspace 24/7. But additions include heli-

borne snipers and helicopters based on HMS Ocean, hardly a couple of minutes from takeoff to over the main Olympic site, gives the security forces a very rapid reaction force indeed.

Using helicopters to protect Olympic Games sites is not new. In February and March 2006 the Italian Air Force used HH-3F Pelican aircraft with electronic notice boards to communicate with slow-moving aircraft.

During these Turin Winter Olympics, the Italian Air Force operated a system of concentric rings, which included a 10nm no-fly zone up to 8,300m over the city, and then a larger zone to incorporate the skiing venues, which went out to 50nm for identification up to a height of 6,300m. All airfields inside the zone were closed with only military, security and emergency aircraft allowed to overfly the area closed to VFR traffic.

London's only inner London commercial heliport, which has recently changed ownership again, will have an exemption from the no-fly zone. The new owners, billionaire brothers David and Simon Rueben, are touting it as an entry point into the city for Olympic officials and mega-rich VIPs who want to beat the expected traffic congestion. Nice for them, then. 𠄎



RAF Puma over the arena.

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Russian Helicopters Mi-28 Night Hunter.
Photo courtesy of Russian Helicopters. See
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- M12** ■ **Flying the Brass**
For years, the 12th Aviation Battalion has flown the government and military's top brass. A look back at how the VIP unit began and where it's headed now. *By Douglas Nelms*

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- M18** ■ **AW159 Wild Enough?**
With the Lynx Wildcat nearing delivery to the UK Army and Royal Navy, questions persist regarding whether the upgraded helicopter is enough of an advancement over its predecessor. *By Andrew Drwiega, Military Editor*

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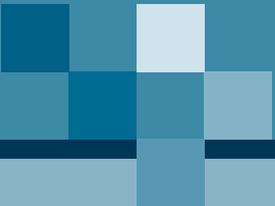
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Military Report

Army's ITEP Gets New Impetus

The U.S. Army's Improved Turbine Engine Program (ITEP) aimed at producing a smaller, cheaper, and yet more powerful engine for the UH-60 and AH-64 fleets is not only running on-time and on-budget, but has become a major player in the Army's future budgetary planning.

Advanced Turbine Engine Company (ATEC) is a 50/50 joint venture involving Honeywell and Pratt & Whitney that is producing the HPW3000. General Electric is the second competitor with its GE3000.

Ed Fortunado, vice president for ATEC, says that ITEP is no longer "just an Army Aviation priority, it's an Army priority. The reason is that it doesn't just provide greater capability to Army Aviation—which is something everyone wants—but it is also the fuel savings." It also includes significant savings in maintenance costs.

While the new 3,000-shp engine is being developed to provide a 50 percent increase in power, it is also targeting improved specific fuel consumption by 25 percent, reduced production and maintenance costs by 35 percent and a 20 percent extension of engine life. Both the Black Hawk and the Apache currently receive power from the GE T700-GE-701C/D engine in the 1,700-shp range. The ITEP engine will be designed as a "drop-in," allowing the earlier engine to be removed and replaced without having to change the engine compartment footprint or engine cowling.

These cost savings have made it a "much more robust program because it has brought in additional stakeholders," Fortunado says. "Where traditionally the pilots, as well as the program office and requirements offices, want a more capable and fuel efficient engine, now the Army and DoD offices with oversight for energy efficiency view ITEP as a hallmark program. It increases the operational capability (along with) a significant reduction of fuel—which means you also reduce the logistics trains that goes with that."

The significance of these cost savings is that when military planners put everything on the table to figure out how to reduce the budget—which programs should go away, which can be drawn out and which can be saved—"ITEP has an additional group of advocates who support and embrace the program that leads in the direction the Congress wants, the DoD wants and that the Administration is looking for because it increases operational capability and brings considerable fuel savings," he continues. At current fleet levels, the fuel savings would be compiled by some

10,000 engines on fleets of around 3,000 Black Hawks and 1,000 Apaches, each of which are twin-engine powered. "And that's before you even start to look at international sales," Fortunado said.

Sikorsky is also considering the ITEP in designing its S-97 Raider to take a single GE CT7-8, a variant of the T700-701D used in the Black Hawk. This will leverage the ITEP, providing the necessary footprint to install the ITEP engine when it becomes available.

"Sikorsky sees great value in a Raider design that uses a single engine that is common with Black Hawk and Apache," according to Chris Van Buiten, vice president of Sikorsky Innovations, the technology development arm of Sikorsky Aircraft Corp.

Another reason the ITEP is being so well received, particularly on Capitol Hill, is that it has been identified as the engine for the Joint Multi-Role Helicopter, Fortunado explains, so the investment supports both today's Black Hawk and Apache fleet and the future of vertical lift. He notes that Congress is well informed on the potential cost savings from the program, with briefings conducted both for committee staff members and the members of Congress themselves.

The ITEP program is still in the science and technology (S&T) phase, with completion expected by the end of FY12. This will be followed by a Request for Proposals expected either in late FY13 or early FY14. A key element will be to release the RFP to support a smooth transition from the S&T phase into engineering, manufacturing and development (EMD), Fortunado says.

"You don't want a year between them. One of the problems that Congress and DoD has seen with other programs is that the government makes a down-select very early, when the technology is not fully matured, and it ends up driving cost and schedule in the wrong direction. If you can maintain competition into EMD, benefits are realized in performance and cost saving for years to come." ATEC and GE have two different technologies, two different architectures of an engine. By maintaining competition, the government and the war-fighters benefit.

"With a well-structured competitive acquisition strategy, ITEP will continue to succeed and ultimately deliver a capable, affordable, versatile and fuel-efficient engine for the warfighter today and tomorrow," he said. —By Douglas Nelms

Italian Air Force HH-139 Enters SAR Service

AgustaWestland has handed over the first of 10 HH-139As to the Italian Air Force. The helicopters will serve in search and rescue (SAR) operations with the Air Force's fleet of older Bell HH-212s and Sikorsky HH-3F Pelicans. The older aircraft are set for replacement with AgustaWestland's HH-101s as the first part of Italy's combat SAR modernization program. The HH-139A is an short-term solution for the SAR fleet replacement and upgrade program; the AW149 is currently being developed answer the Air Force requirement for a medium-class SAR helicopter. AgustaWestland expects certification for the new militarized variant in 2013. The nine remaining HH-139As are slated for delivery by the end of this year. ✈



AgustaWestland

One of Italy's 10 new HH-139As in service with the Air Force.

A Mil Mi-24 Hind featuring a chin turret drew onlookers at Heli-Expo 2012 in Dallas. The Hind was part of the Helicopter Foundation International's Heritage of Helicopters static display. A Bell Helicopter OH-13G Sioux and a UH-1 Iroquois Huey were also in the lineup.

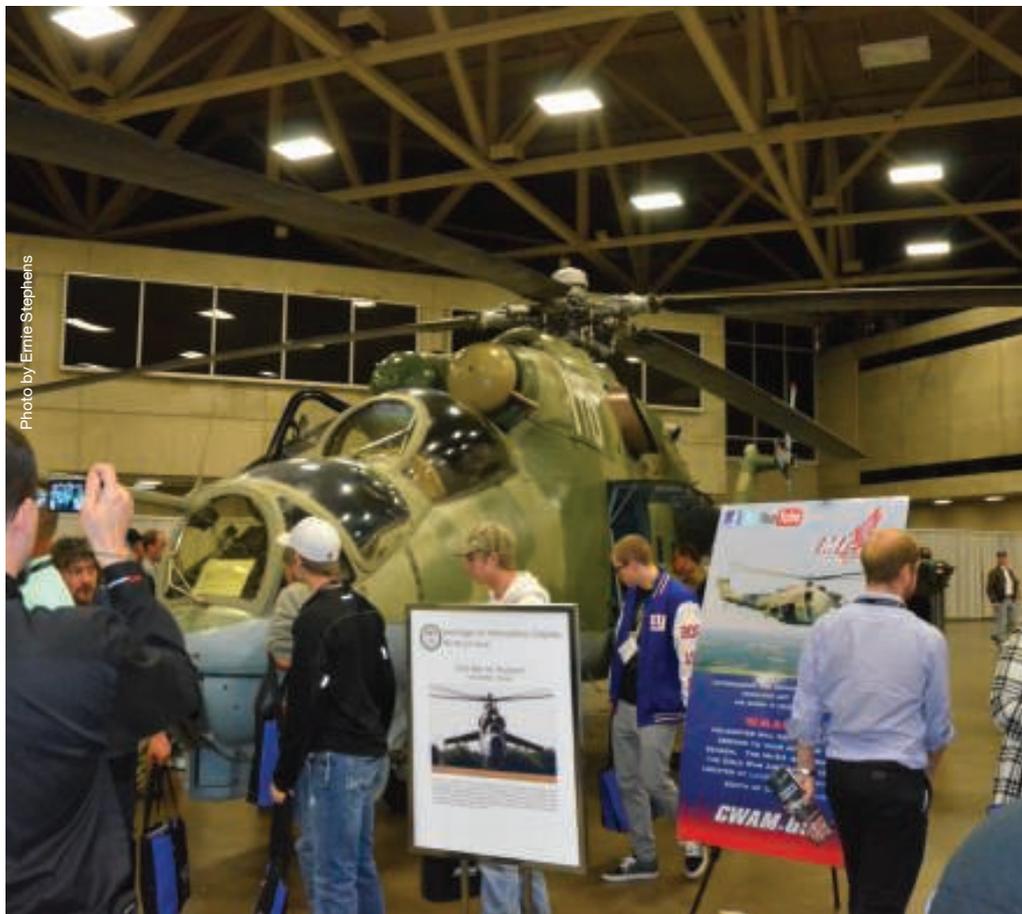


Photo by Ernie Stephens

Boeing, U.S. Army Test AVMS Rotorcraft Flight Control System

Boeing and the U.S. Army have wrapped up a series of tests on the company's Adaptive Vehicle Management System (AVMS), a rotorcraft flight control system. AVMS, which has been in development for two years, delivers enhanced maneuverability and safety while reducing aircrew workload and overall operating costs, according to Boeing. A Boeing H-6 helicopter equipped with the integrated AVMS conducted seven separate test flights in Arizona during December 2011. The tests demonstrated how AVMS adapts the flight controls to the aircraft's flight condition, environment and pilot intent.

Many elements of the AVMS can be incorporated into the CH-47 Chinook and AH-64 Apache platforms, and "could be a key capability in future Boeing aircraft such as Future Vertical Lift," notes Steve Glusman, director of Boeing Advanced Mobility, a division of Boeing Phantom Works. 𐀀

Sikorsky Picks Sandel HeliTAWS for S-70i

Sikorsky Aircraft has contracted Vista, Calif.-based Sandel Avionics to supply a Mil-Std version of its HeliTAWS wire and terrain alerting system for the S-70i, the international version of the Black Hawk. **For the full version of this story, please visit www.rotorandwing.com** 𐀀

Cassidian Supporting Afghanistan Medevacs

The German Army's Forward Air Medical Evacuation (FwdAirMedEvac) unit has signed Cassidian to provide medevac support in Afghanistan. The contract is an extension of the Eurocopter Tiger Afghanistan Stabilization German Army Rapid Deployment (ASGARD) agreement signed in May. The Army, which flies NH90s for these missions, has ordered eight of Cassidian's mobile operational support systems (EUA). The EUAs are compatible with the different helicopter variants that the German Army and Air Force fly, including the Tiger and the Sikorsky CH-53GA. 𐀀

A Bell UH-1N Huey with the Marine Medium Helicopter Squadron (HMM) 265 comes in for a landing on the forward-deployed amphibious assault ship USS Essex. Accompanying the Huey on the flight deck is a Boeing Vertol CH-46 Sea Knight. The 31st Marine Expeditionary Unit (MEU) was also on board the Essex, prepping for the MEU's upcoming deployment. The HMM practices tactical recovery exercises, helicopter raids, humanitarian aid flights, disaster relief and noncombatant evacuation operations with the MEU.



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From the E-Letter

Below is a sampling the various stories that appeared in Military Insider e-letter over the past couple months. To read more visit www.rotorandwing.com



Industry, Working With Or Against the U.S. Army: a Toe-to-Toe Discussion at AUSA's ILW Aviation Symposium

The interaction between the U.S. Army aviation leadership and the "great and good" from industry at the AUSA ILW Aviation Symposium at National Harbor, Md. came down to a three-way interaction between Boeing's military aircraft vice president/general manager Phil Dunford, Sikorsky's president of military systems Phil Maurer, and audience participant (but what a contribution) from U.S. Army Aviation commanding general Maj. Gen. Anthony Crutchfield.

Crutchfield had earlier talked about the launch of his 2030 Vision paper—to appear at Quad-A's annual gathering in early April 2012. He particularly highlighted the need for ongoing vision and a "campaign plan," but called for industry to help identify what he needed rather than "tell him what he wanted."

This is always a 'chicken and egg'

debate—almost an Abbott and Costello script of 'what's on first base' rather than who. "We have to rethink our current way of business—including our acquisition process. We also need to take an appetite suppressant," he affirmed.

In trying to answer this call (without upsetting anyone), the panel of industrialists (which also included AgustaWestland's Scott Retting, EADS North America's Michael Cosentino and Richard Linhart from Bell Helicopter) said their piece on the session topic of Industry Perspective of Army Aviation Future.

Unfortunately, all but Dunford and Maurer wasted an opportunity. Retting's script amounted to hardly more than a "buy our helicopters" sales pitch and Linhart looked for more V-22 orders (from the Army?). Rather unhelpfully Castino said that his company was "not going to invest

if we don't understand where the customer is going." But as we all know—the customer needs help because he already realizes this.

Dunford explained that industry needs speed and direction—and fast. He said that the rotorcraft industry had never been at a more challenging—actually tipping—point in its history, with research, development, test and evaluation (RDT&E) being at its lowest ebb in 40 years. He also reminded the audience that when the skills and experience started seeping out of the manufacturing facilities in the late 20teens (when the current tranche of orders reach completion), they would be hugely difficult to reform—and at what cost. "We need to diversify and keep the industrial base going," he pointed out.

For the full story visit www.aviationtoday.com/rw/military/attack/75612.html



EAG's Personnel Recovery Course Completes Spanish Tests



The European Air Group held its annual Combined Joint Personnel Recovery Standardization Course (CJPRSC) at the Albacete airbase, Spain, from October 14-26. This was formally known as the Combined Joint Combat Search and Rescue course (CJCSAR). The concept behind the annual CJPRSC is to provide individual training for personnel with responsibility for personnel recovery tasks. It trains and tests their knowledge and proficiency in planning and executing PR missions "in a non permissive, multinational environment embedded in a COMAO [Composite Air Operation], using operational documents."

For the full story please visit www.aviationtoday.com/rw/military/medical/75397.html



'Check Six' on 2011

As we come to the end of 2011 what have we learned in the last 12 months and what is in store for the coming year in terms of the ongoing utility of military rotorcraft? What has certainly been confirmed is that helicopters continue to retain an important place at the cutting edge of military operational strategy. This was confirmed on May 2 in the raid mounted by U.S. Naval Special Warfare Development Group (DEVGRU), informally known as Seal Team Six, to "take out" Osama bin Laden at his hideaway "in plain sight" in the Pakistani military-heavy city of Abbottabad. Quite how he was able to survive there without being discovered has still not been explained.

Codenamed Operation Neptune Spear, two modified Sikorsky MH-60M Black Hawks and two Boeing MH-47G Chinooks from the U.S. Army's 160th Special Operations Aviation Regiment (SOAR) performed the mission, supported by fixed-wing aircraft and unmanned aerial systems. One of the Black Hawks crashed and although an attempt was made to destroy it, part of the tail survived to reveal a never-seen-before modification.

This modification came as a huge surprise to most of the international aviation community, providing that in a world of cell phones with cameras—it is still possible to keep a developmental secret.

The shooting down of a U.S. Army CH-47F Chinook with 38 soldiers and other personnel onboard served as a reminder that helicopters flying low and slow are very vulnerable to ground fire, especially heavy machine guns and, in this case, rocket propelled grenades (RPGs).

For the full story, please visit www.aviationtoday.com/rw/military/attack/75396.html 

Around the World

The following stories appeared in the Around the World section of recent issues of the Military Insider e-letter. To read more, follow the links below and visit www.aviationtoday.com/rw 

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K-MAX Operational in Afghanistan

www.aviationtoday.com/rw/military/utility/75495.html

Diamond in the Rough

[/rw/military/attack/75284.html](http://rw/military/attack/75284.html)

Australia

Thales, Boeing Pick EC135 for Australian Bid

www.aviationtoday.com/rw/military/attack/75609.html

Australia Receives Last Eurocopter Tiger

[/rw/military/attack/75314.html](http://rw/military/attack/75314.html)

Brunei

Sikorsky Supplies Brunei with S-70i Black Hawks

Hawks

www.aviationtoday.com/rw/military/utility/75117.html

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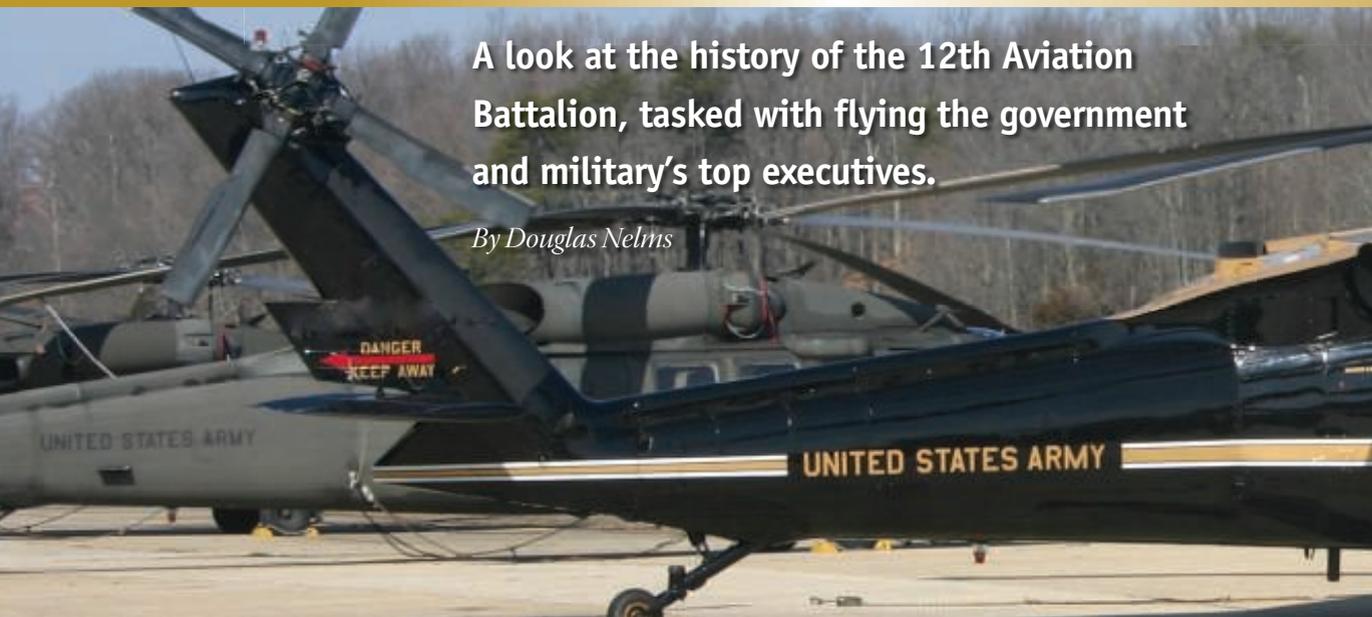
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ARMY 12TH

A look at the history of the 12th Aviation Battalion, tasked with flying the government and military's top executives.

By Douglas Nelms



Like most major U.S. corporations, the U.S. Army maintains a fleet of VIP aircraft for its top executives. And for the same reasons—to get its top people where they need to go as quickly and efficiently as possible.

However, while this fleet of rotary and fixed-wing aircraft serves the same purpose as its civilian counterparts, it has one caveat that civilian corporations don't have—it's also available "to support our nation's leadership in all contingencies, which could include natural or man-made disasters," according to the unit's commander, Col. Scott Sanborn, a dual-rated aviator who most recently served as the chief of operational integration for the Secretary of Defense's Intelligence, Surveillance and Reconnaissance Task Force. This VIP flight detachment is officially

known as the U.S. Army Air Operations Group (AAOG), headquartered at Fort McNair in Washington, D.C., and tasked to provide aviation support to the Military District of Washington (MDW) and Joint Forces Headquarters-National Capital Region (JFHQ-NCR).

This support is provided by three "pillars" made up of separate fixed and rotary wing operations, plus command of Davison Army Airfield at Fort Belvoir, Va. and the Pentagon helipad.

The fixed-wing element, the U.S. Army Priority Air Transport (USAPAT) command, operates corporate jets consisting of three UC35 Cessna Citations, two Gulfstream GVs and a G550 based at Andrews AFB, Md., a GIII at Ramstein AFB, Germany and a GIV at Hickam AFB in Hawaii. USAPAT has the primary mission to provide long-

haul support for the top tiered offices of the Department of the Army, such as the Secretary of the Army and Chief of Staff of the Army, and the commanders of U.S. Army forces in the Pacific and Europe. It also includes commanders of organizations such as U.S. Army Training & Doctrine Command, Army Forces Command and Army Material Command, as well as Congressional delegations traveling in support of Army operations.

The largest segment of the AAOG is the 12th Aviation Battalion, based 16 miles south of the Pentagon at Davison AAF to provide rotary-wing support for the Pentagon and MDW.

However, "it's much more than MDW. If there is an Army rotary-wing requirement [within the National Capital Region, or NCR], we support it," Sanborn said. "The primary customers

FLYING THE BRASS



U.S. Army Air Operations Group's 12th Aviation Battalion flies a fleet including "gold top" VH-60, UH-60 and UH-72A helicopters.

would be the senior leadership based out of the Pentagon (such as senior staff officers, directors, Chiefs of Service, Secretaries of the Services, etc.), or government agencies based throughout the NCR, such as the National Geospatial Intelligence Agency, the U.S. Cyber Command at Fort Meade, or any of the senior leaders that have aviation requirements."

The AAOG was officially activated on Oct. 4, 2005, as a result of lessons learned from the terrorist attacks on 9/11. Gen. Richard A. Cody, then Vice Chief of Staff and an Army Aviator, recognized the need to have a consolidated, colonel-level headquarters "to orchestrate all the aviation aspects supporting the NCR," Sanborn said.

However, origins of the rotary-wing VIP operations date back to 1955, when Secretary of State John Foster

Dulles decided to find out if it would be faster to drive to the President's retreat at Shangri-La, now Camp David, or be picked up at the Pentagon by helicopters from Davison AAF and flown out. It was 45 minutes faster by helicopter.

Almost immediately the 3rd and 509th Transportation Companies, based at Davison and flying Piasecki CH-21s and CH-25s, had their mission changed from supporting the Army's Engineer School at Fort Belvoir to supporting the Pentagon and MDW.

MDW's fixed-wing assets were also based at Davison AAF until 1994, when it was reorganized and those aircraft were assigned to the National Guard as the Operational Support Airlift Command.

In 2004 they were again reassigned, going to the U.S. Army Services and Operations Agency, Office of the

Administrative Assistant, HQDA and physically located at Andrews AFB.

The reorganization of 1994 also assigned the 12th Aviation Battalion to take over MDW VIP flight duties, operating a mixed fleet of Bell Hueys and Sikorsky Black Hawks. The Hueys were retired in 2002. The Army subsequently ordered eight Eurocopter UH-72A Lakotas for the unit, with the first aircraft arriving in July 2010.

Following the tragedy of 9/11, the MDW Engineer Co. was re-organized as the 911th Technical Rescue Engineer Company (TREC) and incorporated into the 12th Aviation Battalion to provide specialized emergency response capabilities in the event of natural disasters or terrorist attacks.

The 12th is led by 1993 West Point graduate, LTC Reed Erickson, who took command on June 9, 2011. The unit



The first of eight UH-72As delivered to the 12th Aviation Battalion at Davison Army Airfield. The Lewis L. Stone Hangar is for the UH-60s. The UH-72As are kept in a hangar on the opposite side of the runway.

consists of six companies, with three rotary-wing companies comprising 26 total aircraft—Companies A and C, equipped with nine UH/VH-60 Black Hawks each, and Company B operating the eight UH-72A Lakotas. The remaining three companies include a Headquarters Company, Company D for maintenance, and the 911th TREC.

The 18 Black Hawks of the battalion are A, L and M models, with eight of the A and M models in VIP configurations as VH-60s. Each company has four VH-60s and five UH-60s.

Bravo Company, which had been deactivated with the retirement of the VH-1s, was reactivated in 2009 in preparation for introduction of the UH-72As.

Until 2003, all of the unit's VIP helicopters had white tops, in keeping with all other military VIP units. However, the unit went from "White Tops" to "Gold Tops" following departure of the VH-1s.

This was to differentiate the 12th Aviation Battalion from the U.S. Marine Corps' HMX VIP squadron, Erickson said.

The selection of aircraft type is determined by the mission, normally dependent on the VIP status and number of personnel needing to be transported, according to CW3 Blake Towler, a pilot with C Company.

The Lakotas are configured for eight passengers with VIP seating, plus VIP headsets, so that two UH72-As could be used if the number of passengers exceed the capacity of a single Black Hawk but not enough for two. Although configured for VIP flights, the Lakotas do not have the shiny gold tops.

A major operation for the unit is a 24-hour standby mission to carry members of the 3rd Infantry Regiment's "Old Guard" and a general officer to Dover AFB to meet the arrival of service members who have died while in the service of their country. Although officially known as the "Dignified Transfer of Remains," it is called "Fallen Heroes" by the members of the 12th Aviation Battalion. Once the transfer of the remains is completed, the 12th returns the Honor Guard to Washington. They do not transport the fallen hero.

Who Gets to Fly

Prior to 1970, requirements for helicopter missions were rather loose, with few restrictions as to authorization for flights. However, in 1969, the media started reporting the flight operations out of Davison as an expensive taxi service for the Pentagon, wasting the taxpayers' money.

As a result, who gets to fly on a 12th Aviation Battalion helicopter is determined based on a very rigid set of rules and regulations, plus a tier level schedule, with the highest tier level being the President. The tier levels then work their way downward, based on job title rather than rank. So while Gen. Raymond Odierno, Chief of Staff of the Army, and Gen. Lloyd Austin, Vice Chief of Staff, are both four-star generals, Gen. Odierno has greater responsibility, and thus higher priority, and tier level, than Gen. Austin, his number two man.

Other restrictions also apply. The 12th is not allowed to transport anyone within the NCR, such as from the Pentagon to Andrews AFB, and being picked up at the Pentagon is restricted to upper level military officers or

DoD/DoA civilians on critical missions. Otherwise, individuals must either drive out to Davison AAF or be picked up at Fort McNair.

"Several checks and balances have been put in place over the past couple of years to ensure that the assets are being used wisely and efficiently," Sanborn said. "We need to do the right thing to protect the taxpayers' dollars."

For standard day-to-day missions, requests from within MDW go through the G-3 Air Staff while external mission requests come down through the Army's Executive Travel Office.

When the pilots are flying within the NCR, such as to pick up personnel at the Pentagon or Fort McNair, they are under the control of the Reagan National Airport (DCA) tower. The NCR has specific routes for helicopter

flights, designed to ensure the safety of the large number of law enforcement and military helicopters operating throughout the Washington area—not to mention commercial airliners arriving and departing National Airport.

When a pilot enters the NCR, he contacts DCA tower and provides the routes, by route number, he will be flying. The tower then approves that flight and advises of any traffic in the area. National tower also has direct communication with the Pentagon helipad, so if the pilot will be landing at the Pentagon, the tower hands him off to the Pentagon helipad controller. On departure, the pilot is again turned back over to the National tower controller. For an IFR flight out of the Pentagon, the pilot files a flight plan on the ground prior to leaving Davison AAF. When departing the

Pentagon helipad, the pilot contacts National tower, which turns him over to departure control for his IFR clearance. In general, flights out of Davison AAF are restricted to a 100-mile radius.

Pilots for the VIP detachment are all highly experienced combat veterans. "We do not have any pilots in the 12th who have not been on at least one tour in Iraq or Afghanistan," Sanborn said. "In some cases, some have had two or more tours. So we have an incredible amount of experience."

All of the pilots in Companies A and C are rated in both the UH-60A and L models, Erickson said. "A Company has the only UH-60M qualified pilots, but not all (A Company pilots) are qualified." He also noted that the Army's Office of Personnel keeps an eye out for UH-60M rated pilots who could be assigned to the 12th, or who

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could be sent through the transition course prior to being assigned to the 12th. Erickson himself is qualified in the A and L models as well as the UH-1, but has not yet been checked out in the UH-60M or the UH-72A.

Pilots who were qualified in aircraft other than the UH-60 or UH-72A, such as Apache, Chinook or Kiowa Warrior, go through a transition course prior to arriving at Davison, he said.

Duty with the 12th is considered a highly sought after assignment, Towler said. "The duty tour is normally two years, with pilots and crew chiefs normally getting assigned to Davison by asking for it ... although it is not generally known about."

The pilots are required to stay current in night vision goggles and instrument flying, with most pilots required to fly a minimum of 48 hours semi-annually. Flight hour requirements are based on the pilot's Flight Activity Category. Those whose pri-

mary job is to fly are listed as FAC-1 and must meet the 48-hour semi-annual minimum. Those with significant additional duties, such as staff duties, are FAC-2 required to log a minimum of 30 hours semi-annually, and the "desk jockeys" with no flight duties are FAC-3 with no minimum requirements.

There are no mandatory simulator training requirements. However, IFR currency is required and simulator training is available as desired. At one time, Davison had an extensive simulator facility for the UH-1s. That is now gone, so the pilots have to go down to Fort Bragg, N.C., or Fort Indiantown Gap, Pa. for simulator training.

Maintenance for the helicopters is provided under contracts to civilian components, although they fall under command of D Company, commanded by CW4 Marc Anderson, a maintenance test pilot. Government employee civilian maintenance personnel maintain the UH/VH-60s.

Maintenance on the UH-72As is provided under a 10-year contract with Sikorsky Aerospace Services. That contract is now at the halfway point, SAS said. Sikorsky also noted that as the principal logistics support contractor for the Lakota program, it is maintaining an average 90 percent operational availability for the fleet with a material fill rate of 95 percent.

The unit can provide the first two echelons of maintenance in-house, to include AVUM (unit maintenance) and AVIM (intermediate maintenance). For depot level maintenance the aircraft are normally sent to the Corpus Christi Army Depot (CCAD). However, special permission can be obtained to do depot level within the unit.

VIP Equipment

While the UH/VH-60As and Ls have analogue "steam gauge" cockpits, the UH/VH-60Ms and the UH-72As have digital multifunction displays (MFDs). The aircraft are equipped with special



avionics allowing them to communicate with law enforcement and other civilian organizations in the event of emergency operations.

The UH-72As are equipped with Raytheon ARC-231 tactical radios with FM/VHF/UHF bands as well as Wulfsberg 5000 and 2000 radios, with the 2000 used to communicate with civilian law enforcement agencies. The aircraft are also equipped with Blue Force Trackers, a GPS-enabled system providing the location of other aircraft.

The Black Hawks have a combination of Honeywell, Raytheon and Rockwell Collins avionics as well as a BAE AN/ASN 128 GPS system. The VH-60s also have a Bendix Stormscope and Rockwell Collins UNS Nav System.

Unlike the UH-60s, the UH-72A is an off-the-shelf helicopter, a militarized EC145 purchased directly from

EADS North America, parent company to American Eurocopter, which produces the aircraft in Columbus, Miss. The first 20 pilots from Bravo Company received training directly from Eurocopter, according to CW-3 James Lamb, a B Company instructor pilot. Pilots designated as UH-72A instructors back in the 12th were required to have already been instructor qualified.

One critical area of training is to strengthen and maintain the synergetic relationship between the helicopter pilots and the 911th TREC. The 911th is the only unit of its kind in the Army, specializing in rescue techniques for victims trapped in structurally damaged buildings. Its members are all combat engineers trained in rescue operations.

"C Company has the specific mis-

sion to transport the 911th TREC's Initial Response Team (IRT) in the event of activation," Erickson said. "To prepare for this, the two units train on sling load operations monthly in day and night conditions to practice the loading and rigging of vehicles, hand and arm signals, and proper sling operations. This mission is executed periodically throughout the year in support of external training missions with other DoD and civilian emergency response agencies."

Erickson noted that the 12th Aviation Battalion staff interacts with other agencies "to identify requirements and refine our plans when needed. Pilots receive most of their training internally through a thorough local area flight orientation of key locations and flight routes supporting our missions." 〰

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IS LYNX WILDCAT

AgustaWestland



Artist's impression of the two versions, Army and Royal Navy, flying in formation.



WILD ENOUGH?

As the new AW159 Lynx Wildcat completes initial sea trials and readies for deliveries to begin to the British Army and Royal Navy, questions remain over whether it represents a big enough capability improvement.

By Andrew Drwiega, Military Editor



The AW159 Lynx Wildcat from AgustaWestland is the successor to the existing Lynx and will enter service with the British Army and Royal Navy (RN) during 2014-2015, more than 36 years since the first Lynx helicopter achieved operational capability with the British Army in 1978. The designations are the Lynx Wildcat AH Mk1 for the Army and the Wildcat HMA Mk1 for the Royal Navy.

Lynx Wildcat may have the same general appearance as the basic Lynx, originally the result of cooperation between Westland Helicopters and Aerospatiale of France (as were the Puma and Gazelle), but AgustaWestland has been more than insistent that the AW159 is a modern aircraft that's strongest link with its predecessor is its heritage.

"This is the first helicopter in AgustaWestland that has been designed completely in a digital environment and [that] has been key to the success of the program," says the company's head of products, David Hillcoat. "The information created in the design phase has then been transferred and used in the technical publications and the training courseware."

The Wildcat was borne out of the Ministry of Defence (MoD) requirement for a new small battlefield reconnaissance helicopter as well as a maritime surface combat/reconnaissance aircraft that was capable of being deployed on the RN's destroyers.

The National Audit Office (NAO) Major Projects Report 2011 issued on November 16 stated that:

"Based on the current assumptions within the Rotary Wing Strategy the quantity of Wildcat aircraft to be procured comprises 34 Battlefield

Reconnaissance Helicopters with a further eight Light Assault Helicopter (LAH) role variants of the Battlefield Reconnaissance Helicopter, together with 28 Surface Combatant Maritime Rotorcraft. The Light Assault Helicopter role requirement will be subject to appropriate requirement approvals. Planning Round 2011 Options introduce funding for the Light Assault Helicopter role equipment as well as de-scoping the Battlefield Reconnaissance Helicopter requirement by four aircraft, resulting in a total fleet of 66 aircraft. A further Planning Round 2011 Option was run to revise the profile of the resources available for the Wildcat project between financial year 2014-15 and financial year 2015-16."

This decision seems to be further supported by comments made by defence procurement minister Peter Luff to the House of Commons a month later on Dec. 14, 2011: "We are planning to increase numbers of Wildcat helicopters being purchased from 62 to 66. The fleet will consist of three types: 28 Helicopter Maritime Attack, 30 Army Helicopter (AH), and eight LAH [versions]. Four of the LAH aircraft were previously to have been AH type. The costs of conversion are still under consideration." AgustaWestland's Hillcoat said that he could not

comment on the proposal as the company currently had no further orders for the proposed additional aircraft. He also could not state how this aircraft, in a light assault helicopter role, might differ in specification from the planned Army version.

The Wildcat is a single source, combined helicopter procurement program has designed to meet both the Army and the RN requirement to replace the existing Lynx helicopters, although the 22 recently modernized Mark9A British Army Lynx should continue to be used after the new Wildcats have entered operational service. The Army will receive its first Wildcat in April this year with the RN's first aircraft arriving one year later. In service dates are set for one year after first aircraft delivery and Hillcoat confirmed that all 62 aircraft will be delivered by the end of 2016.

The MoD has bought into AgustaWestland's assurance that the land and maritime versions "will have a high degree of commonality and will be able to switch between Army and Royal Navy roles, principally through the changing of role equipment."

The helicopter is a six ton, twin engine, multi-role platform which, according to AgustaWestland, will "significantly enhance the Army's ISTAR capabilities." Systems are based around



Eight light assault helicopter (LAH) versions of the AW159 Wildcat are being discussed for service with British special forces.



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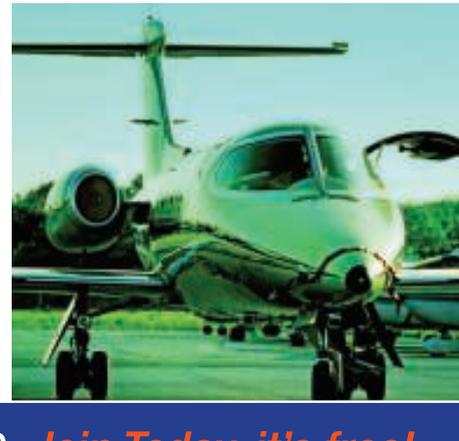
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AW159 lands on an aircraft carrier.

a digital and integrated Open Systems Architecture that will offer improved situational awareness. A forward looking infrared (FLIR) electro-optical system is included to provide “accurate position reports and targeting data. The sight has a laser range finder and designator for both ground and air forces. The aircraft is also equipped with the Bowman radio that provides secure voice and data ... with an improved data modem for the passage of secure targeting data.” The company claims that its modern design will allow future growth and the ability to integrate new and emerging ISTAR technology.

The Wildcat will retain its maneuverability by using the already proven CTS800 engine, recently incorporated into the Lynx Mk9A modification. The tail has been redesigned which, according to AgustaWestland, allows a more powerful tail rotor system and “improves the aircraft’s strength and stealth qualities.” The cabin has also been redesigned to be larger.

In 2006, an AgustaWestland statement put the cost of 70 aircraft at £1 billion. Current costs for 62 aircraft have been put at £1.7 billion (around £27 million each), although Hillcoat declares

categorically there has been no cost increase and that the program is on schedule.

The RN version of the Lynx Wildcat, prototype ZZ402, has already undergone sea trials onboard the frigate HMS Iron Duke around Britain’s south coast and waters of northern Scotland. During the 20-day trial period the test Wildcat conducted 390 flight deck landings in a variety of sea states, including 148 night landings—76 of them using night vision goggles. Sea trials were required as the AW159 is categorized as a new aircraft.

Sensors around the helicopter recorded more than 4,000 items of data from the helicopter’s engines, rotor and transmission. The results of the sea trials will be evaluated over the coming nine months.

What is concerning about the Lynx Wildcat is that it really appears to be an improved version of the Lynx—and however good that is, it looks to be a long way from any kind of radical step forward in helicopter design in the way that Sikorsky is developing its S-97 Raider. Both AgustaWestland and the MoD could rightly argue that this was never the intention when a replacement was being sought for the old Lynx. However, does it represent an opportunity lost to really take helicopter development a much bigger step forward?

The U.S. Army is now well into its Manned Unmanned teaming program with the integration of capabilities between and across all platforms, as well as sharing data with ground troops. The MUSIC exercise in September 2011 brought together a diverse fleet of aircraft, all of which have the capability to shoot and stream live video as well as exchange and use information: the AH-64D Apache Longbow Block II, OH-58D Kiowa Warrior, MQ-1C Gray Eagle UAS, RQ-7B Shadow UAS, RQ-11B Raven UAS, Puma All Environ-

ment Capable variant and the MQ-5B Hunter UAS.

One of the stand-out requirements for the next Armed Aerial Scout (AAS) for the U.S. Army is the need for aircraft to be optionally-manned, a factor that the Army command believes will mitigate the need for aircrew to be present for every mission—hopefully freeing them up from repetitive point-to-point supply missions. Again, the Lynx Wildcat was not designed with the AAS completion in mind, but when measured against the ambitions of the U.S. Army, how much appeal will it have to the wider military market?

Geoff Russell of AgustaWestland’s external affairs points out, “When the U.S. Army releases their mission requirements, we’ll determine the best platform to suit their needs. We’re evaluating our options and will participate in the upcoming flight demonstration with the best aircraft available.”

He adds that in the predecessor of the AAS, the Armed Reconnaissance Helicopter (ARH), the U.S. Army was looking for a smaller, lighter helicopter. Addressing the issue of making the Wildcat optionally manned, Russell asserted that AgustaWestland is “studying unmanned and optionally manned rotorcraft but we are not disclosing details at this time other than we have a program using the SW-4 platform, which will fly this year.”

(In 2011, AgustaWestland’s CEO at the time, Guiseppi Orsi, announced the company’s intent to move into the unmanned aerial vehicle (UAV) market, with a platform based on the PZL Swidnik SW-4 light turbine single engine helicopter. First flight was declared as sometime in 2012.)

So the AW159 Lynx Wildcat seems set to bring a step upgrade to existing capability to both the British Army and RN, and it may well appeal to other military Lynx operators who do not need the sophistication and integration of platforms and systems currently being sought in the United States. 

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Blue Sky Unveils HawkEyeLink, Inks Agreement with Bell

La Jolla, Calif.-based Blue Sky Network launched its HawkEyeLink for Bluetooth messaging during Heli-Expo. The Iridium voice and messaging service debuted for Android smartphones and tablets. The system, which is “aircraft manufacturer agnostic,” comes with an 8130 form for easy installation and field approvals from Blue Sky’s FAA/PMA facilities.

Once the modem is installed in the aircraft, users can pair Android devices with HawkEyeLink and Bluetooth headsets with the Blue Sky app. Currently, Android is the only platform supporting HawkEyeLink.

“We’ve developed the iPhone and iPad app, but Apple requires a lot of regulation, approval and licensing to use Bluetooth on their devices. It’s all done, we just need to get approval,” said Matt Cadwell of Blue Sky Network. Blackberry and Windows Mobile apps are also in development.

The system has a 30-foot radius for Bluetooth connectivity, making it useful for offshore transport operations that use Sikorsky S-92s and other large transport helicopters, such as “these are carrying 20-25 people, and [HawkEyeLink] is giving connectivity to all of them, not just the guys up front.”

“We’ve developed this for two different types of people in the aircraft: One, if you have a two-pilot operation, the non-flying pilot can handle things like calling the operations department ... but our initial thought on this was the people in the back of the aircraft,” said Cadwell.

With FAA expanding its regulations to allow tablets as part of electronic flight bags (EFBs), the use of Blue Sky’s system is just the addition of a new app on a tablet, Cadwell stated. Blue Sky has also signed with Bell Helicopter to provide its HawkEye PT for Bell’s support and services division. The Iridium tracking and messaging software will track helicopters inbound for Bell’s service center in Piney Flats, Tenn. —By Chris Sheppard, Associate Editor



Russian Heli

Head of Russian conglomerate eyes emerging commercial markets in China and Latin America while projecting a 20 percent increase in production and revenue.

By Andrew Parker, Editor-in-Chief

Ka-52 Alligator. While Russian Helicopters is expanding globally in civil markets, the manufacturer's military variants continue to draw international attention.

During a Feb. 13 interview at Heli-Expo, Russian Helicopters CEO Dmitry Petrov sat down with *Rotor & Wing* to discuss a number of topics, ranging from global expansion, emerging markets and training, to aftermarket support and R&D. The Moscow-based conglomerate is made up of a dozen

subsidiaries, including Mil and Kamov, employing a total of around 40,000 people.

When asked whether the company will compete with Sikorsky's X2/S-97 Raider and Eurocopter's X3, Petrov said Russian Helicopters has its own "vision" or approach to developing a high-speed rotorcraft design, known as

the Advanced High-speed Helicopter. He explained that both Mil and Kamov are working on separate designs.

"By the end of this year, based on the projects they've developed so far, we'll select the best one in terms of advancement and feasibility, and we will continue basing our research and development on [the design that's cho-



copters CEO: STEADY GLOBAL GROWTH

sen].” Petrov added that, “we understand that within the next three, five to seven years, the market will not be ready to buy speed at a high price. According to this principle, we have chosen to be a bit more conservative.”

Petrov said that Russian Helicopters is keeping tabs on the civil rotorcraft market in China, as the government loosens commercial airspace restrictions. “We are very closely monitoring the situation because we’re aware of this opportunity. We’re keeping an eye on it.” He added that “we know roughly what our share of this market should be, but I’m not able to get into further details. But it is expected to be hundreds of new aircraft.”

As far as the military side, Russian Helicopters is “currently number one, and we’re going to retain this position on the market,” Petrov remarked, pointing to an “extensive order portfolio” from the Chinese Army. “For a number of years, these orders will keep coming in,” he continued.

Russian Helicopters is also active in supporting the rotorcraft needs of China’s public service operators, with Kamov Ka32-A11BC deliveries starting in 2011, in both SAR and firefighting configurations. “We started with some single contracts, but this year we signed a contract for 20 aircraft, to be delivered from 2013 to 2015,” Petrov noted. Russian Helicopters is also setting up an aftermarket support business under a joint venture with Chinese partners, and is in discussions about establishing

an assembly plant in China. Support services are scheduled to start in 2013.

Petrov also discussed another emerging market—Latin America, which the company “started exploring two years ago.” Russian Helicopters began delivering the Ka-32A11BC and Mi-171A1 early in 2011, and late last year received Brazilian certification for the Ka-32A. “The Mi-171s will be operated by one of the companies working for Petrobras,” Petrov explained. “Other options and deliveries are expected in the near future.”

Operators in the region are also interested in “lighter aircraft,” he continued, “such as the Kamov Ka-226T and the Mi-34S1, and we’re currently in negotiations over the opportunity to start assembling these aircraft in Latin America.” He pointed to contracts in Argentina, Colombia, Mexico and Venezuela as examples of additional growth areas.

Petrov reports that the company’s group of 12 subsidiaries produced a total of 265 helicopters during 2011. “This year we will produce more than 300,” he explained, “so our sales and output will experience a steady level of growth of about 20 percent annually, in terms of both units and revenue.” He predicts that Russian Helicopters will

“maintain the same pace in the coming years. Why I can be confident in saying this is we have an extensive and diversified firm order backlog,” including, on the military side, with the Russian Ministry of Defence through 2020.

“We’ve also experienced great sales in the domestic market—civil helicopters both for exports and for large commercial operators inside Russia.” As a result, the company’s sales are expected to reach 150 billion rubles (approximately \$5 billion U.S.), he added.

Russian Helicopters is also examining the light single-engine turbine market. “We’re studying this segment now, actually two sub-segments—2.5 and 4 tons,” Petrov said.

“We haven’t been present in this segment until now. At the same time we appreciate the risks in these segments are significantly high. In both sub-segments, new releases are expected soon from our competitors, including Sikorsky, AgustaWestland and Eurocopter.”

In order to achieve success in the light segment, he continued, “we will have to be very careful and thorough while calculated from the very beginning. Once we feel that we should have a helicopter in both of these segments—or in one of them—we’ll look at all the



Russian Helicopters CEO Dmitry Petrov.

aspects to come up with a balanced and frugal, fiscal decision.”

Russian Helicopters is expanding its aftermarket support network as well. “We are establishing training schools at service centers and representative offices around the world, including China and Latin America,” Petrov explained. “We’ve prepared some programs for training both the pilots and technicians. They’re cutting-edge, actually, and we will be offering training syllabi through the operators and our customers.” The manufacturer is also working to establish the Training Helicopter Academy near Moscow. The academy “will be scaled up to a large training center, with full-scale flight testing grounds, simulators approved to Level D/Stage 7, and a highly qualified pool



Mi-171 deliveries to Brazil started in early 2011.

of training instructors,” Petrov noted. “We’ve already started teaching and educating there, by 2015 we’ll reach the full output of flight and technical training.”

Promoting flight safety and reducing accidents is an important part of the company’s objectives, according to the CEO, who remarked that Russian Helicopters has worked to annually reduce the rate of accidents per number of units produced. “This is due to the continuous increase of the quality of our product. We are publishing the service bulletins that are obligatory to increase safety of operation and flight performance,” he said.

Petrov also pointed out that similar to fixed-wing operations, “up to 95 percent [of helicopter accidents] are due to human factors, or pilot error. Especially with our newer models, our operators are working on decreasing the influence of human factors on the safety of flight.”



New passenger-transport version of the Mi-38 with Pratt & Whitney engines.

Among the safety equipment the manufacturer is pursuing for the Advanced High-speed Helicopter and some of its newer variants is an enhanced vision system (EVS). Russian Helicopters is increasingly teaming with avionics and engine OEMs to develop new systems for its aircraft. “There used to be times when about

100 percent of the components for our aircraft were produced in Russia, but now we are working on expanding our global operation,” Petrov said. “With the newer models we’ll be producing in 2015, the share of international-produced components will increase, and we will also increase our participation with global corporations.”

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WEATHER NAVIGATING

As part of the Shopping for Weather series, *Rotor & Wing* examines various weather radar options for helicopter operators.

By Chris Baur

The sixties were great. I wasn't old enough to fly then, but several of the aircraft I flew were of that vintage—the UH-1, OH-58, C-130 and the B727. (I won't mention the Cessna 150, TH-55 or the T-37). Many didn't have radar and the aircraft that did had a single monochrome display that was not integrated into a flight management system. In the industrial heyday of their prime, pilots with starched white shirts and skinny black neckties worked complex radar techniques and interpretations from smoke-filled cockpits with mixed, and sometimes, disastrous results. In my early flying days, helicopter radar was rare, and at the time, I was told airborne weather radar was something reserved “for the big boys.” Techniques such as “skud running” or the use of ADF receivers as a “poor man's lightning strikefinder” were more common. My first experience with weather radar was in the Coast Guard, and my success consisted of

much trial and error. But once you become accustomed to flying with airborne radar, it becomes difficult to fly “blind” without it.

Today, there are several options for both single and multi-engine helicopters that can be forward or retrofit, with costs ranging from \$35,000 to \$150,000. Many radar or multi-function displays (MFDs) are night vision goggle (NVG) compatible so you won't lose a minute of what you've been missing.

Weather Radar 101

If you majored in auto hobby like me, you can take it apart and put it back together, but how does it work? I'll compare radar to a flashlight. The “beam” is the light transmitted from the flashlight into space until it dissipates or hits an object, and the light reflected back toward the holder of the flashlight is the echo or return. The closer the object (range) is to the flashlight, the clearer the image (attenuation). Also, the brighter the flashlight, the better the range and attenuation.

As with radar, if there is one object in front of another, you may only see the object at the closer range, such as being positioned in front of a building—you only see the building. Unlike stadium lighting, the flashlight is a pencil-like beam; you are more likely to detect an object by sweeping the flashlight in an arc of 120 degrees. So imagine holding a flashlight at your waist and navigating your way out of dark, unfamiliar building. As you slowly pan the flashlight right-left-right-left, you will probably adjust the angle (tilt) of the flashlight up and down slightly to check for obstacles and illuminate the path.

Excessive tilt down and you only see the ground at your feet (ground clutter) while excessive tilt up and you miss some or all of the obstacles. Once an obstacle is detected, most people would instinctively offset left or right to see if there is anything behind it. Now replace the flashlight with a 10 to 12-inch antenna that is transmitting 4 to 12 Kw of energy and receiving the reflected returns. While greatly simpli-

RRADAR

THE STORM

fied, this is the basic premise of operating weather radar. Helicopters such as a Eurocopter AS350 and AgustaWestland AW109 use a 10-inch antenna, while larger helicopters can accommodate 12, 15, 18 or 24-inch antennas. Even a 10-inch antenna will provide a 200 nm range, but the larger antennas will provide better attenuation. When flying in heavy rain you can experience degradation in range or attenuation created by the film of water that forms on the radome.

Today's radars will typically display four colors, depicting the level of intensity of the reflected return.

In terms of weather avoidance, the higher the moisture content, the greater the reflection or echo and higher probability of turbulence. Hence green for light, yellow for moderate and red for heavy while magenta depicts either severe turbulence or windshear. You can have turbulence without moisture and you can have moisture without turbulence. "Dry" participation such as snow and ice crystals do not reflect much of the transmitted energy back to the antenna and typically cause the radar signal to scatter. Other forms of precipitation will cause the signal to be absorbed and reduce the range and possibly mask the true intensity of

the weather ahead. Wet participation such as rain, wet snow and hail reflect quite well. The intensity level of the turbulence can also be assessed by the contour of the returns. Like isobar contouring, the closer the contour and change in color (intensity) the higher the probability of strong turbulence and bouncing yourself and your passengers off the ceiling while you figure this out (I have never done this).

As mentioned with the flashlight example, be wary of an echo presentation with nothing depicted behind it. Occasionally one echo or cell can block another more intense one. It pays to use the tilt feature and offset your heading to see what behind an echo. This begs the reminder that today's airborne radar's don't come with a hood and cape or provide the ability to penetrate weather. Airborne radar is for weather avoidance, and combined with interpretation based on training, experience and common sense works quite well.

One of the most misunderstood features on any radar is the use of the tilt function. Most are calibrated between in positive degrees (tilt up) and negative degrees (tilt down) from 0 to +/-15 degrees. Too much tilt down and you will paint nothing but ground clutter, like having your head in the

sand. Too much tilt up and you will either miss the large echo in front of you entirely, or get false returns. The operation of the tilt function is a fluid one depending on the attitude of the aircraft, phase of flight and type of returns that are depicted. If you are on the ground and using the radar to make a go/no-go decision, a high angle of tilt up can aid in determining the location of hazardous weather approaching your location.

On takeoff with a nose-low attitude, a mid-range tilt up will keep you out of ground clutter and looking ahead. In cruise flight, set the tilt so you just start to paint some ground clutter. While in cruise flight I typically set the range out 20-80 miles at low altitude and work the range and tilt together to determine the location, height and intensity of weather ahead. I also like to use FMC/GPS/IRS data to determine wind direction, velocity, cross track, and cell movement to develop my Plan A, Plan B and Plan C for avoiding weather. The same technique can be used on decent or approach when using the radar for weather avoidance, adjust the tilt up slightly to avoid painting ground clutter. Most contemporary radar systems allow you to either manually adjust the gain, or leave it in an automatic setting.

If you are not familiar with gain – leave it in the auto mode. I would compare manually adjusting radar gain as similar to manually adjusting squelch on a radio. On older radar systems, there is benefit in adjusting gain to eliminate “ghosting” in the weather mode and sea clutter in the sea search mode.

Another common mistake with radar is not turning it on. Pilots sometimes forget, encounter weather and get behind in the weather avoidance business. This may be caused by the fear of leaving the radar on after landing. Some radar systems are connected to the transponder. If configuring the radar is not currently part of your checklist or flow item, consider developing procedures or best practices for testing and configuring the radar for different phases of flight. Pilots also like to estimate the size of the cell or precipitation ahead. A simple rule of thumb is to estimate 100 feet for each degree of tilt per nautical mile. Although probably not something you would consider attempting in a helicopter, never try to out climb a thunderstorm.

Doppler radar is a terrific tool for detecting windshear in both ground and airborne based systems. Doppler doesn't detect the location of moisture but detects motion, and in the case of Doppler radar, the motion of updrafts, downdrafts, microbursts and even mountain waves. The back of your 10-9 page will indicate if the airport you are operating near has Doppler. Airborne weather radar can also be equipped with Doppler to depict turbulence and windshear. Windshear systems are categorized as either reactive or predictive. Reactive windshear will indicate you've encountered windshear, while predictive windshear will indicate presence of windshear prior to encountering it. These systems are most commonly found on Air Carrier aircraft.

Who's on Point?

Ground mapping is a feature inherent to many airborne radar systems that allow you to paint various features on the ground using the signature of the

returned echo. Most radar systems are capable of depicting recognizable features such as coastlines, significant terrain and man-made objects such as bridges and large buildings. Certain radar systems have advanced ground mapping capabilities that enable offshore navigation and compliance with AC-90-80B, approval of offshore standard approach procedures, airborne radar approaches and helicopter en route decent areas. Airborne radar can be a tremendous asset for navigation in defined situations. The radar imagery can be combined with other navigation data from flight management computers, GPS or inertial reference system, providing an integrated solution, depicted on an MFD. Heliports or runways can be defined or highlighted though the use of radar reflectors, designed to provide precise depictions. To avoid collision and also assist in being located by SAR aircraft, many vessels carry and display a radar reflector to enhance the appearance of their echo. Many manufacturers incorporate GPWS/TWAS, radar and map functions into an integrated MFD unit or a head-up display (HUD).

Where Can I Get One?

There are several radar manufacturers in the marketplace, but two of the largest for weather radar are Honeywell and Rockwell Collins. Both manufacture standalone or completely integrated systems for a variety of aircraft. Honeywell's lowest cost system, the RDR 2000, has a catalog price of \$31,199 and weighs in at just 10 lbs. It has many features such as Target Alert providing automatic alerting of weather hazards regardless of range setting. Moving up to the Primus 660/880 brings the cost to \$77,998-\$119,284 and features REACT—Rain Echo Attenuation Compensation Technique—which helps depict one cell or echo blocking another from view. It also comes with Auto Tilt, Doppler Turbulence Detection and ground mapping. The Primus 700 Series can be found on large helicopters such as the S-92 and AW139.

In addition to the airborne weather and ground mapping functions found on other Honeywell systems, the Primus 700 provides sophisticated mapping and navigation features such as sea clutter reduction, sea search for locating small targets and target de-confliction in a variety of sea conditions. Honeywell is also developing advanced technologies that apply their radar technology to integrate a helicopter Cable Warning and Obstacle Avoidance (CWOA) that will be capable of identifying hazardous cable, wires, towers and other potential CFIT obstacles. It will also support the ability to “see through” degraded visual environments, or DVEs, such as sand, dust, weather, or brownout landing conditions. A Honeywell spokesperson reports positive results from the first test flight.

Dan Toy, principle marketing manager at Rockwell Collins, said the company is currently offering the RTA-4100 series of weather radars with MultiScan capability for the helicopter market. It is a solid-state radar system providing clutter-free weather detection out to 320 nm and features certified turbulence detection using Doppler measurement techniques. It will also support up to four independent display solutions, each with an independent range capability, as well as dual independent mode and gain setting inputs for pilot and copilot controls. As light as 15 lbs depending on type selected, the RTA-4100 MultiScan radar offers a significant weight savings over many of the systems that are currently available for helicopters.”

While radar was not readily available for helicopters in the past, and if it was, it was heavy, complicated and provided limited benefits. Today's helicopter radar systems provide fully automated detection and display capabilities for both airborne weather avoidance and ground mapping navigation use. Many vendors offer radar training as well as practical hands-on experience in simulators and flight training devices. ㊦

TRAINING NEWS

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► UK MoD Awards Training Contract to FB Heliservices

Cobham Aviation Services and Bristow Helicopters joint venture, FB Heliservices, has agreed to provide helicopter flight training for the UK Ministry of Defence at RAF Shawbury, RAF Valley and Army Aviation Centre (AAC) Middle Wallop. The four-year, £193-million (approximately \$303-million) contract carries two one-year extension options and will also service and support RAF Shawbury and AAC Middle Wallop.

The agreement expands FBH's current Defence Helicopter Flying School (DHFS) support services contract, which has been in place for the past 15 years. FB Heliservices will utilize the school's upgraded fleet of 34 Eurocopter AS350B3 Squirrels and 11 Bell 412EP Griffins for flight training. The company also maintains the helicopter fleet for DHFS, performing most of the extensive repair work at RAF Shawbury.

The contract "allows us to continue to work in close partnership with the UK Ministry of Defence and the Defence Helicopter Flying School to deliver military heli-

copter aircrew training," noted Peter Richardson, FB Heliservices managing director.

Army students undergo training in battlefield support scenarios, low-level flight, night vision goggle (NVG) operations and tactics. RAF students receive training with ab-initio search and rescue, NVGs and tactical flight.

FB Heliservices also uses an FAA Level D Bell 412 simulator for training in IMC flying emergencies, malfunctions and tactical maneuvers. The simulator also features a full NVG-compatible cockpit.—*By Chris Sheppard, Associate Editor* ✈



Pair of FB Heliservices AS350B3s in flight with the Defence Helicopter Flying School.

Rotorsim to Operate First AW189 Simulator

AgustaWestland and CAE joint venture, Rotorsim, is set to become the first provider of AW189 full-flight simulator training. The CAE 3000 Series sim will begin service in third quarter 2013 in Sesto Calende, Italy. **For the full version of this story, please visit www.rotorandwing.com** ✈

Metro Aviation Inks Eurocopter Training Pact

American Eurocopter has reached an agreement with Metro Aviation to supply AS350 flight simulator training for Metro pilots. The U.S. arm of the helicopter maker has an AS350 Level B-approved simulator at its facility in Grand Prairie, Texas.

The dry lease agreement involves Metro providing its own instructors. EMS pilots will also go through Eurocopter's new inadvertent IMC course, practicing system failures and emergency landings.

For the full version of this story, please visit www.rotorandwing.com ✈

NSW Police Host Tactical Training Seminar

Aviation support units from across Australia converged in Parramatta for a three-day helicopter tactical training course hosted by the New South Wales Police Force Aviation Support Branch (PolAir).

The tactical flight course, led by airborne law enforcement trainer Kevin Means, was aimed at improving helicopter and fixed-wing skills as well as communications with other non-airborne law enforcement units. Means has more than 12,000 flight hours as a pilot and tactical flight officer during 20 years of service with the San Diego Police Department in California.

"This course gives us an opportunity to learn from his experience and expertise to equip our officers with the techniques to best use the latest technology," noted Superintendent Mark Noakes, PolAir Aviation Support Branch Commander. "It was also a chance to network with police air support units across Australia and improve inter-operability during high-profile events."

PolAir's fleet comprises one Eurocopter EC135P2+, two single-engine AS350s, one twin-engine AS350, one twin-engine Kawasaki BK117 and one fixed-wing aircraft. ✈



Photo by Ernie Stephens

During Heli-Expo in Dallas, the Airborne Law Enforcement Association (ALEA) granted its first-ever accreditation to two of its member organizations—the Houston Police Department (shown here with ALEA's Jim Di Giovanna) and the Columbus Police Department in Ohio. ALEA presented the units with plaques and American Eurocopter donated scholarship fund money. Read more about ALEA on page 54, "The Center of Our Universe," and look for more photos and the full story at www.rotorandwing.com



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Leading Edge

By Frank Lombardi



Tail Feathers and the Gurney Flap

Traveling the floor at the 2012 Heli-Expo, I had to make a second and third visit to many a helicopter on display in order to absorb more of what my eyes were taking in, beyond the glitz of the latest gee-whiz cockpits. Many waited for their turn to sit in the driver's seat. I slowly circled each aircraft from tip to tail, trying to pick up on as many ingenious design points as I could. One of the things that I noticed, was that no matter what degree of automation may have been in the cockpit, the old tried and true engineering fixes to aerodynamic issues were still just as prevalent today as ever. Such is the case of the Gurney Flap.

The Gurney Flap was named after racecar driver Dan Gurney, who devised it to increase the aerodynamic downforce helping a racecar hold the road. It's nothing more than a small tab, angled at 90 degrees to an airfoil and mounted at its trailing edge (see Figure 1). Although seemingly insignificant, its effect can be great. A Gurney Flap simply "bends" the airflow around a surface in such a way that it makes the surface act as if it were a different size or shape. This of course changes the aerodynamic characteristics of that surface, but without the need for a complete structural redesign; something manufacturers like to avoid.

When a Gurney is placed on only one side of a surface, the flow acts as if a flap or an aileron was deployed along that side. When installed on both sides of a surface to form a "T,"

it tricks the airflow into thinking the airfoil is longer to travel over. A larger surface area equates to more lift production. More on that in a minute.

Designers beware. A Gurney Flap can add few percent increase in drag, depending on how tall it stands. The height is usually kept within 1-3 percent of the length of the airfoil's chord. Keeping it short allows it to remain in the boundary layer (the layer of air very close to the airfoil surface that is



A Gurney Flap "bends" the airflow around a surface in such a way that the surface acts as if it were a different size or shape.

slowed due to viscosity/skin friction). Here, its drag will be negligible.

Due to the craziness that is helicopter aerodynamics, it can be difficult to explain why Gurney Flaps end up on certain designs without knowing a bit of history. However there are some common reasons they are used.

When it's discovered that the aircraft doesn't fly at the optimum cruise angle, adding a Gurney Flap to the horizontal tail will change this "balance" angle for the same airspeed. It's like changing the angle at which the horizontal tail was mounted to the aircraft, but much easier to do.

The tail surfaces of a helicopter provide stability. They provide a balance force to resist a change in trim, and a restoring moment to help bring us back to trim. To maintain stability, it is important that the airflow remains attached to the tail without stalling. Because helicopters climb at an almost level fuselage attitude, the negative angle at which the air hits the horizontal tail is very high and can approach stall (that's why most horizontals are cambered, and mounted "upside down"). Attaching a Gurney Flap to part or all of the upper surface can delay the stall even more when flight testing discovers the initial design is not enough, or when it's found that the left side of the horizontal sees a different flow than the right.

Thick airfoils that end in pointy trailing edges also tend to stall from side to side at shallow angles as the air tries to rejoin at the trailing edge, creating a directional instability. Adding a "double" Gurney gives the flow a defined separation point.

Lastly, as increases in gross weight or CG are made with subsequent model variants, a once-adequately-sized tail can now prove to be too small to maintain proper stability margins. Adding a double Gurney can generate the larger lift forces required to regain stability without redesigning a new tail.

In short, a Gurney Flap is a quick and easy fix to solve minor problems in flight test. They can cost you some drag, but they are as simple and reliable as it gets. Walk around your own aircraft and see what you find! 🛩️



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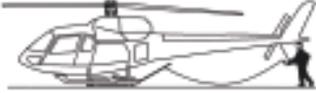
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Law Enforcement Notebook

By Ernie Stephens



The Center of Our Universe

With all due respect to the real folks who fly for the Washoe County Sheriff's Office, and the fictitious cops who appear in the TV series "Reno 911," I'm just not real crazy about Nevada. Even so, I've already booked my flight to Reno, because that's where the 42nd annual Airborne Law Enforcement Association conference and exposition from July 11 to 14, 2012.

ALEA represents the center of the universe for us. Every aircraft manufacturer, service provider and equipment vendor that the airborne LE community does business with comes here to display their wares. There are a dozen public safety aircraft on display, hundreds of booths with all kinds of products to examine, and over a dozen workshops covering everything from unit start-up to the airborne use of deadly force.

But ALEA is so much more than that. One thing many people who have never been to ALEA fail to understand is the access it provides. When I say "access," I mean face-to-face contact with people you would have a difficult time getting to anywhere else. For example, while the majority of the companies who do business with your agency work very hard to tend to your needs, when was the last time you were able to stand in front of the CEO of the company that manufactures your aircraft, and tell him or her what you don't like about its design? Having a problem with the chinstraps on your helmets? The director of production may very well be there, and find a creative way to fix the issue that your sales rep doesn't have the authority to offer. Those kinds of movers and shakers are there, easy to

access, and will talk to even the lowest-ranking person from your unit.

And then there's the technical assistance. Here's an example: My unit's mechanic discovered a damaged pulley aboard one of our helicopters, but couldn't begin to account for what made it fail. So, I took the part to ALEA. Once there, I was able to have two senior engineers who work for the aircraft company look it over. Not only did they figure out what caused the damage, it prompted them to consider redesigning the part.

Most of all, ALEA brings together around 1,500 of your fellow aviation professionals, including commanders, tactical flight officers, mechanics, administrators and drivers. This event is all about answers; answers to the questions you brought with you, and answers to the questions you never even thought to ask. And then there are the informal but equally effective "committees" that gather in the lunch areas, hotel lobbies, and after-hours watering holes. To your left are four surveillance specialists from a federal agency, who are discussing the limitations of the moving map system you're now having second thoughts about ordering.

In the corner is a friendly argument—between mechanics, no doubt—about whether or not flight crews should change their own searchlight lamps, since they sometimes explode. And your new friends from an agency in Canada just gave you a foolproof way to justify an avionics upgrade to a city administrator who doesn't know an HSI from a box of Cocoa Puffs.

Unfortunately, though, I often hear that many aircrew members have never

been to our version of "the big dance." They frequently cite a lack of cooperation from their agency heads, who usually offer one or more of the following reasons: 1) they don't see the cost benefit of this kind of networking, 2) it looks like a cover for a three-day beer blast, or 3) the department truly doesn't have the money. (I heard all three where I used to work.)

But how much money are we talking about? Registration fees run from \$50 to \$250, depending on how many days you want to attend, whether or not you're a member of the association, and how long you waited before registering.

For the full admission price that applies to your situation, you can spend hours cruising the exhibit hall, and attend as many of the workshops and classes as you wish. If you're also able to come the week before, ALEA offers some excellent multi-day courses covering subjects like unit management, water egress and thermal imagery tactics. These courses have an additional tuition attached to them, which can range from \$75 to \$400, but are worth twice that amount, in my opinion. And did I mention that it might be tax-deductible if you pay for it yourself?

If keeping the cost down is what you have to do to sell it to the boss, there are some tactics you can try: Book your flight as far in advance as possible, take advantage of the deep discounts ALEA gets from the hotels, and belly-up to the table for all of the complimentary meals attendees are entitled to.

All I ask is that you go. ALEA is about making and keeping you and your unit safe, effective and efficient. Look for me there! 轟



John Friedrichs
Director, Quality Control

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