ARMY AVIATION

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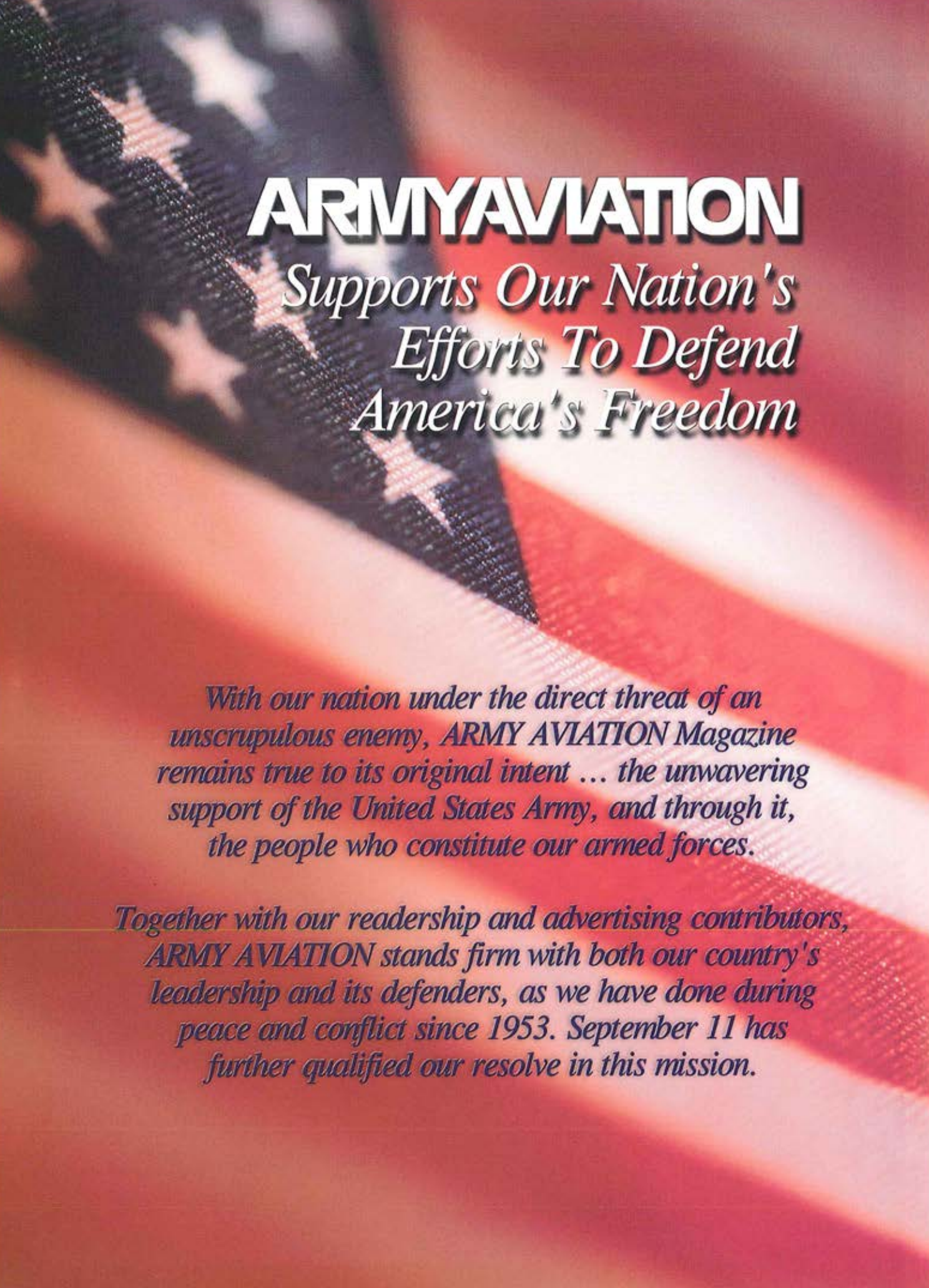
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Together with our readership and advertising contributors, ARMY AVIATION stands firm with both our country's leadership and its defenders, as we have done during peace and conflict since 1953. September 11 has further qualified our resolve in this mission.

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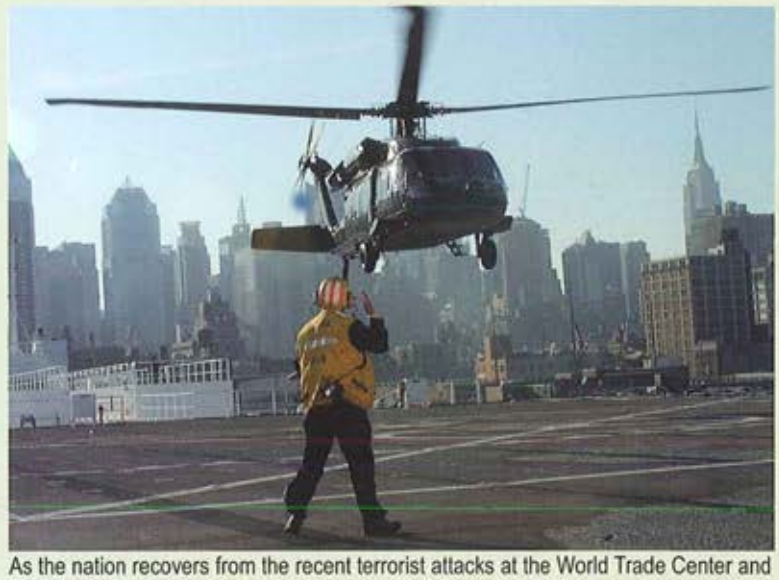
briefings

MG John M. Curran took command of the U.S. Army Aviation Center and Fort Rucker, Ala., and became chief of the Aviation Branch during an Aug. 9 ceremony on the post's Howze Field. Curran, formerly assigned to Europe's Regional Command, South, took over from MG Anthony R. Jones.

Northrop Grumman Corp. has been selected to demonstrate the next phase of the Defense Advanced Research Projects Agency's (DARPA) Affordable Moving Surface Target Engagement (AMSTE) program. Northrop Grumman's Integrated Systems sector is conducting the project through its Airborne Ground Surveillance and Battle Management (AGS&BM) Systems organization. The purpose of the AMSTE program is to develop a system that locates and tracks a ground target moving at up to 50 mph and destroy it with an affordable precision weapon.

Army Aviation Association of America (AAAA) and **Army Aviation Publications, Inc. (AAPI)** have relocated their office effective Aug. 10, 2001. The new mailing address is 755 Main Street, Suite 4D, Monroe, CT 06468-2830; Telephone: (203) 268-2450; Fax: (203) 268-5870.

WestWind Technologies has been awarded a $11.9 million task order by U.S. Army Operations Support Command to procure equipment, manufacture kits and modify 10 UH-60L Black Hawks for the Army National Guard search-and-rescue mission. The program is managed by the U.S. Army Aviation and Missile Command's Program Manager for Utility Helicopters, and the work will be performed at Redstone Arsenal's Logistics Support Facility.



As the nation recovers from the recent terrorist attacks at the World Trade Center and Pentagon, many elements of the Department of Defense and Army have brought their resources to bear. Above, a Black Hawk is seen against the New York Skyline as it delivers Secretary of the Army Thomas E. White to the deck of the hospital ship USNS *Comfort* in New York City on Sept. 19, 2001.

(U.S. Navy photo by PH2 Aaron Peterson)

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SPECIAL FOCUS: PROTECTING THE FORCE: ASE, AVIONICS SAFETY & LIFE SUPPORT

DEPARTMENTS:

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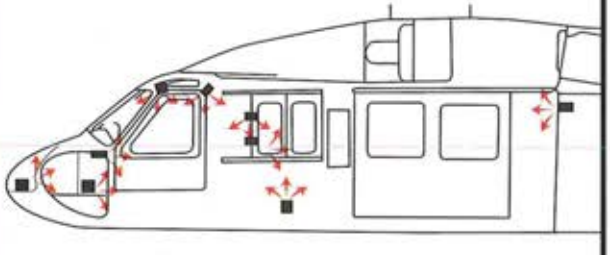

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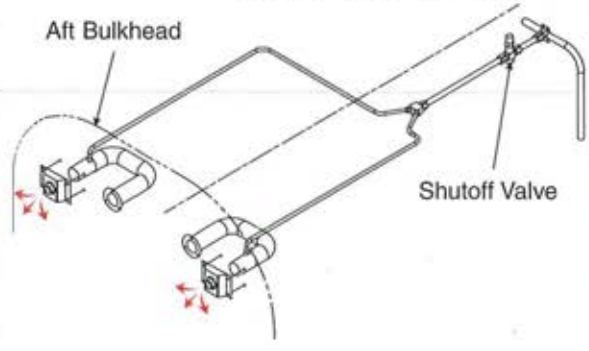

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& Cargo Utility Upgrade

By MG John M. Curran

The UH-60 Black Hawk and CH-47 Chinook have performed admirably for the last 20 to 40 years, respectively. Years of worldwide employment and high operational tempos (OPTEMPOs) have taken a toll on fleet reliability and maintainability. To ensure a combat effective cargo and utility fleet into the 21st century, my Combat Developments Directorate and the project managers in Huntsville, Ala., are executing a modernization effort across the CH-47D and UH-60A/L fleet.

Updating the Chinook

Currently, the project manager (PM) for cargo helicopters plans to rebuild 300 of the Army's 431 CH-47D aircraft to the CH-47F standard to bridge the gap to the future. Improvements to the CH-47 include increases in reliability, maintainability, transportability, the restoration of lost performance capabilities and the ability to effectively operate on the digitized battlefield of tomorrow.

The rebuild of the CH-47D airframe - which was itself a rebuild of CH-47A, B and C airframes - will return it to as new a condition as possible. Included in the rebuild will be all-new electrical wiring, hydraulic lines, airframe stiffening to reduce vibration levels, a new cockpit section, improved bilge paint with corrosion protection, enhanced air-transportability provisions, the Low Maintenance Rotor (LMR) Hub and a digitized cockpit.

The CH-47F airframe rebuild will extend the Chinook's life for another 20 years, while also significantly reducing operations and support costs associated with operating the fleet. Airframe stiffening and the resultant reduction of airframe vibration levels promise to significantly improve the CH-47F's reliability and maintainability. Improved bilge paint will enhance corrosion-prevention efforts in the field.

The CH-47F will be fielded with the Enhanced Air Transportability Kit, which provides features that reduce the time needed to prepare the aircraft for air transport. During field testing, enhanced air transportability provisions reduced man-hours by 58 percent and time by 65 percent in the disassembly and assembly of the aircraft for air transport.

The LMR will reduce operations and support costs and maintenance burden compared to the current rotor head. The objective is increased fleet readiness by replacing the existing oil-lubricated rotor hubs with an improved hub using "dry film" bearings. The LMR will provide a six-fold decrease in material costs, no scheduled depot overhaul, increased life limits, all components will be field replaceable, and reduction of more than 60 percent in parts, coupled with significant reliability improvements. This all translates to a projected three percent improvement in aircraft availability per year, which provides up to 10 additional days per airframe per year.

The CH-47F cockpit will provide aircrews with increased situational awareness through a digital-messaging capability and a moving-map display. The aircraft will achieve this through a 1553 data bus, Improved Data Modem (IDM), Multi-Function Displays (MFDs), Electronic Flight Instrument (EFIS) displays, Control Display Units (CDU) and dual GPS navigation systems. This equipment will allow the CH-47F to send and receive digital information, receive situational updates and communicate using digital messaging. These improvements will enable the CH-47F connectivity to operate in the future operational battlespace.

Operationally, the CH-47F will restore performance lost over the life of

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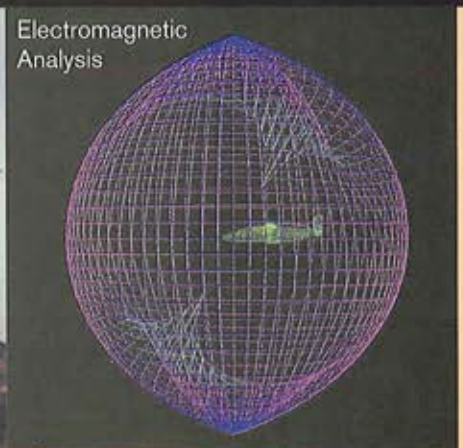

ARINC analyzed and developed a solution for the Mast Mounted Sight (MMS) electromagnetic interference problems caused by the HF radio system.

ARINC is performing an extensive upgrade on the C-23B/B+ aircraft by integrating UHF (HAVEQUICK II), VHF (SINCGARS), UHF MIL SATCOM, military HF radios, PPS GPS, EGPWS, TCAS, Mode S IFF, multifunction displays, and a new color weather radar.

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the CH-47D. It will be able to lift a 16,000-lb. load and carry it for a 50 nm combat radius, and carry 31 troops for a 100 nm combat radius in a high/hot environment (4,000 feet PA/95 degrees F). The aircraft will be capable of self-deploying 1,056 nm with a 30-minute fuel reserve. The first two Engineering and Manufacturing Development (EMD) aircraft were inducted into the Boeing plant in January 1999, and the first CH-47F made its maiden flight on June 25.

The CH-47F program's approach to simulation training provides for a readily available, diverse, yet focused suite of devices designed to meet the multiple requirements of the maintainer and operator. Training devices scheduled to be fielded with the aircraft include the CH-47F Avionics/Electrical Trainer, CH-47F Avionics Component Remove/Replace Trainer, the CH-47F Cockpit Procedural Trainer and the CH-47F Flight Proficiency Trainer. Currently under development is the future CH-47F Transportable Flight Proficiency Simulator. It is a mobile, self-contained unit that utilizes the latest visual technology. Mounted on a transportable trailer, the system can be deployed as required with its unit. The system is a non-motion-based device designed to provide high-fidelity sustainment training to units in garrison and while deployed. The Ch-47 and training devices are scheduled to be fielded concurrently.

Upgrades to existing CH-47 Flight Simulator (2B31) devices have been funded. Initial efforts are currently underway at Fort Campbell, Ky., and in Korea. Upgrades consist of installation of a new Instructor/Operator station, new Image Generator, and modifications to provide T55-GA-714A and engine air particle separator functionality. An area-specific visual database is being incorporated to provide increased realism in the device at Camp Humphreys, Korea.

Upgrading the Black Hawk

The UH-60M program will upgrade the airframes, powerplants and avionics of UH-60A/L aircraft so they can more effectively operate in the battlespace of the future.

The airframe improvements will standardize the fleet with the most current Modification Work Orders and Engineering Change Proposals. The improvements include removing Kapton wiring, refurbishing the stabilator and tailcone, installing a transition section access door, Electro Magnetic Interference (EMI) rewiring, Crashworthy External Fuel System (CEFS), new cabin and upper deck, transmission beams and servo beam rails, and adding External Stores Support System (ESSS) mounting hard points to the oldest UH-60As.

The transition access door will facilitate access to avionics located in that section of the fuselage. EMI rewiring will add cable shielding to meet the modern Electromagnetic/Electronic Environment (E3). The improved CEFS will be crashworthy and capable of emergency jettison, will have an improved fuel monitoring system, and will provide for a single point refuel of both internal and external fuel tanks resulting in decreased refueling time.

Propulsion improvements include an upgrade to the T700-GE-701C/D engine, wide chord rotor blades, improved infrared (IR) signature suppressor, improved durability gearbox, new rotor head and controls. The 701C/D engine will provide the latest technology upgrades, increase performance and standardize the utility fleet to one engine, thus reducing the logistical footprint. The wide chord blades will provide the aircraft with additional lift capacity. The improved durability gearbox, rotor head and controls will increase reliability.

Cockpit digitization is another major area of improvement for the UH-60M. The aircraft will be able to operate effectively in the future battlespace, gain long-range precision navigation, and pass digital messages to improve situational awareness. Major improvements include a stormscope to provide direction and distance to electrical discharge; a cockpit voice/flight data recorder, which will record all crew intercom voice and all radio voice and data messages; and an Automated Flight Control Computer, which will replace the obsolete Automated Flight Control System and offers a growth path for reduced pilot workload.

UH-60M operator simulators will have the physical and functional capabilities necessary for individual/crew and collective combined-arms training, of selected critical tasks, to the appropriate standard. The cockpit, flight controls, weapons, sensors, Aircraft Survivability Equipment (ASE), communications and navigation systems of these simulators will accurately replicate, physically and functionally, those of the actual aircraft and its sys-

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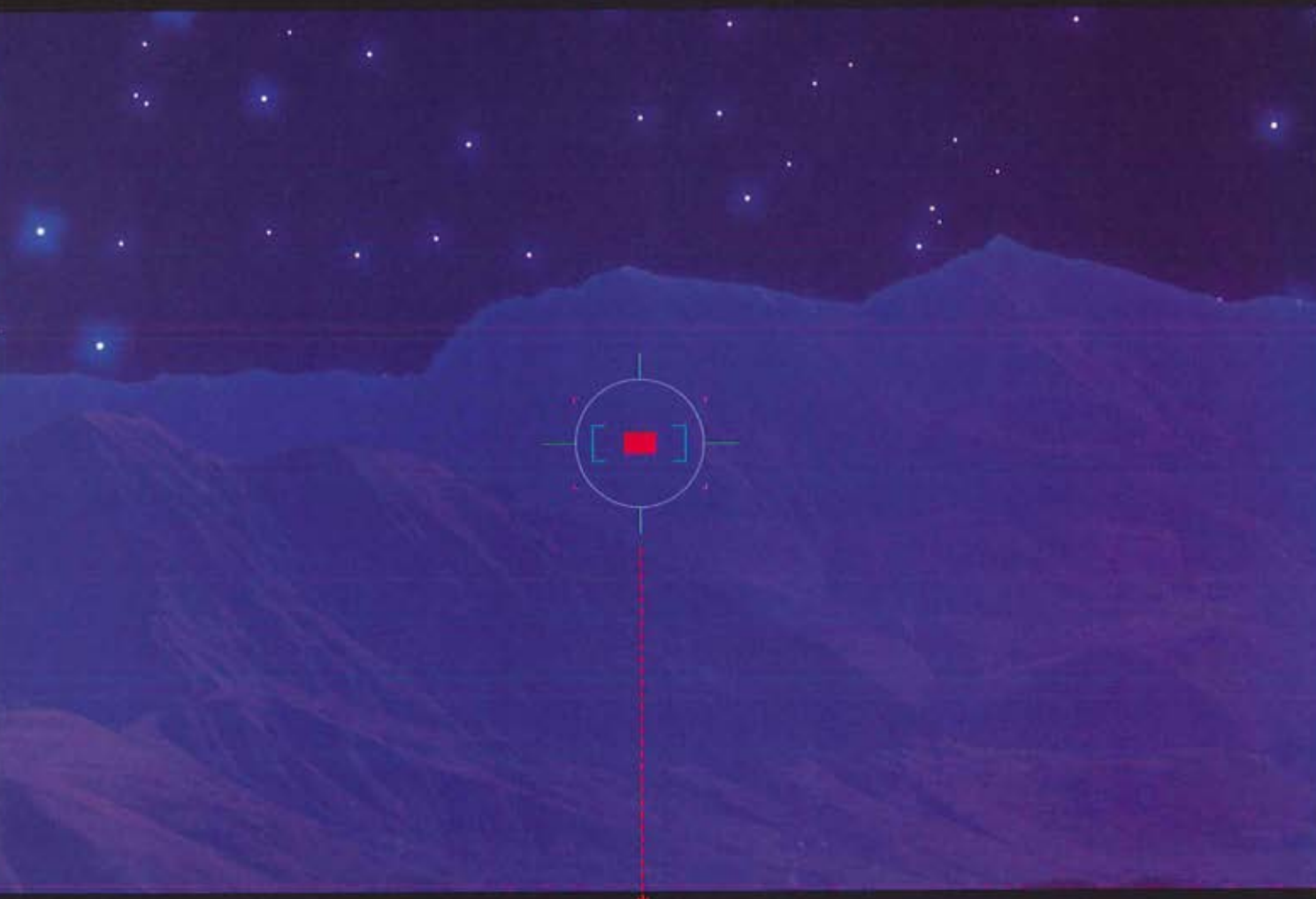

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tems to preclude negative habit transfer.

UH-60M maintenance training devices will simulate the physical and functional fidelity necessary to train selected critical tasks to applicable U.S. Army Training and Doc-

trine Command standards. These critical training tasks represent a burden sharing between the field and the training base. New training devices will be required to support training on the 1553 avionics/navigation data buss.

Current operator and maintainer UH-60A/L training material, devices and simulators will continue to support UH-60A/L training until the fully modernized UH-60M has replaced all systems in the field. New and/or modified training devices, individual/crew flight simulators, collective simulation and training material are required to support modernized UH-60M training loads. Upgrades to existing simulators are scheduled for completion late in fiscal year 2004.

Additional lift and performance capabilities are required, but not yet technically available. These improvements will require an improved engine. The continual pursuit of the Common Engine Program (CEP) will allow us to incorporate these operational capabilities in future upgrades to the UH-60.

Performance degradation has occurred in both the Black Hawk and Apache as a result of normal aircraft weight growth associated with new mission equipment packages. In addition, increased lift and range requirements are being sought to support future battle scenarios. There is also a growing demand to reduce the logistical burden and costs associated with sustaining Army aviation. The CEP will develop a new engine applicable to Black Hawks and Apaches, which will enable achievement of both future payload and range requirements. The CEP goals include a 25 percent reduction in specific fuel consumption (sfc) and a 60 percent improvement in shaft horsepower-to-weight ratio (shp/wt). These performance goals will be achieved while increasing the engine design life by 20 percent relative to the current T700-GE-701C engine.

In addition, development of a common engine offers reduced logistics burden in terms of reduced operations and support (O&S) costs and reduced logistical footprint. The CEP program goal is to reduce O&S costs by 20 percent. The reduced O&S costs are realized in part due to a 20 percent increase in engine design life, reduced parts count, improved diagnostics and improved specific fuel consumption compared to the current engine. Since the engine has been identified as the top O&S driver for the Black Hawk and number two for the Apache, significant cost savings will result from developing a common engine.

Common to both cargo and utility programs is the M-240D machine gun. The weapon is currently undergoing testing for use on Army aircraft. The weapon system must be type classified, which takes 18 to 24 months. Funding shortages have continually delayed this much-needed capability. Once it is type classified, the weapon will be fielded to aviation units.

We are also working with PM Cargo, PM Utility and the Technical Application Project Office on a Common Avionics Architecture system for the CH-47F, UH-60M, MH-47 and MH-60 aircraft. This common cockpit could significantly reduce procurement and support costs, reduce logistical support requirements and improve operational readiness for all these aircraft.

We continue to work with the aircraft PMs and other organizations as an integrated team in order to provide our aviation soldiers with the most combat effective and reliable cargo and utility helicopter fleet the Army can afford.

❖❖

MG John M. Curran is the commander of the U.S. Army Aviation Center and chief of the aviation branch.

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Aviation Electronic Systems — Managing Transformation

By Jerry Cox and Jim Hatfield

On Aug. 20, 2001, a change-of-charter ceremony acknowledged a change of project managers and formally merged the Aviation Electronic Combat (AEC) Project Management Office (PMO) with the Aviation Electronic Systems (AES) PMO.

Sixteen months earlier what is now the current PMO was three separate project offices managing 16 product lines. Those offices were Advanced Threat Infrared Countermeasure and the Common Missile Warning System (ATIRCM/CMWS), AEC and Aircrew Integrated Systems (ACIS). In May 2000 ATIRCM/ CMWS PMO combined with ACIS PMO to form AES PMO, and in August 2001 AEC officially merged with AES. The new office retained the name AES PMO. Figure 1 is an overview of the new organization.

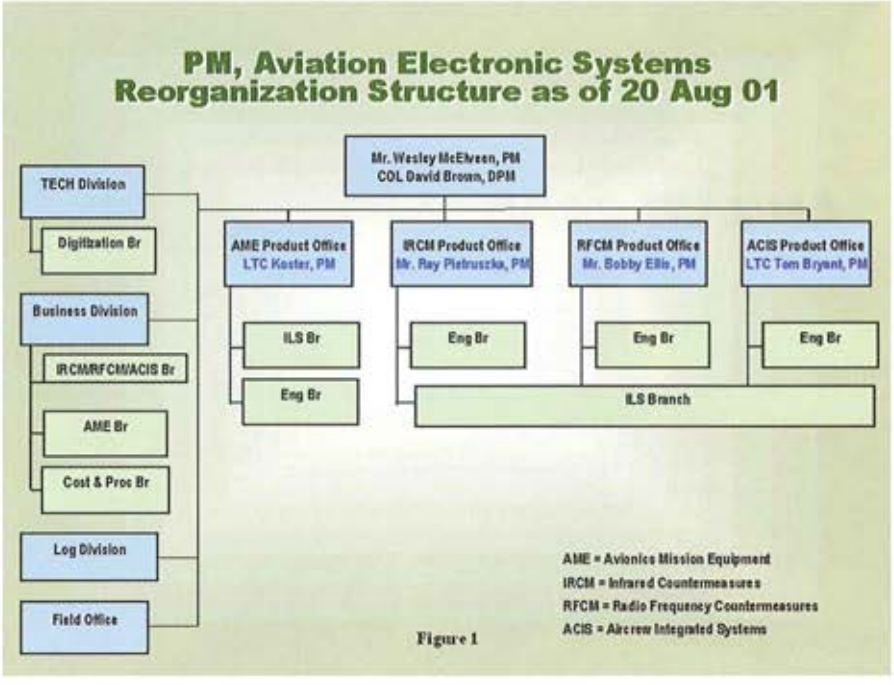

Figure 1

ACIS Product Office (PO) will function in the new organization without any changes since its merger with ATIRCM/CMWS over a year ago. The Suite of Integrated RF Countermeasures (SIRFC) PO, whose name has changed to RFCM, manages radio frequency and laser detection systems, and survivability training systems. A new product office, Infrared Countermeasures (IRCM) PO has been created to manage the ATIRCM/CMWS. Finally, the AEC PMO was downgraded to a product office renamed Aviation Mission Equipment (AME); it retains the same products and responsibilities as the previous AEC PMO. The new organization still has three divisions — Logistics, Business and Technical — which report directly to the project manager (PM) but support each of the PMs. The field office at U.S. Army Communications-Electronics Command (CECOM) was also retained under the control of the PM.

PM AES is responsible for aircraft survivability, aircrew integrated systems, aviation electronics and digitization. These responsibilities are managed through four product offices: Infrared Countermeasures (IRCM), Radio Frequency Countermeasures (RFCM), Aviation Mission Equipment (AME) and Aircrew Integrated Systems (ACIS).

The IRCM Office is responsible for the development and fielding of the Suite of Integrated Infrared Countermeasures (SIIRCM) programs. SIIRCM consists of the AN/ALQ-212 Advanced Threat Infrared Countermeasure System/ Common Missile Warning System (ATIRCM/CMWS). The AN/AAR-57 CMWS is a subsystem of ATIRCM/CMWS, as well as a stand-alone missile warning system for platforms that do not utilize ATIRCM/CMWS active jamming functions.

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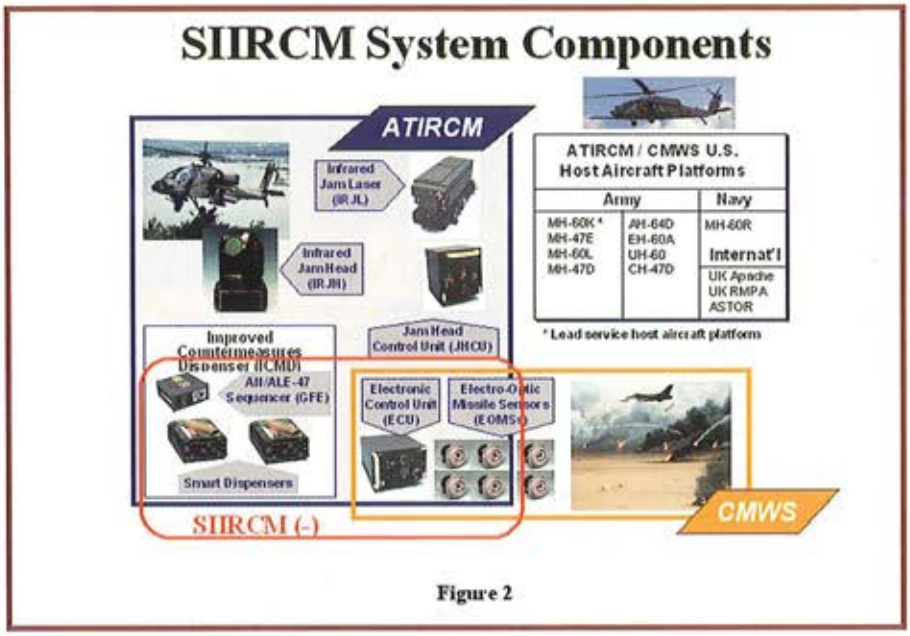

Figure 2

The ATIRCM/CMWS protects Army aircraft from a wide variety of infrared (IR) threat missiles, using a missile warning system (CMWS) and a directed IR countermeasure (ATIRCM). There are applications where the Army will use only a missile warning system and an expendables dispenser. The CMWS will provide warning and countermeasure cues to various countermeasure systems used within all three services. This requires the system to fit, both mechanically and functionally, within the large number of airframes. The ATIRCM/CMWS has been designed for employment on a range of Army and Navy helicopters (see Figure 2 above). The lead test aircraft for the ATIRCM/CMWS is the Army MH-60K helicopter.

SIIRCM (-) is a variation of the system currently under consideration for selected applications. This configuration will consist of the CMWS Sensor, Electronic Control Unit, AN/ALE-47 Sequencer, Smart Dispenser and Improved Countermeasure Munitions.

The SIIRCM is a modular system, which uses passive means to "declare" the approach of "valid" missiles. By definition, declaration occurs after the following are accomplished: detected missile(s) is (are) determined to be valid, and a countermeasure initiation command is sent to the countermeasure system. To be considered "valid" the missile must be closing on the host platform. If the missile is using IR energy for its tracking system, the system will then provide a countermeasure to cause the missile to miss and not damage the host platform.

The RFCM Product Office manages the SIRFC, AN/TPQ-45 Aircraft Survivability Equipment Trainer (ASET) IV, AN/AVR-2A Laser Detecting Set and the APR 39A(V)1.

The AN/ALQ-211 SIRFC consists of the Advanced Threat Radar Warning Receiver and the Advanced Threat Radar Jammer. SIRFC will provide active and passive countermeasures against RF threats to ensure optimum protection for the host aircraft. It will provide additional warning and countermeasures against continuous wave and pulse, pulse Doppler and pulse compression threats. The suite will integrate with other onboard systems to enhance situational awareness.

The AN/AVR-2A Laser Detecting Set is a passive laser-warning receiver which receives, processes and displays threat information resulting from illumination by laser designators, range finders and beam-riding missiles. The system provides sufficient warning to the crew to allow evasive maneuvers. The system also functions as a laser receiver for MILES/AGES II.

The AN/TPQ-45 ASET IV is a set of tactical threat emitting training devices that teach realistic force-on-force and collective-team training. The ASET IV threat emitters will trigger the warning system and activate the countermeasures onboard the aircraft. The ASET IV can be used with all aircraft equipped with ASE systems.

The AN/APR-39A(V)1 provides pilots warning of radar-directed threat air defenses. The system is deployed on Army AH-1F, AH-64A/D, CH-47D, MH-


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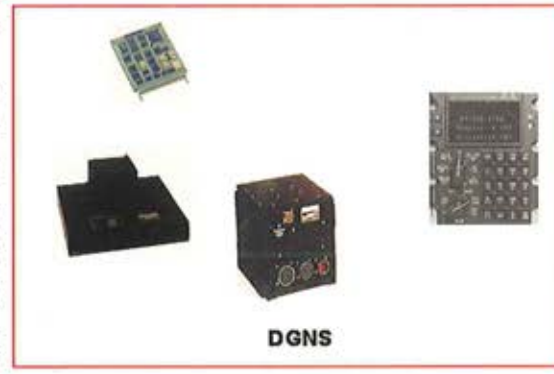
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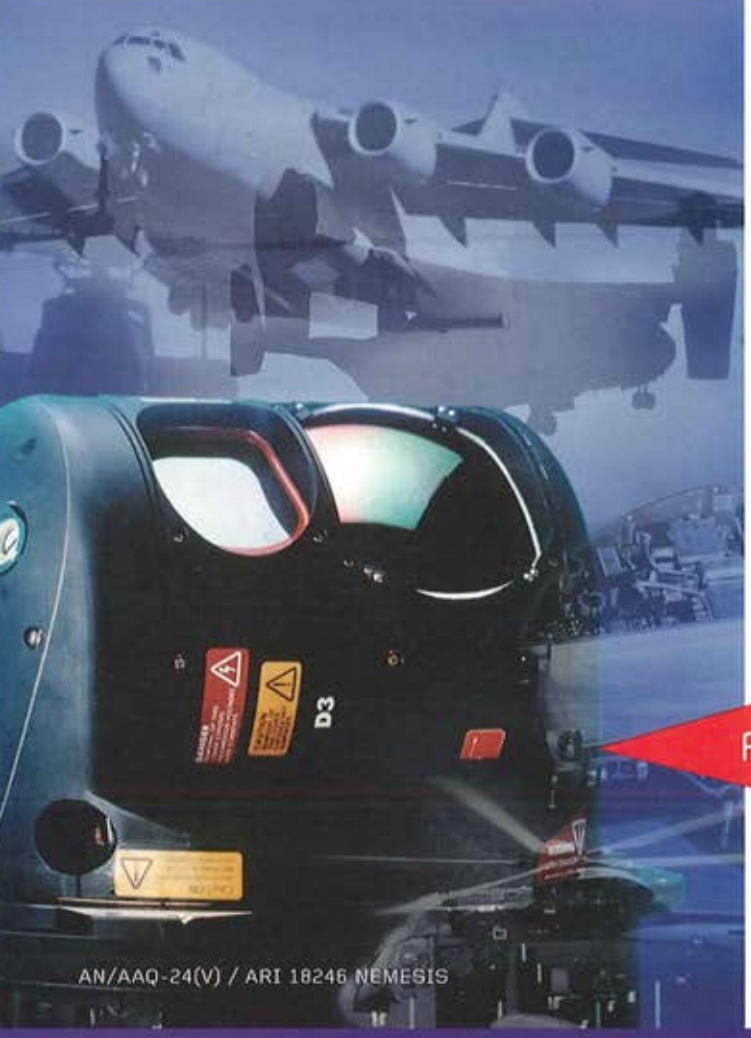

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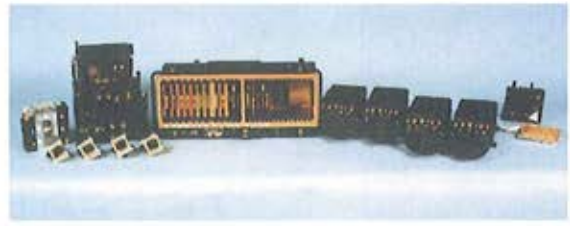


SIRFC

ASET IV

AN/AVR 2A

Figure 4

47E, UH-60A/L/Q, MH-60K and OH-58C/D helicopters. The system is designed for use on low and slow flying fixed-wing and rotary-wing aircraft. It will be replaced by the AN/ALQ-211 SIRFC system.

The AME Product Office manages the AN/ARC-220 Non-Line of Sight (NLOS) Radio, the Improved Data Modem (IDM), the Aviation Mission Planning System (AMPS), the Doppler GPS Navigation System (DGNS), the Embedded GPS Inertial System (EGI) and Global Air Traffic Management (GATM), and integrates for aviation the Joint Tactical Radio System (JTRS).

The JTRS will be a family of affordable multi-band, multi-mode, multiple channel radios supporting advanced narrowband and wideband waveform capabilities with integrated computer networking features. JTRS will provide both line-of-sight and beyond-line-of-sight C4I capabilities to the warfighters operating in the 2 to 2000 MHz spectrum, and will be capable of transmitting voice, video and data.

The IDM allows both air and ground forces to exchange digital information. It simultaneously transmits and receives data over any of four different radios and processes messages up to 3,500 characters in length. Embedded Battle Command (EBC) software based on the Lynx real-time operating system will be integrated into the IDM for tactical Internet interoperability.

The AN/ARC-220 HF radio provides a 0-300 km NLOS communications capability not available with current line-of-sight radios. The radio is currently being fielded to aviation units.

GATM allows Army aviation to remain interoperable and compliant with changing civil airspace architectures by upgrading aircraft communications, navigation and surveillance avionics. The timelines for being compliant vary by geographic region.

The Aviation Mission Planning System (AMPS) is a subordinate system of the Army Battle Command System, Maneuver Control System.

"The JTRS will be a family of affordable multi-band, multi-mode, multiple channel radios supporting advanced narrowband and wideband waveform capabilities ..."

AMPS software is hosted on a portable ruggedized workstation. The AMPS automates brigade-and-below aviation mission planning and distribution of mission files among units, and provides mission downloading into the aircraft for navigation, communications, weapons and post-mission information. The AMPS is currently fielded.

Air Warrior

MIHDS

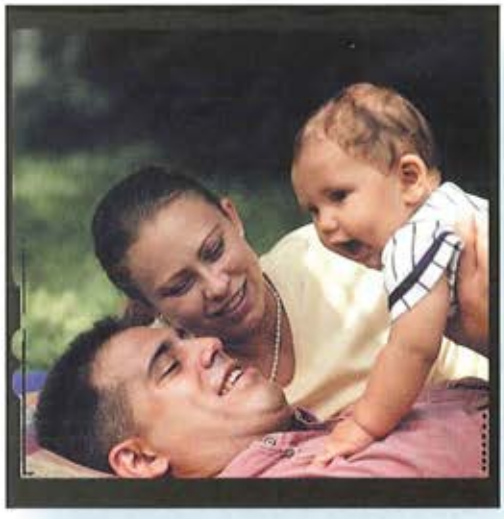
CABS

Virtual Cockpit Optimization Program

The GPS program consists of two parts. The Doppler and Global Positioning System Navigation System (DGNS) provides a combined Doppler/GPS navigation capability for the UH-60 and CH-47 fleet. The Embedded GPS/Inertial Navigation System (EGI) is a tri-service program for aircraft equipped with a MIL-STD 1553 digital data bus. The EGI is the objective solution for the AH-64 and OH-58D aircraft. The DGNS and EGI will be upgraded to meet Navigation Warfare (NAVWAR) requirements as well as provide civil capability for IFR en route and nonprecision approaches.

The ACIS Product Office manages Aviation Life Support Equip-

"Protecting my family



is a duty I don't take lightly."

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** Source: A.M. Best's Policy Reports, May 2000. Current Competitive Whole Life policy ranking is based on surrender-cost index, 10-year history. Policy form #LWL240ST 10-89 (may vary by state). Life insurance is provided by USAA Life, except in NY. In NY, life insurance is provided by USAA Life of NY. USAA Life of NY was not surveyed by AM Best.

ment (ALSE), Air Warrior, the Modular Integrated Helmet and Display System (MIHDS), Virtual Cockpit Optimization Program (VCOP) and the Cockpit Air Bags System (CABS).

ALSE consists of items of equipment needed to protect, sustain and enhance the performance of Army aircrews while in flight, and on the ground during escape and evasion. Air Warrior is a modular aviator ensemble for rotary-wing aircraft crewmembers. It enhances the aviator's ability to accomplish mission requirements by reducing the aviator's equipment weight and volume, thus lessening the physical burden, and improving survivability especially in a nuclear, biological or chemical (NBC) environment.

The MIHDS integrates the HGU 56/P aviator helmet with displays that provide the aviator with sensor imagery and symbols, while permitting the aircrew a clear view of the external environment during both day and night operations. The MIHDS can be integrated with current and future chemical biological (CB) masks to reduce/eliminate reductions in field of view when simultaneously worn with CB protective masks and night-vision goggles.

VCOP provides a solution to pilot "information overload" by presenting the pilot with information such as situational awareness, sensor imagery, flight data and battlefield information in a clear, intuitive manner, making the aircraft easier and safer to fly while also improving mission performance. VCOP uses a full-color, high-resolution, daylight readable, see-through helmet-mounted display to render essential situational awareness and flight data in a "Highway in the Sky" heads-up format, keeping the pilot's hands on the controls and out of the cockpit.

The CABS is a crash-activated inflatable protection system intended to supplement the current webbing restraint systems on helicopters. In a crash the air bags will inflate forward and lateral to the aircrew member, keeping the aviator away from impact hazards. In the uninflated mode the CABS will not obstruct the aircrew member.

In summary, the AES PMO is uniquely organized to provide the aircraft platform PMs the latest in communications, navigation, survivability and aviation crew performance. Additionally, AES strives to insure commonality and interoperability across all Army aviation platforms. By combining all special aviation equipment under the management of one PM, aviation now has a one-stop shop for coordination of aircraft platforms and mission support programs.

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Mr. Jim Hatfield is the Engineering Branch chief for the IRCM PM. Mr. Jerry Cox is a program integrator in the AES PMO at Redstone Arsenal, Ala.

AIRCREW

EQUIPMENT UPDATE

By LTC Thomas H. Bryant and MAJ James Delaney

The past year has been an eventful and fruitful year for the Program Executive Office (PEO) for Aviation and the Aircrew Integrated Systems Product Manager's Office.

Since MG Joseph L. Bergantz, the PEO for Aviation, and I updated you last year, many positive events have occurred for Army aircrew. Over the last year we have been able to spend our limited resources towards improving your flight operations today while leveraging technologies to keep your gear useful in the future. There have been improvements to legacy Aviation Life Support Equipment (ALSE), safety equipment and the Air Warrior (AW) program. All of these improvements are to one end - to get ALSE out of your decision cycle when you have to fly point for our nation. If you have to tailor any mission because of the ALSE you have or do not have, we all fail.

On the legacy ALSE equipment front, the Product Manager (PM) for Aircrew Integrated Systems (ACIS) has teamed with PMs across the Army and the other services to ensure you have the best equipment the Army can afford. Examples of this upgraded equipment are Communication Ear Plugs (CEPs), Laser Eye Protection (LEP), the HGU-56P helmet and the ALSE School upgrade. All of you will be glad to know that the Army and Congress recognized the importance many of you place on the CEP. This year, the Army will finalize a contract for nearly 7,400 CEP sets, accelerating this part of the AW program so it can start to reach the field in January or February of 2002.

EXTERNAL EAR

On the LEP front, the Army teamed with the Air Force to provide the latest in nighttime LEP with the Clear Laser Eye Protection Infrared (CLEPIR) spectacle. In addition, we were able to procure CLEPIR spectacles that are modified for use by aviators who fly with the Integrated Helmet and Display Sight System (IHADSS) on the AH-64A/D Apache attack helicopter. These CLEPIR spectacles are highly compatible with your ANVIS night-vision goggles and the Apache's Helmet Display Unit (HDU).

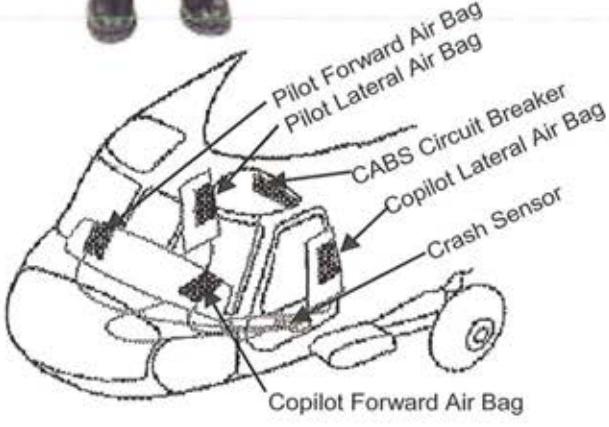
Over this past fiscal year we continued to field a limited number of HGU-56/P helmets to the National Guard. Now that certain waivers for subcomponents have been secured, we will restart National Guard helmet fieldings full-force, starting with the California Aviation Classification Repair Activity Depot (AVCRAD) in September 2001 and ending some 7,400 helmets later.

An important fact for all National Guard aviators to know is that Congress and the Army have set aside funds for helmets specifically for the National Guard. Ordering the HGU-56/P will result in a cancelled order and unnecessarily tie up your unit funds.

Lastly, we are continuing to upgrade the ALSE "Q2" course for ALSE technicians. Over the last year, with the help of 1st Battalion, 13th Aviation, we were able to bring the ALSE school within U.S. Army Training and Doctrine Command (TRADOC) standards, extend the course two weeks, and implement eight new training courses that are available at Fort Rucker, Ala., or in a take-home package format.

Our fielding and development of safety equipment continued over the last year, concentrating on two primary items, the MA-16 Inertia Reel and the Cockpit Air Bag System (CABS). The MA-16 Inertia Reel has been installed on many Army aircraft types to date and will dramatically reduce the number of injuries to our cockpit aircrew caused by the flexing of the current MA-6 or MA-8 reels. On the CABS front, the PM ACIS team has completed a production decision for two aircraft types and is moving towards the first aircraft installations of these life-saving systems in May 2002, on Black Hawk.

The most exciting developments in Army aircrew equipment this year came in the AW program. Despite having its budget cut by 40 percent over the next six years, the AW Team designed a block development program that will ensure aircrews will begin to see the basic version of this superb aviation warfighting system as early as FY 04, while we continue to develop vital technology inserts over the next six years for Blocks 2 and 3.



In January 2001 the AW Team finalized the system design and has since commenced subsystem and system testing to ensure that the system you receive can work in any aircraft and in any environment. Electromagnetic Environmental Effects, Cooling, Flame Retardancy, Chemical Exposure, Extraction Harness Load Strength and a host of other environmental tests have already been successfully completed as the AW system prepares for formal Developmental and Operational Testing by the U.S. Army Test and Evaluation Command. At this time next year, we expect to report that we are finishing OT and work on Block 1 production contracts while we are simultaneously completing the initial steps on such Block 2 innovations as the Wireless Intercom System and the Electronic Data Manager.

While we tend to focus on the AW system's development to ensure it is on track, we at PM ACIS know that you want a complete system fielded that you can easily maintain. Along with DT and OT this next year, we are facing a logistics demonstration on four separate aircraft types. During these demonstrations, PM ACIS will show how we can avoid "drive-by" fieldings as we address AW training, manuals, training-course development, supplies, operational and basic loads, storage and maintenance for the system.

As we stated in the beginning, the men and women of PM ACIS are working to ensure that Army aircrews fly with the best equipment. We know that there are many issues, both with current and future equipment, that we didn't fully address this year. However, we are getting closer to solving many long-term problems. For instance, many of you want better and lighter helmet-mounted displays that offer more in the way of color, brightness and field of view. The PM ACIS helmet team is nearing a flight demonstration of a Laser-based Retinal Scanning Display system that exceeds the clarity and brightness requirements of anything currently proposed.

Overall, we want to leave you with this: at PM ACIS we have nearly 450 years of experience with ALSE and approximately 40,000 hours (6,000 combat) in Army aircraft. We know ALSE, and we know it's our job to get you the ALSE you want to use on every mission. We no longer want your ALSE to dictate to you what terrain, environment or threat you can handle. While we have come much closer to that goal this past year, we are not done. Wherever you are flying on point for our nation, we look forward to hearing from you and ensuring your ALSE needs are met. Please contact us at ourwebsite (**http:// www.peoavn. redstone. army.mil/ aes/**), via facsimile to (256) 313-4346 or (DSN) 896-4346, or by telephone at (256) 313-4255 or (DSN) 897-4255.

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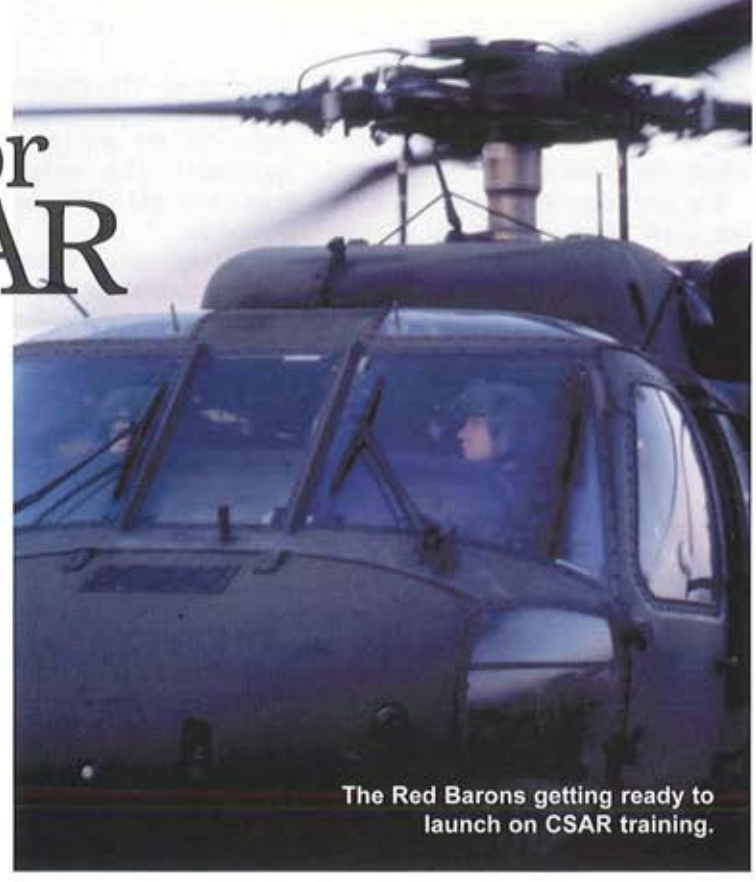
MAJ James Delaney is the assistant product manager for the Air Warrior System, part of the Program Executive Office for Aviation. LTC Thomas H. Bryant is the product manager for aircrew integrated systems. Both are based at Redstone Arsenal, Ala.

The Case for Army CSAR

By CPT James J. Mazel Jr.
and CW2 Timothy S. O'Sullivan



The Red Barons getting ready to launch on CSAR training.

The "Red Barons" of the Korea-based Company B, 1st Battalion, 52nd Aviation Regiment, were recently given the task of researching what it would take to convert the unit to a true combat search and rescue (CSAR) unit.

The company has already been performing over-water emergency downed aircrew recovery in support of the 6th Cavalry Brigade and has a well developed over-water aircrew training plan. What we lack is the equipment to perform the mission. In this article we will discuss some of the lessons we have learned, the questions we still have, and the suggestions we believe are needed in order to train and equip a unit for this demanding mission.

The Mission

FM 90-18, "CSAR: Multi-Service Procedures for Combat Search and Rescue," states that the Army does not have dedicated CSAR units or aircraft, but points out that CSAR is a secondary mission for rotary-wing Army aviation units. We think this must change, because cross-FLOT and over-water operations are too difficult to be a secondary mission.

The Air Force has recently recognized the complexity of rescue operations and has designated a new career field for officers, that of joint rescue coordinator. The Army needs to invest in similar rescue professionals. FM 90-18 also says that the commander of a deployed Army force is responsible for the conduct of CSAR operations involving that force, and requires service component and specified commanders to ensure forces are available to conduct CSAR operations and provide mutual support to CSAR operations of the other services to the greatest extent possible. Aviation units normally meet this requirement through the use of Downed Aircraft Recovery Team (DARTs), but the support required for over-water recovery of personnel goes beyond what normal training, doctrine and fielded systems provide.

Training

Air Force pilots can spend their entire careers in rescue squadrons, and courses in the Air Force are dedicated to training personnel in all aspects of personnel recovery. Air Force military occupational specialties, such as that of pararescueman, are designated both for enlisted and officer personnel — this allows them to concentrate on the tactics, techniques and procedures associated with rescue operations.

We believe that we need that level of commitment, and that CSAR needs to become a track for Army warrant officers.

This is exemplified here in Korea where a 12-month tour barely allows a person enough time to progress as a night-vision goggle (NVG) pilot in command. Add to that the training required to become proficient in cross-FLOT and over-water operations, and

you will quickly run out of any utilization time for that pilot.

First, the Basics

The first stage in Army CSAR training must focus on survival. Rescue crews will be called upon to fly into hostile environments, usually in degrading situations, so they must be proficient in escape and evasion and survival in a water environment.

The first step is to have prospective rescue crewmembers undergo a swim test. A standard test should include survival floating, survival swimming and underwater swimming. The equipment for the test should include whatever the crewmembers are likely to be wearing when they would hit the water — items such as helmets, vests, boots and ballistic vests. Though there is no requirement for a successful swim test prior to flying over-water, no safe training plan can get started without first identifying the strong and weak swimmers. Weak swimmers will need to receive more training. What has worked well for us is hold PT twice a month at the pool.

The next piece in a successful training plan is ALSE training. There is no standard across the Army for over-water survival equipment, nor does there need to be. Each unit should be able to customize its equipment to its needs, but the crews must be properly trained on whatever equipment is on hand. The time to become proficient is not after the crash. ALSE equipment needs to be used regularly in the training program. This requires not only the initial procurement of the ALSE equipment, but the ability to service that equipment. This includes test sets, repair kits and refill stations for condensed air.

The Helicopter Emergency Egress Device should be the next training event. If possible, dunker training should be included at the same time. Every time an individual is tested in a full-motion simulator, the odds of survival increase dramatically. In Korea, the 6th Cav. Bde. has recently initiated a dunker/HEEDS training course. While the instruction is excellent the infrastructure is weak, because all of the instructors work the mission as a collateral duty. The Army needs dedicated professionals to run this first-class program.

SPC Weesner and SPC Leone inspect the M134 minigun prior to CSAR training.

Classroom instruction can be given at any time in this process. The Air Force and the Navy already have excellent training plans. Specific areas that need to be taught include search patterns, terminology, joint rescue operations, use of rescue equipment and first aid. Attention should also be given to the actions required from a survivor, as the rescue crew will be putting itself in the same hazardous environment as the downed crew.

Once all of this has been accomplished the aircraft training can begin. We have instituted a policy of no single-ship operation when training outside of glide distance from the shore. It has proven to be a very prudent decision, as all of us have been susceptible to spatial disorientation at one time or another. The second aircraft is able to provide flight following and can also conduct a rescue operation if an aircraft were to have an emergency.

Initial qualification must begin in the daylight and should be adjusted for each individual's proficiency. Search and extraction procedures should be completed to the point of proficiency before the training is conducted at night. The heads-up display (HUD) is vital to mission success at night. Ten hours has proven to be a sufficient amount of time prior to going over-water.

At night, a lack of contrast is the most common hazard encountered. The HUD, at times, is your only reference. We have also found that 100 feet above the water level is the best altitude at which to operate, as it is the best compromise between having contrast with and distance from the water.

Equipment

All services use a variant of the UH-60, and it is the right airframe for rescue operations. The current Army variant, however, is not the right tool for the rescue job. A number of modifications are needed in order to search for the survivor, reach the survivor, get the survivor in the aircraft, and to get crew and survivor back safely.

The Air Force HH-60G is specifically adapted for search-and-rescue missions. The equipment has been field tested by some of the military's best. The HH-60G is equipped with an air-refueling probe, external hoist, the GAU-2B minigun, hover stabilization, ARS-6 personnel locator, ARC-187 SATCOM, AAQ-16B FLIR and APN-239 weather radar. We will use the HH-60G as a baseline for the equipment needed for CSAR requirements.

- Range: Extended range is also a key issue in CSAR operations. We currently use two Robertson internal fuel tanks - they give us about a 5-hour on-station time, do not increase our drag or our profile, and cannot put the aircraft in a dangerous center of gravity situation no matter how the fuel transfer is conducted. The tanks, however, do have their drawbacks. First is that the last row of seats must be removed for the fuel tanks, losing room for four passengers or the equivalent amount of equipment.
- Power: Another problem we have,

due to the fact that we fly the A-model Black Hawk, is power management. We usually take off, in mission profile, well above 20,000 lbs. Hover capability and single-engine capability can be lost, especially in the hot days of summer.

The solution for future modifications is twofold. The internal Robertson tanks are vital in prolonging the aircraft's abilty to search, and if a pilot-controlled fuel dump valve was installed it would provide an emergency option to the crew for dispensing weight in critical situations. Secondly, a refuel probe would greatly enhance the ability to search not only over water, but also deep behind enemy lines.

- Communications systems: The Army has in its inventory the Personnel Locator System (PLS), AN/ARS-6(V). The system locates personnel equipped with the AN/PRC-122(V) or equivalent survival radio. A survivor with the PRC-112 stands a much better chance of being rescued in a timely manner if the search aircraft are equipped with the PLS.
- Navigation systems: The AN/ARN-153 Air-to-Air TACAN or ARN-118 Air Force Air-to-Air TACAN would greatly increase the ability to the rescue crew. The TACAN allows for air-to-air tracking of your wingman, allowing crews to quickly link-up once the survivors have been located. The system does not require an aircraft AC BUS upgrade, and an AWR is already in the system with MH-47/60. The system allows for IIMC recovery at most Air Force facilities and U.S. Navy vessels in emergencies. In Korea, it would also allow us access to Republic of Korea facilities. Shipboard recovery is also possible with survivors.
- Weather/search radar: The APN-239 Color Weather Radar or Honeywell's Primus 700 radar are both excellent systems. The APN-239 is currently in the Army system with AWRs. The U.S. Army Technology Applications Contracting Office has let a contract for the purchase of the Primus 700 for special-operations helicopters. The Primus 700 combines high-resolution surface mapping with unequaled weather detection and display capabilities. It includes surveillance and search modes integrated with color weather radar. It is, in effect, two radars in one, and is ideal not only for helicopters in offshore service and search and rescue, but also for any aircraft engaged in maritime surveillance, enforcement, medical evacuation or reconnaissance. It can also be used as low-grade thermal imager.
- Forward-looking Infrared: The AN/AAQ-16B FLIR is currently used by both the Army and Air Force. FLIR Systems Inc. has many affordable options with government contract support. In addition to the cockpit FLIR, hand-held FLIR would increase the non-rated crewmembers' ability to search.
- Rescue Hoist: An external rescue hoist provides the most airframe flexibility. The Rescue Hoist System Breeze-Eastern Model BL-27100 is the system of choice for the future of the Army. The decision to go electric will reduce the susceptibility of the hydraulic system to catastrophic failure. As a back up to the rescue hoist, Breeze-Eastern also offers the "SkyHook" Emergency Rescue Device, which allows crewmembers to winch in survivors.
- ALSE Equipment: Anti-exposure suits are required when the water temperature is below 60 degrees Fahrenheit. Mustang survival offers a number of options at varying costs. A 9- to 13-man compact life raft can be deployed from the aircraft and can provide a floating survivor an escape from the water. A 32 foot caving ladder can be used as a back up to the hoist. A Stokes collapsible litter reduces the space needed for a litter and can aid in the rescue of injured personnel. The horse collar extraction device is the quickest and easiest way to recover personnel into the aircraft. A rescue seat/jungle penetrator increases the rescue unit's flexibility.

Summary

The bottom line is that the Army needs its own CSAR capability. In order to ensure that aircrews come back alive, the Army will need to dedicate resources to the training of units designated to carry out this difficult and vitally important mission. The Navy, Coast Guard and Air Force are light years ahead of the Army when it comes to training and resources, so it will not be necessary to re-invent CSAR policies, procedures and techniques. What will be necessary is for the Army to officially designate units to perform this mission, and then to resource those units properly.

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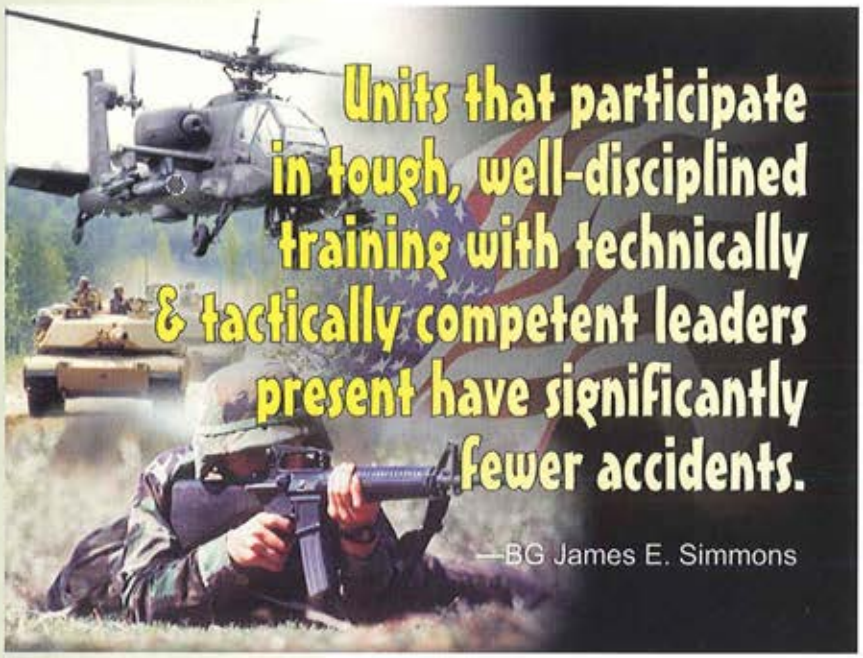
CPT James J. Mazel Jr. is the commander of Company B, 1st Battalion, 52nd Aviation Regiment. CW2 Timothy S. O'Sullivan is the company operations officer and the overwater mission unit trainer.

SAFETY & RISK MANAGEMENT
Integration-More Critical Than Ever

By BG James E. Simmons

In October 1999 the Army articulated a vision to posture itself to better meet the demands of the 21st century. With the Army's transformation campaign initiatives well underway, few knew how soon, or how hard, the demands of the new century would strike us.



On the morning of Sept. 11 an enemy unlike any we have ever faced bloodied us on our own homeland. The impacts of hijacked airliners into the World Trade Center towers and the Pentagon stunned America and the world. Our sense of safety and security was compromised. Attitudes changed; resolve hardened. Internal differences set aside, Americans rallied and vowed to do whatever it took to seek out and bring to justice those responsible for such despicable acts of terrorism.

A Challenge to the Military

In the days since the attack we've mourned the loss of fallen comrades, we've counseled with our allies, and we have engaged in what our commander in chief has declared to be the first war of the 21st century. His challenge to us is clear: "Be Ready!"

The Army is ready! The finest men and women in the world always have, and will again, without hesitation fulfill our non-negotiable contract with the American people. We will fight and win this war against cowardly enemies who make no distinction between innocent lives and military targets. We have promised our adversaries that they are going to experience the finest hours of the United States Army. But we must all be mindful that to fulfill that promise demands using all available means to maintain and enhance our readiness.

Safety Performance

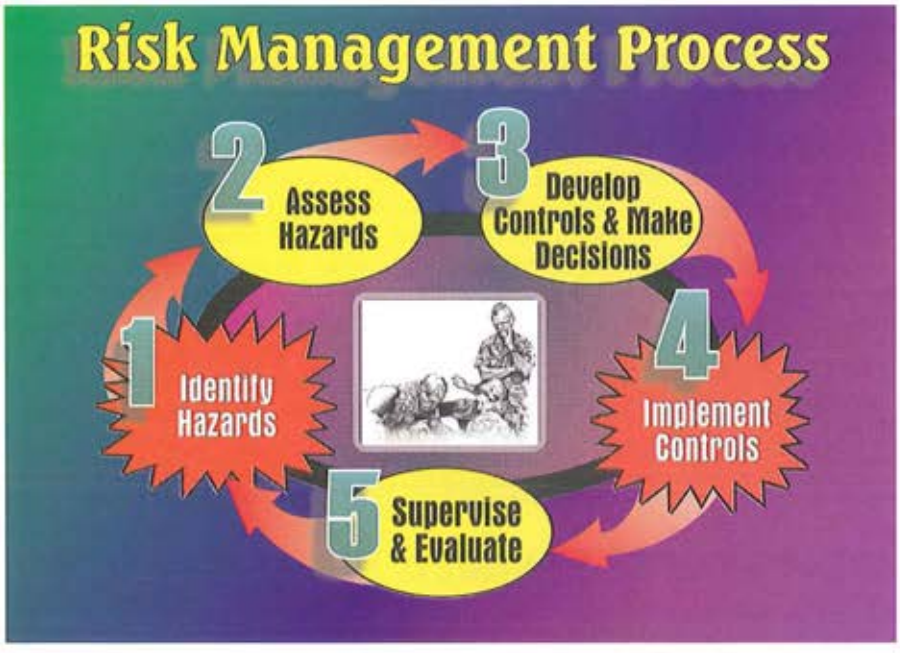
Recent events changed many things, but one thing has not changed. Accidents, whether in routine training or while preparing for combat, remain a major threat to soldiers. History clearly tells us that in every major conflict since World War II, with the exception of Korea, we have lost more soldiers to accidents than to enemy action.

As we closed out fiscal year 2001, our fatality rate from accidents was more than 4 percent above last fiscal year. We set some aggressive, but achievable, safety goals for FY 2001. While we did not achieve the overall 20-percent reduction in total military fatalities goal established for FY 2001, command involvement did succeed in reducing by almost 12 percent fatalities resulting from privately owned vehicle (POV) accidents, notoriously the number one killer of soldiers.

Last fiscal year aviation fatalities were at an unprecedented low. But as we all know, safety success can be extremely fragile. This year, we've lost some hard-earned ground in our aviation accident-prevention efforts. The real tragedy is that Army aviation accidents have resulted in 11 Army and 18 Air Force

fatalities, compared to four Army fatalities for the previous year. All three of our fatal aviation accidents this year included multiple deaths.

The number of fatal aviation accidents has remained steady (two in FY 2000 and three in FY 2001) and even constitutes an improvement over the average of 5.5 fatal accidents per year for fiscal years 1996 through 1999. Unfortunately, our total Class A aviation accidents (fatal and nonfatal) for FY 2001 are more than double what we experienced in FY 2000 (13 vs. six). Our Class A aviation accident rate jumped from 0.6 in FY 2000 to 1.3 in FY 2001. While numbers and rates are one metric for measuring safety performance, we must never lose sight of the fact these numbers represent lives lost and costly equipment destroyed - all of which decreases our readiness.



Aviation Accident Causes

Indiscipline, poor leadership and inadequate training are the leading causes of aviation accidents.

Indiscipline - knowing the standard and electing to ignore it - was a cause factor in 28 percent of Class A-C accidents from fiscal years 1999 through 2001. Leadership issues were identified in almost 18 percent of those accidents, and training failures were present in more than 13 percent of the accidents.

Aviation units across our Army execute well-thought out, set training plans and have a high hit rate on meeting standards, but the numbers illustrate that even a momentary lapse in providing effective leadership, enforcing standards and executing well-rehearsed training plans can have catastrophic results.

Accident Prevention

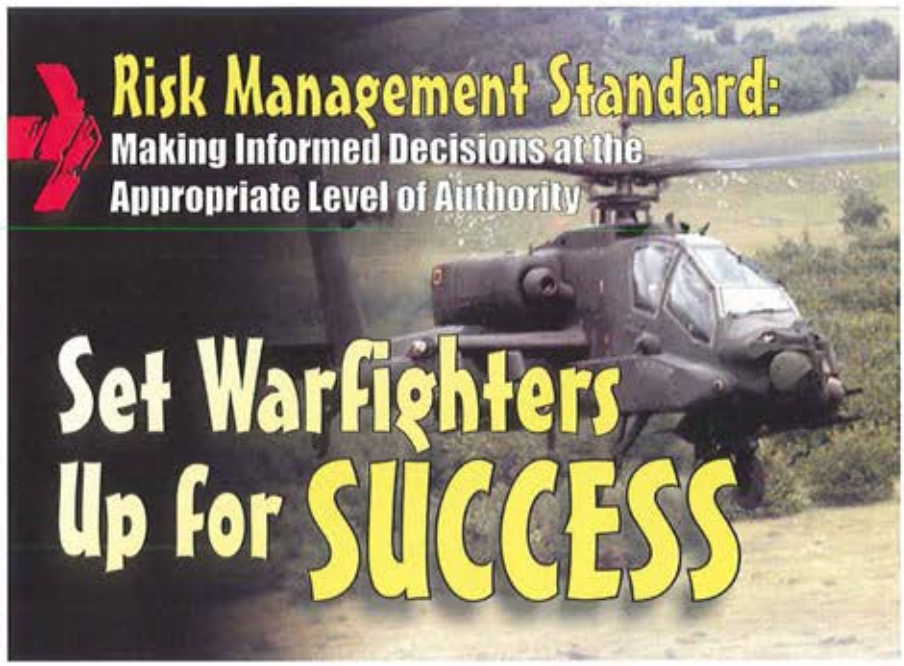
Risk management is not just another safety requirement. It is a proven accident-prevention process - one that applies to peacetime training and combat. Following our adoption of risk management as our principal accident-prevention process, we saw accident rates across the Army drop during the 1990s. We must now resist any temptation to set aside a proven accident-prevention process and revert to a mindset of accepting accidental losses as the "cost of doing business." It would be unconscionable to do so.

As we are asked to respond to President George W. Bush's call to action, I challenge commanders at all levels to continue to spearhead efforts to ensure that safety and risk management are fully integrated into all aspects of Army operations: tough, realistic training; deployments and preparation for combat; and actual combat.

I submit to you that units that participate in tough, well-disciplined training with technically and tactically competent leaders present have significantly fewer accidents.

Leaders have to be actively involved before the aircraft breaks friction with the ground, and our most state-of-the-art safety weapon is risk management. Effectively applying the five-step risk management process will help us do the right training safely, and will also help us execute our operational missions safely.

I also submit to you that rarely does one achieve the risk-management standard of an informed decision at the appropriate level while sitting behind a desk writing e-mails. As leaders, our presence must be on the front lines. While there are lots of folks to help us in integrating safety and risk management into our operations, leaders guide the boat. At the same time, we must also be skilled in using the talents and assets in our organizations. If you cannot physically be present, make sure the command



sergeant major, S3, XO or another principal staff member is out there to observe the training, the mission, the operation. Safety is a by-product of having tactically and technically competent leaders on the scene.

Good training produces tough, disciplined and highly motivated soldiers - and it reduces casualties in combat. Safe performance is a predictable result of performing to standard, and performing to standard is a result of training to standard. Training to standard leads directly to discipline - both collectively and individually. Disciplined soldiers and operations are inherently safer. Discipline, leadership, standards, training and solid risk management are the key tools for reducing our losses from accidents.

Focus Areas

Weight-and-balance issues, power management, weather decisions and over-water operations remain critical areas of concern in our aviation operations. Commanders should review their safety, maintenance and training programs, ensuring that hazards are carefully assessed and ensuring that informed decisions are made at the appropriate level.

Of greatest concern are the effects of cumulative risk. Seemingly low-risk individual hazards, when left uncontrolled, can collectively raise risk to an unacceptable level. Because of mission demands and aircraft capabilities, we often place crews in positions that create very limited margins for error. We must monitor and assess the hazards carefully.

Summary

Safety is not something we can leave to chance. Safety is discipline. It's standards; it's training; it's leadership. It's making tough risk decisions. Risk management is a sound investment in readiness that we will need to prevail. An informed risk decision at the appropriate level is the standard all of us must meet because soldiers' lives are at stake.

Collectively, we are an Army of great courage, strength and resourcefulness. Our non-negotiable contract with the American people says we will fight and win our nation's wars. Equally as important, that contract demands that we fiercely protect America's greatest assets - its sons and daughters - from being injured or killed. At this critical time, we cannot afford the serious drain on readiness that will result from the loss of a single soldier in a preventable accident. From cockpit crews to the maintainers to the refuelers, we need every soldier's skills and steadfast commitment to transforming the chaos created by terrorists into security for all who embrace the principles of peace, freedom and democracy.

Plan, train and fly safe!

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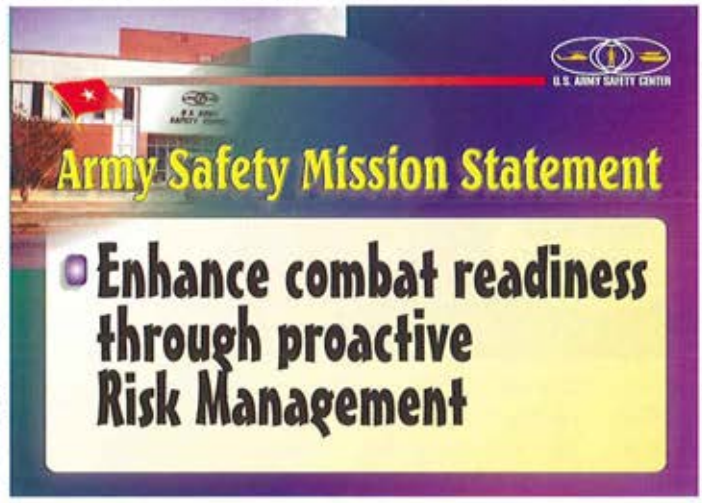
BG James E. Simmons is the director of Army safety and commanding general of the U.S. Army Safety Center at Fort Rucker, Ala.



Spur Ride: Buddy Extraction on the AH-64A Apache

By CW4 Warren A. Aylworth

The 2nd Squadron, 6th Cavalry, 11th Aviation Regiment, is the deep-strike force for the Fifth U.S/German Corps. The deep strike mission profile requires 2-6 Cav. to be prepared to fly more than 100 kilometers behind enemy lines to attack selected high pay-off targets. Flying with night-vision systems going that deep means the 2-6 Cav. Crews can plan on spending up to an hour behind enemy lines.

Limited availability of joint combat search and rescue (J-CSAR) or Army lift aircraft able to accompany the deep-strike AH-64A Apaches means that dedicated rescue forces may not be available to pick up a downed Apache crew. Combat experience has proven that chances for a successful combat rescue are directly proportional to the speed with which the downed crew can be picked up.

Therefore, we in 2-6 Cav. and the 11th Avn. Regt. developed an immediate buddy/self-extraction technique in our Tactical Standard Operating Procedures (TACSOP). This buddy extraction SOP addressed how and when we would immediately extract the crew of a downed Apache using our own aircraft.

Validating the TACSOP

Having a good TACSOP is an excellent start, but what about actually validating it? From the individual line Apache pilot to the squadron standardization instructor pilot (SIP) we thought this was important, real-world training, which directly affected our go-to-war capabilities. Of course little happens in Army aviation just because line Apache pilots think it's important. And having crews sitting on the forward avionics bay (FAB) of an Apache as it flies around the traffic pattern was definitely going to be an eyebrow raiser.

So how'd we pull this off? With courage, planning and training, of course.

Courage

The indispensable part of this training event was to have courageous leaders willing to stand up for high-risk training. Fortunately, the chain of command was willing to accept the risks of conducting advanced training. The regimental commander put "Extraction Training" as a specific bullet on our "High-Risk Training" slide during the Training Management Review (TMR). The corps commander accepted the regimental training plan and we went to work.

Risk Management

From the beginning we integrated risk-management techniques, carefully reviewing and mitigating all associated risks to the lowest level.

The squadron safety officer completed a risk-management matrix which, together with the flight risk assessment worksheet and DA 5484, was signed by the regimental commander.

The live-flight portion of extraction training had some specific additional safety-control measures:

- Training was limited to volunteer, mission-essential personnel (Apache pilots only).
- The aviation life-support equipment (ALSE) officer personally inspected the Safety Restraint Tethers (SRT) used.
- The squadron and regimental aviation safety officers did the final safety checks and supervised aviator hook up.
- An additional independent SRT and hook-up point was utilized for each extractee.

- An instructor pilot flew in each of the extraction aircraft.
- Aircraft maneuvers were limited to shallow bank angles and 60 KTAS maximum speed.
- Aircraft would only fly with a symmetrical load of extractees (one aviator on each wing).
- One traffic pattern was flown for each crew.
- Crash rescue forces were placed on "cockpit alert" on the ramp.
- Unit medics were on standby on the ramp.

Additionally, we actually flew the flight surgeon on the wing as part of the training to validate any physiological issues with self-extraction external flight.

Planning

With information available from 7th Army Training Command (7th ATC) and the U.S. Army Aviation Center (USAAVNC), we reviewed and improved our TACSOP self-extraction procedures and integrated the latest information about the SRT. We evaluated USAAVNC's recommended extraction position and included it in our training program. Including the USAAVNC position, we came up with a total of three recommended extraction locations/methods for an AH-64A.

Checklist for peacetime Buddy Extraction Training

Self-Extraction Preflight Personal Inspection - External Crewmembers

Helmet -
- Visor down.
- Chinstrap secured.
- ICS and IHADSS harness tucked into SARVIP.
- Lip light/weight bag removed and battery cords stowed.
- Mic boom stowed over left ear.
- All remaining items secured (visor screws, other items).

SARVIP -
- Fully zipped and properly fit.
- Chest strap secured and excess webbing stowed.
- Leg straps secured and excess webbing stowed.
- D-rings properly secured.
- Safety Restraint Tether (SRT) properly secured.
- All pockets secured, any loose or questionable items removed.
- Check inside pocket items as well.

Uniform -
- Neck/collar strap fastened.

Pens and pencils removed.
- Loose keys/coins/pocket items removed.
- All pockets secured.
- Gloves on, wrist straps secured.

Hook up to the aircraft on the left or right side.

Ensure security of all SRT/D-ring connections.

Thumbs up and move away from the aircraft.

We had an instructor pilot compute longitudinal and lateral center of gravity (CG) for the extraction aircraft. The mathematics reinforced our intuition. On the Apache we wouldn't think twice about throwing a few extra Hellfires on an outboard missile rack, so an Apache pilot or two sitting up beside the transmission was insignificant from a CG and weight-and-balance perspective.

The squadron standards officer wargamed the CSAR training with key squadron trainers, particularly the squadron safety officer, troop safety officer, squadron CSAR officer, instructor pilots and pilots in command of the training aircraft.

Training

Training was conducted in three phases: academic, static aircraft and an actual extraction flight. The academic and static-aircraft training were mandatory for all assigned aircrew. The flight portion was open to volunteer Apache pilots only.

The squadron CSAR officer conducted academic training for all assigned aviators. This training was conducted in a classroom environment utilizing PowerPoint and emphasized our buddy-extraction procedure in accordance with our TACSOP with special emphasis on equipment preflight, crew hand signals and recommended extraction positions.

Static-aircraft training was conducted in the hangar using an instructor pilot and safety officer certified by the squadron SIP. During the hangar training each aviator practiced hook-up procedures and was encouraged to try the three positions recommended for extraction on an A-model Apache.

Lets' Go Fly

After the first two phases were completed the aviator with his SARVIP and IHADSS were inspected by the squadron ALSE officer in accordance with our pre-extraction training checklist. Then the aviator moved to the flight line, where a final Jump Master Pre-Inspection

(JMPI) was conducted by the regimental and squadron safety officers. These two officers then escorted the extractees to the aircraft, supervised their hook-up, did a final inspection and personally attached an additional SRT to an alternate hook-up point.

Leading from the front, the squadron commander and squadron standards officer were the first two extractees to fly on the wing. The squadron flew 35 aviator volunteers on the wing of Apache helicopters up to altitudes of 700 feet above ground level.

Lessons Learned

In the process of actually doing this, we found that sitting on the FAB forward of the wing with our backs to the transmission was the easiest, safest and most stable of the three extraction positions. Though we thought about pylon articulation on takeoff and landing we found it didn't pose a significant problem. We found that in the alternate position, sitting up on the wing, the nose gearbox intake sucks in your arm pocket, and that your IHADSS helmet cord could be sucked into the engine inlet.

We thought about restricting the use of aircraft weapons after picking up a crew, but on an Apache the extractees are farther from the rocket pods and gun in this emergency mode of flight than a Kiowa Warrior crew is during normal ops.

We found that 60 KTAS was a comfortable speed, which could be easily endured by the extractees. In fact, the windblast at this speed was less than that encountered riding a motorcycle on our local A-7 autobahn. Under combat conditions uninjured crewmembers should be able to tolerate 80 KTAS without much difficulty.

We concluded that the buddy-extraction concept was completely viable for ambulatory crewmembers. The traditionally sized copilot gunners of the extraction aircraft could assist lightly wounded crewmembers into position; nonambulatory crewmembers, however, would be a challenge with current epicene aircrews. In extremis, if nonambulatory crewmembers could be transported to the aircraft, they could be attached to the tie-down points on the main landing gear and "slung out" by their SARVIPS.

The bottom line is that there still is no substitute for a dedicated J-CSAR aircraft. The biggest limit to buddy extraction is that the downed crew has to be within running distance of a suitable landing area. In forested or urban terrain where an Apache can't land, or when the downed crews are nonambulatory, we'll still need an HH-60 Pave Hawk with a winch and pararescue personnel. But for all of the other scenarios buddy extraction beats the hell out of the POW cage!

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CW4 Warren A. Aylworth is the standards officer for 2nd Squadron, 6th Cavalry, in Germany.

2-6 CAV "SPUR RIDE" BUDDY EXTRACTION SOP

If imbedded SAR aircraft are not available; aircrews may be extracted by Apache helicopters using the buddy-extraction method. The standard technique is for the rescue Apache to land as close to the shot-down crew as possible.

The survivors will move to the rescue Apache and climb on each FAB/wing. The CPG will move to the left (port) side and the backseater will move to the right (starboard) side. Each survivor will climb up the FAB steps and sit on the FAB forward of the wing, or sit on the wing between the transmission and the nose gear box facing forward (in the direction of flight). Exercise extreme care not to stand on the wing or FAB due to turning rotors.

Each survivor will secure himself to the nearest step/hand hold by double looping his Safety Restraint Tether (SRT) through the step/hand hold and clipping the SRT back onto itself or the SARVIP. The SRT is a tubular nylon strap similar to a mountain climbing "runner" which is secured to the D-rings on an individual aviator's SARVIP.

Once secured, each survivor will signal the aircraft crew with a thumbs-up signal during day, or a vertical movement of a flashlight, lip light or chem-stick during darkness. At that time the pilot will take off, exercising extreme care to minimize changes in the aircraft's pitch and bank attitude. The pilot will not exceed 60 KTAS and will fly towards friendly lines (normally via the briefed route). The gunner will constantly monitor the status of the survivors to ensure the speed is not excessive, or determine if injuries or damage to their SARVIPs are compromising the survivor's ability to stay on the Apache.

As soon as practical the Apache will land and cross-load the survivors onto a CSAR, medevac or utility aircraft. When clear of the enemy the Apache buddy-extraction crew will attempt an in-flight linkup with the CSAR or C-2 aircraft. Once both aircraft are in positive communication they will select a suitable landing area to cross-load the survivors.

Whither the Data Bus?

By Ronald V. Kurowsky

MIL-STD-1553, the aircraft Local Area Network (LAN), celebrated its 25th birthday in 1998. Why should we concern ourselves with a standard when it is more than 25 years old? Most assuredly fiber optic or other high-speed bus standards will soon replace this bus system standard. But the Comanche, Improved Cargo Helicopter (ICH) and the digitized UH-60 will all be using this bus into the 21st century.

The Early Years

In the 1950s and early 1960s Army helicopters used standalone systems that were analog with a control head and cumbersome electro-mechanical processors that consumed large amounts of space, weight and power. To perform a different mission meant adding wiring, another display, control head and processor to an already overloaded aircraft, or developing another mission-specific aircraft.

The late 1960s and 1970s saw the evolution of digital processors and the capability to integrate information to meet mission needs. Sensor information could now be integrated in a serial mode of transmission, thereby reducing the number of wires and weight an aircraft carried. Data could now be transmitted in both directions over a single pair of wires. In 1968, at the request of the U.S. Air Force, the Aerospace Branch of the Society of Automotive Engineers (SAE) established the A2-K subcommittee to develop MIL-STD-1553, "Airborne Tactical Multiplex Data Bus Standard." The A2-K subcommittee completed the document in 1970. This subcommittee is still in existence as the AS-1A Avionics Systems subcommittee, and is composed of both military and industry representatives constantly striving to improve the standard and provide for better methods of testing.

Although the standard was intended for Air Force application only, industry approached both the SAE and the military to extend its use and created Notice 1 in 1980 and Notice 2 in 1986. The standard has since been stable to allow industry to build reliable equipment, with comments regarding changes and versions given in MIL-HDBK-1553A. Industry has further used the standard to design and build commercial systems for subway control, oil well rigs and production lines. In the waning days of military specifications and standards, the SAE has published MIL-STD-1553(B2) as AS15531 and an update of MIL-HDBK-1553A Section 80, as AS15532.

Operation

Have you flown an AH-64, OH-58D, MH-47, MH-60 or the new UH-60Q? If you have, then you've flown an integrated system: MIL-STD-1553 multiplex data bus technology. MIL-STD-1553, or "1553" as it is called, describes a standard military architecture: "Speak when spoken to." The bus controller speaks; the remote terminal(s) answer one at a time. This speaking is done at a 1 MHz transmission rate or approximately 50,000 words per second.

The AH-64 was the first Army production aircraft to carry a tactical data bus. The AH-64 started out with a McDonnell-Douglas version of MIL-STD-1553 using a sine wave, rather than the square wave now in use. Sometimes known as a "twisted shielded pair," 1553 has only three types of terminals: bus controllers (primary and back-up), remote terminals and bus monitors. It is over the twisted shielded pair that up to 32 terminals can communicate — usually a bus controller; a back-up bus controller; and remote terminals made up of communication, navigation, ASE, command and control and specific mission equipment. You may find more than one set of buses on a given aircraft. Multiple buses are required when throughput of data exceeds the limits of 1553, when there are more than 32 subsystems to be integrated, or when safety requires dual or triple redundancy.

The majority of data transmitted across the bus is in messages containing from one to 31 words. A typical subsystem could have 15 to 20 messages to receive and transmit. It does not take long to reach the conclusion that at a given rate of 7 Hz only eight or nine remote terminals and one bus controller can reach the 100 percent throughput capability of the data bus. Newer or updated aircraft are using multiple sets of 1553 buses with backup bus controllers to move the vast amounts of data within the airframe for communications; navigation; IFF; ASE; engine and transmission status; command and control; and weapon firing.

To control bus protocol, mode codes were generated that allow systems to reply with a minimal number of words and further improve the efficiency of the bus. Bus traffic or throughput quickly reaches its maximum, while efficiency of the bus is degraded when mode codes and status flags are not used. Why continue to ask for or give data to a subsystem when the subsystem can't react? Mode codes are used to tell the controller "I'm busy or not working properly".

"The AH-64 was the first Army production aircraft to carry a tactical data bus."

Subsystems usually contain a microcomputer that interfaces the data bus to the subsystem. Many subsystems now contain two computers, one for the operational flight program and another to interface to 1553. Depending on the system, this may be a custom design or commercially available chip set.

Integration

You don't have to be a system designer to understand 1553 integration, but without a basic knowledge of its design you cannot have a full appreciation of the operation, training and testing required of an integrated system.

Attaching terminals to the data bus is not accomplished like plugging a toaster into an electrical outlet in your home. MIL-STD-1553 requires terminal electrical characteristics be maintained within specified tolerances to minimize electrical interference or noise that can be interpreted as an error signal. Bus

controllers provide command and data to the terminals, while the terminals provide data and status to the controller. The normal command/response is a transmission of a command from the bus controller (BC) to a remote terminal (RT). The terminal accepts the data or transmits data, depending upon the command, and a status word is transmitted. There are three basic types of transfers: BC-to-RT, RT-to-RT and RT-to-BC. For in-depth information on this subject we refer you to the MIL-HDBK-1553.

As a pilot, you may not care about types of data transmitted; options implemented; transfer of data and data-update rates; or status bits; but maintenance crews and those who design the system do care. Because 1553 is a standard and not a specification, integrators do not have to conform to a specific way of integrating each subsystem. In fact, other than the MH-47/60, none of the Army's existing aircraft use the same remote terminal address for the same radio or navigation system. They do, however, conform to electrical, protocol and timing requirements for 1553. Although conforming to these requirements, options within each area of the standard allow the integrator to pick and choose from what is available. In protocol, they may or may not use mode codes or status flags and have a myriad of message formats available. To assist in sorting through options the SAE, at the request of the Air Force, undertook the development of MIL-HDBK-1553A containing the efforts of both industry and the tri-services. The handbook provides standardized options and the use of a standard set of words for all avionics systems while leaving room for growth when a unique mission subsystem is added.

The aircraft integrator translates operational requirements into system/subsystem requirements, and then into hardware/software requirements. An integral subset of the Interface Requirement Specification for any system is a Multiplex Interface Control Document (MICD), the format for which can be found in Section 80 of MIL-HDBK-1553A or the new SAE AS15532.

To have a minimally integrated system you only need to combine two subsystems with one controller. Such a system could take the form of an ARC-164 radio and an ASN-137 Doppler with a multifunction Control Display Unit (CDU). Older subsystems such as the ASN-128 Doppler Navigation system have had their lifecycles extended by the integration of GPS and 1553. Other systems, such as ASE equipment or engine/transmission parameters, have been integrated into a remote terminal where many standalone systems can interact with the data bus.

As the requirements for a system grow, a myriad of data can be entered — including hundreds of presets for radios, navigation waypoints, digitized map data and threats. Each remote terminal needs its particular data to operate properly. The crew could spend an hour manually entering this data, or could use a Mission Planning Station that can provide the necessary data prior to the mission and then have data transferred from a remote terminal to other terminals once the aircraft is started.

We have reached a point at which federated subsystems are treated as integrated sensors. Bus controllers are now performing navigation solutions and maintaining all radio-frequency control instead of allowing the systems to do the job they were intended to do. Maintenance personnel can no longer tell if the system is operating properly if the air crew comes back and states the radio did not go to the proper preset squelch setting.

Maintenance crews are becoming acutely aware of these multiplexed architectures as they try to determine what is really wrong on an aircraft when the crew comes back from a mission and writes up a problem. "False pulls of good equipment" are occurring more rapidly now than when each system was standalone.

A seminar given to 157 personnel at Fort Rucker, Ala., clearly showed the need for tools and training required to reduce O&S costs and downtime. The Avionics Branch U.S. Army Communications-Electronics Command's Software Engineering Center, working with the 160th Special Operations Aviation Regiment (SOAR) and CECOM LARs, has been developing software tools to assist maintenance personnel checkout and/or repair boxes. Tools such as the "On-Aircraft Test Software" were designed to stop false pulls of good equipment. The "Software Loader Verifier" is a tool to download new versions of software. Telemaintenance is the next step in improving ways to perform maintenance at reduced costs.

The Future

The most sophisticated army systems now in production are the 160th SOAR's MH-60s and MK-47s, which require multiple sets of data buses to control 31 subsystems for radio, navigation, ASE and secondary instrumentation. Although not part of 1553, the design of what the pilot and copilot sees are of paramount importance. What is it the crew has to do? How do they perform their mission, and what data analysis is required for situation awareness? Answering these questions and trying to make sense of how to accomplish it with a Control Display Unit and/or Multifunction Display is all part of what an integrated crew station process team must decide for each aircraft and its mission.

Once these questions have been answered the selection of radios, navigation, IFF/ASE and unique mission equipment can be made and the items can be integrated. Most terminals have more data available than is necessary for the pilot or crew to see. More efficient ways of presenting data should be used other than reproducing what was previously seen on the standalone control head for each system. Like the data bus, display/control integration becomes a two-way street: What is it the pilot has to know, and how does the system present this information?

To borrow a phrase from an outstanding organization, "The Future is Now." Integrated sensor packages are being developed to replace the radio, navigation and ASE systems; programs are using an open architecture to ensure growth potential; and smart systems are being prototyped. But there is a limitation to the amount of data that can be transmitted at a one-megabit-per-second rate. The tri-services will have to look at ways of providing additional data over the same twisted shielded pair to minimize wiring changes. Transmission methods for bundling data — such as those handled by FAX machines or other digital telecommunications devices — will have to be reviewed to continue the ever-present thirst for information transfer in the aircraft.

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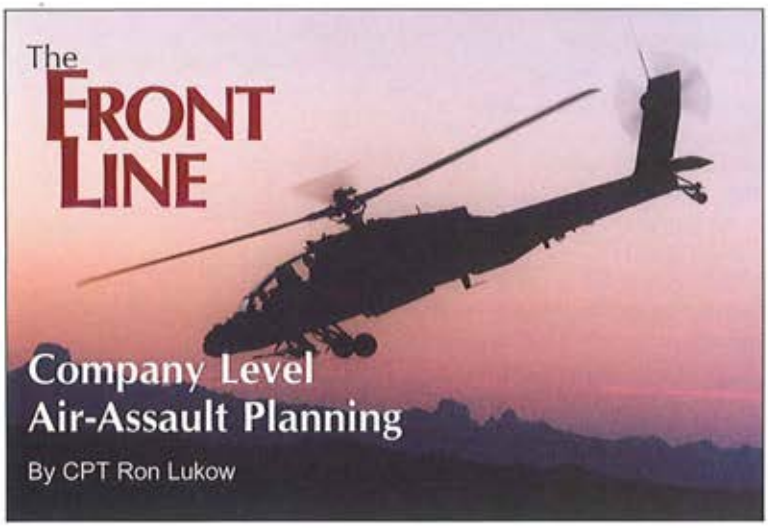
Ronald V. Kurowsky, a retired Department of the Army civilian employee, is president of AAAA's Monmouth Chapter.



Company Level Air-Assault Planning

By CPT Ron Lukow

Air-assault operations are highly complex and planning-intensive, and require great amounts of coordination throughout all levels of the combined-arms team. The current doctrine (FMs 90-4, 1-113 and 71-100-3) addresses the many different plans and coordination requirements associated with air-assault operations, but fails to define requirements in sufficient detail down to company level.

Specifically, the current doctrine does not address the role of the assault company commander and his/her requirements during company-level planning, the Initial Planning Conference (IPC) or Air Mission Coordination Meeting (AMCM), the Air Mission Brief (AMB) or the Aircrew Brief (AB). As a result, while deployed to the National Training Center (NTC), assault company commanders habitually struggle with the many tasks and tactics, techniques and procedures (TTPs) associated with those key planning events.

This article will highlight some of the necessary company-level key planning tasks and TTPs during the air assault planning process for use by assault company commanders.

Upon initial notification of an upcoming air-assault mission, the company commander must immediately accomplish a few key tasks. First, the commander should identify the crews required and the chalk order within each serial and, if possible, identify aircraft. By determining crew and chalk order requirements, many planning cell duties can be assigned, and by determining aircraft many maintenance issues can begin to be worked. If, however, the mission is still too vague to determine crews and numbers of aircraft, at a minimum the serial commanders and flight leads should be identified so they can participate in the initial planning stages.

The second action that an assault company commander should accomplish is to properly cycle the required crews for the mission. Normally, with the initial warning order, there is an estimated execution time and all crews, including crew chiefs, must get on-cycle to be ready for mission execution.

And third, the commander should establish an initial timeline and assign company planning cell duties. The timeline ensures company personnel know when and where both internal and external key planning events will occur. Even though there might not be enough information to begin planning, by assigning planning cell duties individuals can begin to gather the necessary tools. Many unit SOPs have defined planning cell duties; however, many of them do not go into enough detail for the company level. Therefore, the company should compile its own list of specific tasks required to properly plan, brief and execute an air-assault mission. The staff can then determine, based on the amount of planning time available, which tasks must be accomplished. The company commander can then assign these duties.

Here is one way to capture all of this: After the initial warning order of an upcoming air assault, an IPC or AMCM is normally conducted at the Air Assault Task Force (AATF) tactical operations center (TOC). The company commander should ensure that all company serial commanders and flight leads attend this meeting, with additional key personnel added based on time and space availability.

KNEEBOARD	RESPONSIBILITY	COMPLETED
Packet OIC		
Route		
Route Double Check		
Route Triple Check		
TDH Cards (Kneeboard)		
Fuel Requirements		
Crew/Commo Cards (Kneeboard)		
Timeline Card (Kneeboard)		
LZ Diagrams (Kneeboard)		
PZ Diagrams (Kneeboard)		
FARP Diagram (Kneeboard)		
Lagger Site Diagram (Kneeboard)		
PPC (Kneeboard)		
IIMC Card (Kneeboard)		
Approach Plate Copies (Kneeboard)		
Cover Page (Kneeboard)		
MISSION DETAILS		
RFI Board		
Risk Assessment		
Flight Plan / Strip		
Weather		
NOTAMs		
ACO/SPINS		
CSAR/DART Plan		
AMPS Cartridge		
Execution Checklist		
Tadpole Diagram		
BRIEFING		
Map Preparation (Briefing)		
Concept Sketch (Briefing)		
PZ Diagram (Briefing)		
LZ Diagram (Briefing)		
Parking Diagram (Briefing)		
FARP Diagram (Briefing)		
Lagger Site Diagram (Briefing)		
Timeline Card (Briefing)		

Company level planning becomes much more productive and efficient as more company personnel attend the IPC. Therefore, under time constrained situations, more company level personnel need to participate in the IPC.

For the conference to be beneficial the company commander must bring some basic information. A general IPC checklist is in FM 1-113, Appendix B, and the commander should bring as much of this IPC data completed as possible.

As a minimum, if LZ/PZ locations are known prior to the meeting, the flight leads should have initial flight routes calculated or know which routes will be utilized. These routes can change based on the ground tactical plan and further refinement of the enemy situation. However, by having a general idea of the routes, detailed refinement of the PZ/LZs can occur and the initial Suppression of Enemy Air Defenses (SEAD) plan can be developed.

Also, if not already determined and sent to the AMC/LNO, the commander must know exactly how many aircraft and crews are available for the mission, and how they will be broken into serials. This allows the AATF to determine load plans and priorities for incorporation into tadpole diagrams. This information must be "locked in" during this meeting for the operation to go smoothly.

Finally, either during or after the IPC the company commander and other key company attendees should conduct direct coordination with the AATF BOS elements or subordinate unit LNOs to receive any additional data that will assist with planning. Because of fighter management cycles, time and distances, this might be the only opportunity to conduct this critical face-to-face coordination with the AATF staff, and receive answers to any questions that still remain. A good technique is to utilize the company's aircrew brief to prompt the specific questions needing answers before departing the AATF TOC.

According to FM 90-4, "The Air Mission Brief (AMB) is the last coordination meeting of key participants in an air-assault mission and ensures that key aviation personnel are briefed and that the details of each plan are finalized." In accordance with FM 1-113 at the company level, the commander should again ensure that all serial commanders and flight leads attend this brief. Additional company-level attendees are not required since most of the company-level planning should already be completed or can continue to be worked.

Like the IPC, the AMB will normally occur at the AATF TOC, and the company commander should again annotate notes on the company's aircrew brief if the information is not already known. At the AMB some additional products may be issued, such as finalized LZ/PZ diagrams, tadpole diagrams, AATF communication cards, air movement tables and execution checklists. The company commander, serial commanders and flight leads should immediately inspect these documents for errors. Then, if not already covered during the AMB, all errors should be reported to the aviation LNO or AATF S3 Air immediately following the brief.

Before departing the AATF TOC, the company commander must ensure all remaining issues are being worked or are answered. After returning from the AMB with the finalized information, the company can complete the company-level air assault planning and prepare for the aircrew brief.

Because the Aircrew Brief is critical to the understanding of the air-assault plan, all company personnel participating in the operation should attend. The company commander must ensure that the maximum number of people attend this briefing, including crew chiefs and/or door gunners. The commander should also coordinate with the battalion staff if there are specific portions of the AB that they must brief.

Before the AB begins all kneeboard packets and other documents (execution checklists, air movement tables, commo cards, etc.) should be handed out. This ensures that the brief is not interrupted once. The commander should then conduct a packet inventory highlighting all pen-and-ink changes. This ensures everyone has the required documents and is standardized.

During the brief, the commander must ensure all information is briefed down to the crew chief/door gunner level. All friendly and enemy positions should be briefed with grid coordinates and relative relation to the serials or individual aircraft. For example: "At LZ Dove, Company B, 1-45th Infantry will conduct a right door exit and assault the wood line to the right. Their objective, OBJ CRUSH, is at the two o'clock position, 3000 meters from the number one touchdown point in the LZ." With this level of detail the risk of fratricide will be greatly reduced and the overall situational awareness for every crew will be greatly enhanced.

With the use of these suggested TTPs during those key events in the air-assault planning process, assault company commanders can ensure that company-level planning and coordination is more efficient and effective in preparing for air assault operations.

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CPT Ron Lukow is the assault company trainer at the National Training Center, Fort Irwin, Calif.

Briefings continued from page 3

The **U.S. Army Aviation Applied Technology Directorate** has awarded **Simula** inc. an $11.1 million contract for the production of Cockpit Air Bag Systems (CABS) for UH-60A/L Black Hawk helicopters. The CABS are intended to minimize the chance of crash-induced head and upper-body strikes in helicopter cockpits. The 20-month contract is for the production of 490 systems, additional spare kits and associated training materials.

In August, retired Army **COL Jim Voss** rode home aboard the space shuttle *Discovery*, which also carried active Army **LTC Patrick Forrester**, a mission specialist. Forrester was part of a four-man shuttle crew whose mission was to deliver 7,000 pounds of supplies, food and science experiments to the space station. Voss, a flight engineer with the Expedition Two crew, arrived at the space station March 18. In addition to Forrester, there are five other active-duty Army astronauts: **LTC Jeff Williams, LTC Nancy Currie, LTC Tim Creamer, LTC Doug Wheelock** and astronaut candidate **MAJ Timothy Kopra**.

The advanced Lightweight Microclimate Cooling System developed by the **U.S. Army Soldier and Biological Chemical Command's Soldier Systems Center** is being adapted for use in Army UH-60, CH-47 and OH-58 helicopters. Developed as part of the Air Warrior system, the cooling device will help aircrews lower body heat generated in the multi-layered flight suits. The system is scheduled to be issued to field units beginning in 2003.

"Did You See That Tower?"

By CW3 Jon Sturnick

How many times have you said this during your career in the cockpit?

I believe it is fair to say that many of us have experienced a near-miss with an object that seemingly should have been - but wasn't - lighted and annotated in our flight information publications. As an aviator with 11 years of experience, it's certainly happened to me. As a result, I decided to find out why - by becoming a subject-matter expert on how obstructions are reported through appropriate channels, as well as on how they ultimately make their way into flight information publications and tactical maps.

Government Requirements

The federal government controls the reporting, marking and lighting of obstructions in the National Airspace System (NAS). Federal Aviation Regulation (FAR) 14, Code of Federal Regulation (CFR) Part 77, requires the reporting of all obstructions above 200 feet above ground level (AGL). Obstructions of less than 200 feet AGL do not have to be reported unless, according to Advisory Circular (AC) 70/7460-1K, the FAA recommends marking and/or lighting a lower structure because of its particular location. 14 CFR part 77 and AC 70/7460-1K basically state that obstructions within 20,000 feet of a runway - regardless of height - will be reported to the FAA so that an appropriate safety survey can be made of the object's location and potential hazard to the NAS.

The federal government controls the reporting, marking and lighting of obstructions in the National Airspace System.

The AP/1B Pg. 1-4, item (19) says: "Unpublished towers found by surveys 200 feet AGL and above are in this SOP." The Chart Update Manual (CHUM) is a living document that states: "All vertical obstructions 200 feet AGL and higher cannot be portrayed due to chart scale and feature density."

OK, all obstructions that we have to deal with are required to be lighted right?

Wrong.

AC 70/7460-1K says: "Pilots of aircraft traveling at 165 kts. or less should be able to see obstruction lights in sufficient time to avoid the structure by at least 2,000 feet horizontally under all conditions of operations, provided the pilot is operating in accordance with FAR part 91."

However, owners of obstructions may or may not be required to light the obstruction based on specific requirements in the AC. Painting of obstructions in either a red and white checker pattern or aviation orange is expensive and is only "recommended" by the FAA. AC 70/7460-1K further states that "Construction or alteration of a structure that may affect the NAS is required under the provisions of 14 CFR part 77 to notify the FAA by completing the notice of proposed construction or alteration form. This form may be downloaded from www.faa.gov/ats/ata/ ata400." AC's may also be accessed and downloaded from this site.

The bottom line is that the lighting of obstructions above 200 feet AGL is not required, but is a normal operating practice. Obstructions within 20,000 feet of a runway and below 200 feet AGL may or may not be required to be lighted, based on a site survey conducted by the FAA.

What happens when the light fails? AC 70/7460-1K states that "Light failures on obstructions should be corrected as soon as possible. Any failure or malfunction that lasts more than 30 minutes and affects a top light or flashing obstruction light, regardless of its position, should be reported immediately to the nearest Flight Service Station (FSS) so a notice to airman (NOTAM) can be issued. Toll free numbers for FSSs are listed in most telephone books or on the FAA's website."

One of the problems we are dealing with is that AC's are not regulatory in nature, they merely describe an industry standard that is not a requirement unless directed by a governing body such as the FAA.

Obstructions that emit frequencies governed by the Federal Communications Commission (FCC) as stated in 47 CFR part 97, volume 5, part 80. FCC forms, bulletins and information can be obtained toll-free from the FCC's national call center at (888) call-FCC [(888) 225-5322].

Airman's Information Manual (AIM), Section 5, Potential Flight Hazards: Section 7-5-3, "Obstructions to Flight," states that "many structures exist that could significantly affect the safety of your flight when operating below 500 feet AGL, and particularly below 200 feet AGL. At and below 200 feet AGL there are numerous power lines, antenna towers, etc., that are not marked and lighted as obstructions and therefore may not be seen in time to avoid a collision. Notices to Airman (NOTAMs) are issued on those lighted structures experiencing temporary light outages. However, some time may pass before the FAA is notified of these outages, and NOTAM issued, thus pilot vigilance is imperative."

How do you ensure your unit's terrain flight hazard avoidance program is the best it can be?

Part c. of the same section states: "Many of those [obstructions] that do require notice do not exceed 200 feet AGL or meet the Obstruction Standard of 14 CFR Part 77 and, therefore, are not marked and/or lighted. All pilots are cautioned to remain extremely vigilant for these power lines or their supporting structures when following natural flyways or during the approach and landing phase." Section d. of the same section states, "some structures do not require obstruction marking and/or lighting and some may not be marked and lighted even though the FAA recommended it."

It is important to note that each military service and the FAA have an Obstacle Evaluation/Airport Aeronautical Evaluation Proponent Office working together to find appropriate solutions to this complex issue within the constraints of the law and Best Safety Practices.

Army Requirements

Army Regulation (AR) 385-95, Pg. 12 E. (4), requires Army aviators to immediately report hazards and unsafe conditions or acts to the proper authority. After the initial verbal report, provide a DA Form 2696 (OHR) to document the condition and promote follow-up actions as appropriate [the FAA has a similar program known as the Aviation Safety Reporting System (ASRS)]. AR 385-95, Pg. 10 C. (4), says: "The operations officer will ensure a detailed hazard location map covering the entire unit operational area is posted and current."

In addition, Page 24, 3-3 A & H, states that the SOP will address "terrain flight hazard avoidance and operations in a tactical environment." We often train in alert areas and military operations areas (MOAs) that are beyond the boundaries of our "base operations hazard maps." So, we must be aware of the manner in which hazards are promulgated in all of our areas of operation, and ensure that we include these areas in our terrain flight hazard avoidance operations in a tactical environment.

Real Hazards

Why is all of this so important to Army aviation operations?

Power companies frequently put up distribution and transmission lines to homes, businesses and other facilities that are not in the proximity of an airport. Depending on the terrain, distribution lines average 40 to 60 feet AGL and transmission lines average 100 to 120 feet AGL. These obstructions are not reported unless they are in proximity to an airport. Moreover, these obstructions may not be lighted - even if they are above 200 feet AGL. It is important to note that "our" MOAs, alert areas or areas of operation (AO) are not really "our" airspace - it is the FAA's. An individual or small company may or may not know whom to report construction projects to, or whether reporting an obstruction is required.

All of this means that aircrews end up relying on FAR part 91 (see and avoid). Remember, not all obstructions will be reported or lighted. I am not even attempting to address the errors in publications, or the problems with proper and timely dissemination of new hazards.

Improve Your Program

How do you ensure your unit's terrain flight hazard avoidance program is the best it can be? My solution to this complex paradox of regulation and publications (which greatly relies on the human element) is:

- First, establish a working relationship with all cell phone, power and construction companies in your local area and/or areas of operation.
- Second, give the information in this article - and the name and number of your Post Airspace Safety Office (PASO) - to each of the businesses (you will more than likely find yourself educating these companies as I did).
- Third, work with your PASO frequently in an effort to develop the best, most proactive terrain flight hazards avoidance program possible.

AR 385-95 states that your SOP will address terrain flight hazard avoidance, and operations in a tactical environment. How well and how completely you apply process system safety management into your SOP is up to you and your organization.

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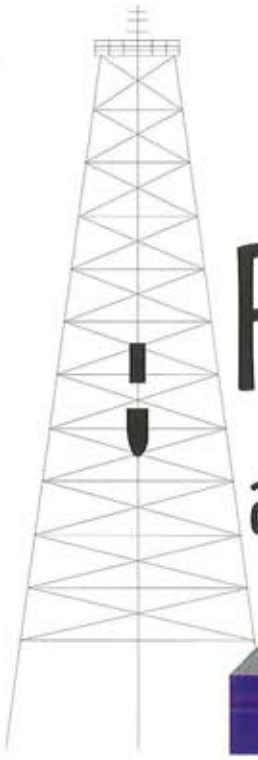

Radio Phraseology and ASRS

by CW4 Corey J. Ferguson

Army aviation today literally spans the globe, and we can find ourselves operating into and out of busy military and civil airports worldwide. When doing so, we have an opportunity to listen to other aviators on air traffic control (ATC) frequencies attempting to communicate their desires concisely and efficiently. The room for communications error in this fragile air traffic network is continually decreasing as more aircraft of differing capabilities are packed into a limited amount of space.

One of the distinguishing features between the professional aviator and just another pilot is their use of correct ATC phraseology, which assures the best chance of our intentions being correctly understood, and thus increases the safety of our operations. Recently there has been a tendency by some pilots to use "ATC slang" that is not listed in the Department of Defense General Planning Guide or the FAA Aeronautical Information Manual.

Professional aviators will read back the clearance as it was issued by ATC. The reason for this read back is to allow the controller and other aviators monitoring the frequency to have a chance to "hear back" the clearance. This allows the controller to correct the clearance should it have been issued in error, intended for another aircraft or if some type of miscommunication has occurred.

One of the more common slang phrases to come along seems to be the response to the towers' takeoff instructions. When hearing "Army 12345, cleared for takeoff runway 26 Right," the professional aviator will respond "Army 12345, cleared for takeoff runway 26 Right." However, there seems to be a growing number of "cool" pilots who believe that the response "on the roll" just sounds better. When issued a clearance of "Army 12345, position and hold runway 26 Right,"

these "cool" pilots respond with "on the hold" rather then reading back the full clearance.

This laid-back method of communication recently led to the following incident — extracted from the Aviation Safety Reporting System (ASRS). It happened at a major airport and serves as a good example of why we should not tolerate this type of phraseology in our cockpits.

"Reports sent to the ASRS are held in strict confidence. More than 300,000 reports have been submitted to date and no reporter's identity has ever been breached by the ASRS."

It was one of those VFR days with strong west winds. The operation was simultaneous landings and departures on both runways 26 Left and 26 Right.

"Somewhere in the vicinity of the outer marker," the writer reported, "we had been cleared to land on 26 Left and to maintain visual separation with the other traffic that had been cleared to land on 26 Right. In attempting to get another departure off runway 26 Left prior to our landing, the tower cleared a light twin for an immediate takeoff on 26 Left. Apparently misunderstanding the clearance, that light twin responded, 'On the hold, 26 Left.'

"I know that my copilot and I both thought that he said 'On the roll, 26 left." I suppose that the tower controller also thought the same thing. The light twin taxied into position and held on runway 26 Left.

"We continued our approach in anticipation of the aircraft starting its takeoff roll. As we got closer, the tower asked the light twin on the runway if there was a problem. The reply was that they had no problem and that they were 'on the hold.' I swear it still sounded like he said 'on the roll.' Now we were very close to touch down, so I started a missed approach just as the tower controller instructed to the light twin to 'hold your position and cancel takeoff clearance.'

"I'll bet anyone a cup of luke-warm coffee that had the light twin's pilot used the phrase, 'position and hold runway 26 left,' indicating his misunderstanding of the original clearance, the tower controller, my copilot or I would have queried him early on in our approach."

The ASRS program was established in 1975 under a memorandum of agreement between the Federal Aviation Administration (FAA) and the National Aeronautics and Space Administration (NASA). While the FAA provides most of the program funding, NASA administers the program and sets its policies in consultation with the FAA and the aviation community.

The ASRS collects, analyzes and responds to voluntarily submitted aviation safety incident reports in order to lessen the likelihood of aviation accidents. ASRS data are used to:

- Identify deficiencies and discrepancies in the National Aviation System (NAS) so that these discrepancies can be remedied by appropriate authorities;
- Support policy formulation and planning for, and improvements to, the NAS; and
- Strengthen the foundation of aviation human factors safety research.

This is particularly important since it is generally conceded that more than two-thirds of all aviation accidents and incidents have their roots in human-performance errors.

Pilots, air traffic controllers, flight attendants, mechanics, ground personnel and others involved in aviation operations may submit reports to the ASRS when they are involved in, or observe, an incident or situation in which aviation safety was compromised. All submissions are voluntary.

Reports sent to the ASRS are held in strict confidence. More than 300,000 reports have been submitted to date and no reporter's identity has ever been breached by the ASRS. ASRS anonymizes reports before entering them into the incident database. All personal and organizational names are removed.

"The next time you observe a safety deficiency please consider the value of helping to correct the problem ..."

Dates, times and related information, which could be used to infer an identity, are either generalized or eliminated.

This program has helped to identify many significant hazards to aviation and have resulted in the implementation of procedures and policy to reduce our risks in the cockpit. The next time you observe a safety deficiency please consider the value of helping to correct the problem by the voluntary submission of an ASRS report.

For further information on this program and to download the latest version of the reporting form visit the ASRS web site at http://asrs.arc.nasa.gov/main.htm.

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CWO Corey J. Ferguson is a dual-rated master Army aviator and, in his civilian occupation, a B-747 captain with a major airline.

How good are your acronym-identification skills?????

Test yourself with this exercise
submitted by CSM Jack L. List (Ret.)

Recently at the WAATS the OAT was high. I walked up to an aviator who was wearing his ALSE, reading his ATM and preparing for his APART. As I approached this aviator I noticed that he had dropped his CL and NVG. We were both attempting to pick up the equipment when the airfield suddenly went IFR. Unable to see each other, we both made a MAP at the dropped equipment. The weather got so bad that we continued toward the CL and NVG utilizing good old NOE. As we made our approaches I asked the aviator if he had read the NOTAM for that day. He indicated that he had only glanced at them, and noticed that a NAVAID had been out and was undergoing an MWO.

We both reached the dropped equipment at the same time; he reached for the NVG and I for his CL. I proceeded to give him the CL when the alarm went off indicating that we both should put on our MOPP gear.

This all occurred on a Monday, the same day that the colonel from the DOES was due to arrive, along with a fellow from the FAA who was going to give a briefing on FAR, FLIP and ICAO. The FAA fellow was an IE, IP, MP, IFE and a VHIRP expert. The DOES colonel was prepared to give a briefing on TAAMS-A utilizing the latest TRADOC STANAG.

I greeted them both with a hefty salute and good morning. As we proceeded to the headquarters building the colonel said he had left his NGR and DOD paperwork aboard the aircraft. He did an about face and was greeted by the CE of the UH-60 carrying his NGR and DOD stuff. They both saluted, the colonel thanked the chief with a wink and we proceeded to the HQ. The colonel asked me if the unit did AVIM or AVUM, or both. I indicated that while in CONUS the ARNG did both. As we continued through the HQ building we noticed that an NCO was giving instructions on the acronym SALUTE to a class of his peers. We continued down the corridor to the commander's office, where a young female soldier, who indicated that there was a DSN call for me, greeted us.

I took both gentlemen into the commander's office and they cordially exchanged greetings. I picked up the phone and was alerted by the OPS officer that ATC reported that an F-16 had accidentally shot one of his ATAS while performing a GCA. The ATAS hit a BMP on the ground, setting off an explosion that set off an ELT of a parked aircraft. The OPS officer said to tell the commander that HQDA was already alerted. The F-16 had returned to its AFB along with the AFSO team. Apparently, the AMC of the mission — who was also the EW expert of his unit — had miscalculated the DH and FPM while performing the GCA. I hung up the phone and turned to go back into the commander's office, when a young CPT came to me to discuss an OHR that he filled on one of the new WOs. It seems that a HAZMAT situation occurred when the WO was performing a preflight on his UH-60 and inadvertently spilled fuel all over the ramp.

So, how many did you get? If you got all 52 acronyms without using the answer sheet, it's time you retired!

ANSWERS TO ARMY ACRONYMS

1. WAATS - Western Army National Guard Aviation Site
2. OAT - Outside Air Temperature
3. ATM - Aircrew Training Manual
4. APART - Annual Proficiency and Readiness Test
5. CL - Check List
6. IFR - Instrument Flight Rules
7. MAP - Missed Approach Point
8. NVG - Night-Vision Goggles
9. NOE - Nap of the Earth
10. NOTAM - Notice to Airmen
11. NAVAID - Navigational Aid
12. MOPP - Mission-Oriented Protective Posture
13. DOES - Directorate of Evaluation and Standardization
14. FAA - Federal Aviation Administration
15. FAR - Federal Aviation Regulations
16. FLIP - Flight Information Publication
17. ICAO - International Civil Aviation Organization
18. IE - Instrument Flight Examiner
19. IP - Instructor Pilot
20. MP- Maintenance Test Pilot
21. VHIRP - Vertical Helicopter Instrument Recovery Procedures
22. TAAMS-A - The Army Maintenance Management System-Aviation
23. TRADOC - Training and Doctrine Command
24. STANAG - Standardization Agreement
25. NGR - National Guard Regulations
26. DOD - Department of Defense
27. CE - Crew Chief
28. UH-60 - Utility Helicopter-60 (Black Hawk)
29. HQ - Headquarters
30. AVIM - Aviation Intermediate Maintenance
31. AVUM - Aviation Unit Maintenance
32. CONUS - Continental United States
33. NCO - Noncommissioned Officer
34. SALUTE - Size, Activity, Location, Unit, Time and Equipment
35. OPS - Operations Officer
36. ATC - Air Traffic control
37. F-16 - Air Force fighter plane (Fighting Falcon)
38. ATAS - Air-to-Air Stinger
39. GCA - Ground Controlled Approach
40. BMP- Boyevaya Mashina Pekhoty (Russian armored vehicle)
41. ELT - Emergency Locator Transmitter
42. HQDA - Headquarters, Department of the Army
43. AFB - Air Force Base
44. AFSO - Aerial Fire Support Observer
45. AMC - Air Mission Commander
46. EW - Electronic Warfare
47. DH - Decision Height
48. FPM - Feet Per Minute
49. CPT - Captain
50. OHR - Operational Hazard Report
51. WO - Warrant Officer
52. HAZMAT - Hazardous Material

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Tips from TOPS

By LTC Laurence Mazzeno, USA-Ret.

Head of the Class

For those with realistic expectations, jobs in education can be rewarding.

As a college president and retired Army officer, I enjoy helping fellow officers seek second careers in higher education. Hardly a month goes by that I don't hear from someone asking for advice - or a good lead - in finding a job at a college or university.

It's a natural trend. Most officers are college graduates, and many have advanced degrees. Seen from the outside, college life is attractive: You have a pleasant work environment, make a decent salary, and deal with intelligent, goal-oriented people.

The reality of college life isn't quite so utopian, but it can be a rewarding second career if you are realistic about your qualifications and know something about the industry. For example, colleges have different hiring practices. Ivy League schools and major state universities tend to hire new Ph.D.s or national figures who can attract students and grant money, while many small liberal arts colleges and community colleges welcome applicants with a master's degree and years of experience.

As a retired military officer, you bring great value to higher education. You know how to lead, have a great work ethic, and can handle stress. Your planning skills can help an institution prepare for the future. And, if you've commanded soldiers, you will find your military leadership skills can be useful to motivate students, who always need good role models.

There are some differences to this type of job search:

- Networking may not be as effective as it is in other industries. While you may be hired into a nonteaching staff position by calling or visiting friends, it won't help you become a faculty member or a vice president.
- There often is a long lead time between the announcement of a position and the actual start date. Colleges spend six months to a year selecting a president or vice president; many faculty appointments take that long, too.
- Unsolicited, generic resumes aren't effective. Rather, check out trade journals for openings and send a tailored resume. As in any job search, research helps. Learn about a college before you apply.
- Hiring can take a long time. Colleges receive hundreds of applications for every faculty position in the humanities, social sciences, and some business disciplines. If you have credentials to teach science, engineering, or math, your chances improve. Although staff positions don't always require a doctoral degree, the right education can count as much as experience.
- Some faculty members, staff, and members of the board of trustees are wary of "military thinking." They worry that military leaders are accustomed to issuing orders and obtaining instant obedience. Colleges practice a system of shared governance in which many groups provide input for making important decisions.

If a faculty position doesn't work out, keep other staff positions in mind. There is always a need for midlevel staff positions such as business managers, student-life directors, food-service managers, and facilities engineers. Most state-supported institutions report to larger governing organizations that hire staff for long-range planning, budgeting, and facilities management.

Regardless of what you're hired for - facilities maintenance, student relations, business or finance management, or teaching - you will be an integral part of a quality campus atmosphere.

LTC Laurence Mazzeno, USA-Ret. serves as the current president of Alvernia College in Reading, Pa.

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I certify that the statements made by me in this statement and dated September 30, 2001 are correct and complete. Lynn Coakley, Publisher

AAAA NEWS

New Chapter Officers

Air Assault:
COL John H. Schnibben, III, President; COL Richard B. Bowman, Sr. V.P.; CPT Brett D. Criqui, Secretary; CW5 John E. Sims, Treasurer; MAJ Donald N. Galli, V.P. Membership Enrollment; MAJ Steve J. Countouriotis, V.P. Programs; MAJ Christopher B. Carlile, V.P. Awards; CSM Donnie D. Calvery, Assistant V.P.

Aloha:
COL James S. Schisser, President.

Arizona:
LTC Gary M. Bishop, Ret., President; CW3 Robert M. Kelly, Ret., Senior V.P; LTC William J. Wallace, Ret., Secretary; LTC Philip A. Mooney, Ret., Treasurer; CW4 Denis M. Dvorchak, Ret., V.P. Membership Enrollment; COL David F. Sale, Ret., V.P. Membership Renewals; LTC Bradley N. Rounding, Ret., V.P. Programs; Mr. Ronald A. Trejo, V.P. Military Affairs.

Aviation Center:
CPT Gary J. Retzlaff, Jr., V.P. Awards.

Corpus Christi:
COL James J. Budney, President; Ms. Tammy H. Tuttle, Sr. V.P.; Ms. Martina V. Sellman, Secretary; Mr. Steven M. VanVleet, Treasurer; Ms. San Juanita R. Cantu, V.P. Membership Enrollment; Mr. Gary N. Kelly, V.P. Publicity.

High Desert:
CPT(P) Robert E. Pettit, III, Secretary.

Lindbergh:
LTC Glenn A. Monrad, Ret., V.P. Scholarships

Tennessee Valley:
MAJ Ian b. Klinkhammer, V.P. Public Affairs.

Aces

The following members have been recognized as Aces for their signing up five new members each.

LTC Gregory L. Cantwell
LTC Dennis D. Doyle
Ms. Mary M. McCown
CW3 Gerard S. Partridge III
MAJ Stanley O. Smith
Ms. Tammy H. Tuttle

AAAA Soldier of the Month

A Chapter Program to Recognize Outstanding Aviation Soldiers on a Monthly Basis

SGT Richard D. Larkin
June 2001
(Narragansett Bay Chapter)

SSG Kenneth B. Lancaster
July 2001
(Indiantown Gap Chapter)

SGT Terry L. Ellestad
August 2001
(Indiantown Gap Chapter)

2LT Theresa H. Martin
September 2001
(Narragansett Bay Chapter)

CPL Jeffrey M. McIntrye
October 2001
(Narragansett Bay Chapter)

SGT Louis A. Netto
November 2001
(Narragansett Bay Chapter)

Outstanding NCO of the Quarter

A Chapter Program to Recognize Outstanding Non-Commissioned Officers on a Quarterly Basis

SFC Charles E. Smith, Jr.
4th Qtr. 2001
(Narragansett Bay Chapter)

AAAA NCO of the Year

A Chapter Program to Recognize Outstanding Non-Commissioned Officers on a Yearly Basis

MSG Robert F. Evangelista
2001
(Narragansett Bay Chapter)

AAAA Distinguished Instructor of the Quarter

A Chapter Program to Recognize Distinguished Instructors on a Quarterly Basis

SSG Anthony W. Harris
July-September 2001
(Colonial Virginia Chapter)

New AAAA Order of St. Michael Recipients

CW4 Frank M. Candela (Silver)
CW5 Ronald L. Clary (Silver)
COL Bobby H. Freeman, Ret. (Silver)
COL Richard B. Bowman (Silver)
COL Carl R. Merkt (Silver)
CW5 John L. Peterson (Silver)
CSM David B. Rabon (Silver)
Jaros C. Rickmeyer (Silver)
MAJ Heyward Hall, Jr. (Bronze)
SFC Clarence F. Lee, Jr. (Bronze)
SFC Timothy M. Kilpatrick (Bronze)
MAJ Terry P. Key (Bronze)
MAJ Sidney J. Gray III (Bronze)
SFC Timothy S. Nidiffer (Bronze)
CW5 Dudley F. Christian (Bronze)
CPT Jeff W. White (Bronze)
CW4 Duward C. Bean III (Bronze)
MG William F. Allen (Bronze)
LTC Brett E. Jonson (Bronze)
MAJ Allen Huber (Bronze)
CSM L. M. Morgan (Bronze)
CW3 James Dupasquier (Bronze)
MSG Stephen A. Davis (Bronze)
SFC Timothy A. McGrath (Bronze)
SSG John H. Kroenke III (Bronze)
CW4 John H. Kroenke III (Bronze)
COL Elaine B. Baxley (Bronze)
CPT Craig J. Alia (Bronze)
CPT Bart R. Tragemann (Bronze)
COL(R) Theodore C. Cason (Bronze)
MAJ Charles D. Bradley (Bronze)
Robert K. Redfield (Bronze)

New AAAA Industry Members

Columbia Helicopter Inc.

AAAA Life Members

Mr. Thomas W. Light

High Desert Chapter

LTC Anthony G. Crutchfield (right), president of AAAA's High Desert Chapter, presented the Order of St. Michael to CPT Jeff White (left, in flight suit), during a Sept. 4 ceremony at the National Training Center at Fort Irwin, Calif.

AAAA NEWS

The thoughts and prayers of The Military Coalition's board of Directors and the 31 organization representatives go out to every individual and family member touched by the unprovoked Sept. 11 attack on our nation. We join all Americans in saluting the countless rescue workers and many others who performed unsung but heroic acts to assist their fellow citizens. We also fully support President George W. Bush's commitment to find and punish the perpetrators.

We're proud to know that the United States is a strong nation because of its strong and determined people - including the 5.5 million members of the uniformed services community, of which AAAA's 13,000 and The Retired Officers Association's nearly 390,000 members are a part. With everyone's continued patriotism and resilience, this nation shall overcome all challenges.

LEGISLATIVE REPORT

COL Sylvester C. Berdux Jr. (Ret.)
AAAA Representative to The Military Coalition (TMC)

Emergency Care During Heightened Base Security

With the increased security level on numerous bases, The Military Coalition (TMC) has heard from some members who have been unable to access their primary care managers (PCMs) at military hospitals and clinics because the installation had been "locked down," or they were told there were no appointments. Beneficiaries needing care and finding themselves in this circumstance should call the Health Care Finder for guidance. Phone numbers for various installations can be found on the Web at www.tricare.osd.mil/tricareservicecenters/default.cfm.

Particularly in cases of an emergency, beneficiaries must seek help immediately rather than delaying care because they can't get to the military facility. But how do you know what constitutes an emergency?

TRICARE defines an emergency as "a condition characterized by acute symptoms of sufficient severity (including severe pain) that would lead a prudent lay person with an average knowledge of health and medicine to believe and reasonably expect that the absence of immediate medical attention could result in one or more of the following:

- Serious jeopardy to the health of the individual or to the health of a pregnant woman or her unborn child; or
- Serious impairment of bodily functions; or
- Serious dysfunction of any bodily organ or part. (Examples include severe eye or ear injuries, broken bones, serious wounds or profuse bleeding, heart attack symptoms or severe abdominal pains.)"

Medical emergencies do not require approval from your physician. Here's a good rule of thumb to follow when in doubt: If your condition seems too serious to take time to call your PCM before dialing 911 or going directly to the nearest emergency room (ER), it probably is.

If a TRICARE-eligible patient is referred to a civilian ER by a military hospital or clinic, by your PCM or the TRICARE Line for Care (TLC), TRICARE will pay the claim automatically. If you have not received a referral, you must notify your PCM within 24 hours of receiving ER care. This is important, because TRICARE will not cover follow-up civilian care (and you would have to pay that expense out-of-pocket) unless the ER visit has been authorized.

Senate Still Working on Authorization Bill

Among amendments in the Senate Authorization Bill still pending are Sen. Harry Reid's amendment to allow concurrent receipt of military retired pay and VA disability compensation, and Sen. Strom Thurmond's amendment to increase the age-62 SBP annuity.

Indications are the Senate is likely to include those in its version of the defense bill (the Senate did so last year), but that remains to be seen. If that turns out to be the case, the next big challenge will be to convince the House negotiators to include these provisions in the final defense bill.

The House bill expressed support for enactment of the concurrent receipt provision as of Oct. 1, 2002, but only if the president submits legislation and funding requirements in his fiscal year 2003 budget. The odds of that happening aren't good. The Bush administration has just issued a formal statement expressing concern about several provisions in the House bill, including a line stating the administration is "opposed to the repeal of the current prohibition on the concurrent receipt of military retired pay and VA disability compensation." This isn't really a surprise, given the past opposition of administrations of both parties.

But Congress in its wisdom has corrected many serious inequities in the past despite opposition from previous administrations at the time - including TRICARE For Life (TFL), the active duty dependent dental plan, 30-year paid-up SBP and SBP for elderly "forgotten widows." TMC didn't give up on those programs because of administration opposition, and now they all win Executive Branch praises. So TMC will continue pressing on concurrent receipt in the belief that Congress will end up doing the right thing.

Government OKs FEHBP Suspension for TFL-Eligibles

The Office of Personnel Management (OPM) announced a decision in the Federal Register on Sept. 26 that allows federal civilian FEHBP annuitants who are also retired from a uniformed service to suspend, rather than cancel, their FEHBP enrollment in order to participate in TFL. The ruling also applies to FEHBP participants who want to enter the Uniformed Services Family Health Program (USFHP).

Current FEHBP enrollees cannot use TFL or other Department of Defense (DOD) health programs, except for some modest reimbursements. The regulation clears the way for dual-eligible beneficiaries to suspend (not cancel) their FEHBP enrollments in order to take advantage of TFL while preserving a future opportunity to re-enter FEHBP if they wish to do that for any reason. An annuitant or former spouse who cancels - rather than suspends -FEHBP coverage to use TRICARE coverage will not have the option to return to FEHBP. To suspend enrollment in FEHBP, enrollees must contact OPM's Retirement Information Office for a form to request suspension of their FEHBP enrollment. The form can be obtained by sending an email message to retire@opm.gov or by calling (888) 767-6738. According to the regulation, the suspension will take effect the day before the beneficiary designates to start TFL or coverage.

TFL to Improve Benefit Coordination

TFL will improve coordination of benefits between Medicare and TRICARE for beneficiaries under 65. Those under age 65 eligible for Medicare and enrolled in Medicare Part B will receive the same TFL benefits as those over 65. The only difference for the under age 65 Medicare-eligibles is that the beneficiary or their provider will have to submit claims to TRICARE to receive reimbursement for the TFL payment. TFL will pay Medicare copays and deductibles.

TROA and TMC are working to get the process fixed so that the under-65 Medicare eligibles will have the same seamless processing of claims as will occur for the over-65 group.

An Important TFL Question

A number of folks have been asking whether they should cancel their supplemental insurance. Some companies are now offering TFL supplemental insurance plans, and people are wondering if they need to purchase a TFL supplemental policy.

Answer: TFL provides excellent "wrap-around" coverage comparable to or better than Medicare supplemental policies. We don't think you need even more coverage unless you live outside the United States and its territories and possessions - but the decision is yours to make. One concern is that members who are confused about TFL coverage or apprehensive about giving up their Medicare supplements might purchase extra coverage they would never use.

Here are some sample scenarios compiled from member inquiries to TROA:

- "Do I need additional coverage for a doctor who does not accept Medicare assignment?"

You do not need such additional coverage. Providers who do not accept Medicare assignment, by law, can only charge 115 percent of the Medicare Maximum Allowable Charge (MMAC) for Medicare Part B services. TFL pays these excess charges above MMAC, so you have no need for extra coverage. You may have to pay your doctor first, but the doctor must then file the claim. In that case, TFL would pay you directly, so there is no real insurable risk.

- "Do I need insurance coverage for my pharmacy copays?"

You shouldn't. Although you will have to pay the $3 or $9 cost shares for the pharmacy benefit, under TFL there is only a minimal chance that you would have excessive out of pocket expenses. At $3 to $9 a prescription, it takes a lot of medications to add up to real money. Any premium you pay for supplemental coverage will almost certainly cost more than you would pay in pharmacy copays.

- "Don't I need extra insurance in case I have a prolonged inpatient or skilled nursing care (SNF) stay?"

Additional insurance is not needed. You will have no financial liability until day 151+ for a hospital stay (90 days if the 60 day lifetime reserve has been used). Although this is possible, there were only 5 out of 140,000 TROA Mediplus policyholders who had such lengthy stays last year. Should you require care of this length, it is far more likely that you would be transferred to a lower-cost setting, such as home health care. After 151 days of inpatient care, TFL would be first payer and you would be responsible for the TRICARE cost shares. But even in that very unlikely event, the newly lowered catastrophic expense cap would limit your cost-share responsibility to $3,000 per family per year.

As for SNF care, you have no liability for the first 100 days. Since SNF care is provided to make you better (remedial, not custodial care), very few patients ever stay that long. Again, even in the very unlikely event that you go over 100 days, your out-of-pocket expenses for TRICARE copays are limited to $3,000 per family per year.

- "I live overseas, therefore I need supplemental coverage."

Yes, this is the exception. If you reside in a foreign country, you probably should consider purchasing a TRICARE supplement, since Medicare does not pay for services overseas. Just be sure the supplement you are considering covers overseas care.

Special Retired Pay Compensation

The FY 2000 Defense Authorization Act provided an extra $100 to $300 per month for certain severely disabled retirees who served at least 20 years in a uniform service. Specifically, it covered only members with:

a. At least 20 years' service (or accumulated the equivalent 7,200 Reserve retirement points), and
b. Who received nondisability retirement from their parent service, but
c. Were awarded VA disability ratings of 70 percent or more within four years of retiring from service.

Members awarded 100 percent ratings with the VA receive $300 per month; a 90 percent rating provides $200, and a 70 to 80 percent rating $100 per month. Payment of this benefit was effective Oct. 1, 1999.

The FY 2001 Defense Authorization Act revised the provisions of special retired-pay compensation to include those retired under Chapter 61 (military disability) effective Oct. 1, 2001. With this change a retiree must:

a. Still meet the 20 years' service/7,200 points rule, and
b. Must have been awarded a disability rating of 70 percent or higher by either the parent service or the VA within four years of retiring.

Qualified members whose VA or service disability rating is 100 percent (or rated unemployable) will be eligible for $300 per month; those with ratings of 90 percent will receive $200 per month; those with 70 or 80 percent ratings, $100 per month.

The Defense Finance and Accounting Service (DFAS) and VA are in the process of identifying the eligible members. The first payments are scheduled to begin on Nov. 1, 2001, for the effective date of Oct. 1, 2001.

Court Limits Reservist Reinstatement Rights

Federal employees who go on active military duty may see their job-restoration rights limited under certain circumstances under a recent decision (Woodman v. Office of Personnel Management, 00-3414) from the U.S. Court of Appeals for the Federal Circuit.

The court said that re-employment rights of employees who go on active Guard or Reserve duty do not apply for those who "abandon" their federal civil service careers. The case involved a former "dual-status" National Guard technician who voluntarily went on Active Guard Reserve duty, requested a series of extensions, eventually qualified for military retirement and then applied for reinstatement to his civilian position and was denied that request.

The court noted that re-employment rights in general apply for only five years and that the employee served a total of 14 years in the military after leaving his civilian position. The court said that although he never formally resigned from his civilian job, his actions "created a de facto resignation by indicating that he never intended to return to his civilian position."

The court's decision in the Woodman case not only sets precedent for employees taking extended Guard or Reserve active assignments, but also provides an overview of the current state of re-employment law that is of vital interest to the more than 100,000 federal employees who are members of the Guard and Reserve. For a look at the court's take on the law, go to www.fedweek.com/ HotFreeNews/ default.asp.

HHS Releases Assisted Living Report

As a number of Silver Eagles are entering the approach pattern to a change in their living styles they may want to take a look at this website. For the newer members of AAAA, the Silver Eagles are those members who have 35 years or more in AAAA. The web site is www.seniors.gov/articles/0801/assisted-living.html.

The Department of Health and Human Services released "A National Study of Assisted Living for the Elderly," the first national study of assisted living facilities for older individuals. Another good source of information is the website www.healthandage.com. Numerous TMC representatives frequently use this site to answer questions and to assist members. This excellent site has sections on health and lifestyles that are well thought out and easy to navigate. And it caters to both the public and healthcare professionals.

AAAA

SCHOLARSHIP FOUNDATION

Helping Dreams Take Flight

The AAAA Scholarship Foundation has been helping AAAA members and their spouses, children and siblings pursue educational goals since 1963 by awarding annual scholarship grants and interest free loans funded through the generous support of members, corporations and individuals. Grateful members and their families who have applied for and received these grants and loans know how easy it is to take advantage of this outstanding membership benefit. Do you?

Landing a Scholarship or Loan

There are three easy ways to receive scholarship application forms or additional information:

By mail
AAAA Scholarship Foundation Inc.
755 Main Street, Suite 4D
Monroe, CT 06468-2830

By telephone
(203) 268-2450

By downloading from the Web
www.quad-a.org

The deadline for applications is the 1st of May each year.

Making Our Funds Soar

The Scholarship Foundation has grown over the years thanks to the generosity and commitment of many AAAA members. But as education costs continue to escalate, everyone's support is more crucial than ever. Whether you make an individual gift, give through a company matching program, contribute to the Combined Federal Campaign (CFC), take part in an important chapter scholarship drive, or encourage your company to become a corporate sponsor, you can know that every donated dollar is used to help defray the cost of classes and books for deserving students.

At AAAA, we're always looking for new ways to make the Scholarship Fund grow. Help us help you. Give to the AAAA Scholarship Fund today.

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AAAA NEWS

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ANSBACH, GERMANY
SFC Lawrence B. Bengough

COLONIAL VIRGINIA CHAPTER
FORT EUSTIS, VA
SFC Kevin E. Hollingsworth
LTC Mark C. Smith

CONNECTICUT CHAPTER
STRATFORD, CT
COL Fred J. Geier
Mr. Paul A. Sikorsky
Mr. Chuck J. Skurja
Mr. Edward Turschman
Mr. Gregory P. Wright

CORPUS CHRISTI CHAPTER
CORPUS CHRISTI, TX
MAJ Wayne E. Bubnick, Ret.
Mr. Kresten L. Cook

DELAWARE VALLEY CHAPTER
PHILADELPHIA, PA
SSG John A. McCoy

FLYING TIGERS CHAPTER
FORT KNOX, KY
SGM Michael L. Lucas
Mr. Sean P. Naylor
CW2 Michael E. Shay, Ret.

FRONTIER ARMY CHAPTER
FORT LEAVENWORTH, KS
MAJ Paul Bontrager
MAJ Terrell C. Boyd
MAJ Andrew Cole
MAJ Susan M. Duke
MAJ Benedict L. Fuata
MAJ Todd W. Lewis
MAJ Raymond R. Stark, Jr.

GREATER ATLANTA CHAPTER
ATLANTA, GA
1LT Rob J. Dawson
Mr. Jeffrey B. Lacey

INDIANTOWN GAP CHAPTER
INDIANTOWN GAP, PA
MAJ Robert C. Allison, Jr.

IRON MIKE CHAPTER
FORT BRAGG, NC
CW3 Roger A. Graf

JIMMY DOOLITTLE CHAPTER
COLUMBIA, SC
SGM David R. Spigner, Ret.

MAGNOLIA CHAPTER
JACKSON, MS
CW2 Frank E. Tackett
SSG Walter D. Westbrook

MONMOUTH CHAPTER
FORT MONMOUTH, NJ
Ms. Nicole M. Dilorio
Mr. Theodore M. Homanick

MORNING CALM CHAPTER
SEOUL, KOREA
CW3 Herman A. Hampp

NARRAGANSETT BAY CHAPTER
N. KINGSTOWN, RI
SGT Richard D. Larkin
2LT Theresa H. Martin

NORTHERN LIGHTS CHAPTER
FORT WAINWRIGHT/
FAIRBANKS AK
LTC Bruce B. Bates
CPT Todd E. Buhr
COL Raymond W. Watters

OREGON TRAIL CHAPTER
SALEM, OREGON
SGT Patrick A. Casha
SPC Bryan R. Scrantz

RHINE VALLEY CHAPTER
HEIDELBERG, GERMANY
MAJ Jeffrey S. Sears

RISING SUN CHAPTER
CAMP ZAMA, JAPAN
PFC Matthew S. Adair
SPC Adegloyega S. Adegimo
Ms. Amy L. Behrends
SGT Christopher M. Behrends
PV2 Suzanne K. Biltz
CW3 John C. Brotzman
MAJ Lynn K. Byers
SGT Arthur F. Doucette III
CW3 John R. Eastmoore
Ms. Carmen M. Goloversic
CPT Timothy E. Goloversic
Ms. Mary E. Rouse
PFC Paul M. Sayre
Ms. Mi Cha Taitani
Mr. Nobuyuki Tamaru
SSG Lilly L. Walton
SGT Christopher W. Wood

SAVANNAH CHAPTER
FT STEWART/HUNTER AAF, GA
LTC David L. Sheets, Ret.

SHOWME CHAPTER
JEFFERSON CITY, MO
CW4 Gary E. Jones

SOUTHERN CALIFORNIA CHAPTER
LOS ANGELES, CA
CPT George G. Rock, Sr., Ret.

TALON CHAPTER
ILLESHEIM, GERMANY
CW5 Ronald L. Clary
CW4 William T. Darnell, Ret.
CPT Joel S. Masig

TAUNUS CHAPTER
WIESBADEN, GERMANY
SGT Chadwick S. Crawford
CW3 James R. Dupasquier
CPT Andrew J. Risio

TENNESSEE VALLEY CHAPTER
HUNTSVILLE, AL
Mr. Donald G. Allen
MAJ Mark E. Ballew
Mr. Randy L. Hodge
Ms. Theresa J. Jacoby
COL Donald E. Potter, Ret.
Mr. Richard A. Resler
CW3 Michael L. Slocum, Ret.

WASHINGTON-POTOMAC CHAP.
WASHINGTON, DC
MAJ John C. Baskerville
CW5 Geraldine A. Bowers
LTC Ronald W. Johnson, Ret.

WINGS OF VICTORY CHAPTER
GIEBELSTADT, GERMANY
CPT James S. Edwards
CPT Jason L. Hester
WO1 Kevin L. Jackson
CPT David C. Menser

WRIGHT BROTHERS CHAPTER
COLUMBUS, OHIO
CW4 Carl A. Coyan, Ret.
Mr. Donald T. Mears

MEMBERS WITHOUT
CHAPTER AFFILIATION
CDT Michael D. Barno
LTC Henry A. Paladino, Ret.
General Jean Razy
Mr. Ian L. Ruhl

TOP CHAPTERS

The 1 October 2001 Membership Enrollment Competition standings have the following chapters ahead with two months left in the CY01 contest ending 31 December. The rankings are based on **CY01 net membership gain.**

Master Chapter (170+ Members)
1. Tennessee Valley Chapter 93
2. Air Assault Chapter 60
3. Central Florida Chapter 47

Senior Chapters (80-169 Members)
1. Connecticut Chapter 54
2. Indiantown Gap Chapter 29
3. Frontier Army Chapter 18

AAAA Chapter (25-79 Members)
1. Oregon Trial Chapter 29
2. Jimmy Doolittle Chapter 28
3. Narragansett Bay Chapter 21

TOP GUNS as of 1 OCTOBER 2001

The member who sponsors the greatest number of new members during the contest year ending 31 December 2001 wins an all expense-paid trip to the AAAA Annual Convention, as well as a $300 cash award, and receives a plaque. Please note that the Top Gun program has been expanded to include prizes for 2nd place, $400; 3rd place, $300; 4th place, $200; 5th place, $100.

Mr. William J. Cannon 394
Mr. John H. Bae 101
MAJ Frederick L. Rice 84
LTC Michael F. McClellan, Ret. 36
LTC David E. Reichert, Ret. 35
MAJ Alexa G. Covert 22

NEW NCO AWARD ANNOUNCED

Solicitation now under way for CY01 AAAA National Awards
Suspense: January 15, 2002

The AAAA National Executive Board, (NEB) has voted to establish a new AAAA NCO of the Year award to be presented each year at the Annual Convention. The award, to be sponsored by Lockheed Martin, will recognize excellence in the ranks of Sergeant and above. The existing AAAA Soldier of the Year Award, sponsored by Bell Helicopter Textron, will honor those below Sergeant.

The other seven awards to be presented at the AAAA Annual Convention in May are:

- Joseph P. Cribbins Department of the Army Civilian of the Year, sponsored by The Boeing Company
- James H. McClellan Aviation Safety Award, sponsored by GE Aircraft Engines
- Army Aviator of the Year, sponsored by Sikorsky Aircraft Corporation
- The Robert M. Leich Award, sponsored by Northrop Grumman Corporation, ESSS
- Outstanding Army Aviation Unit of the Year (USAR), sponsored by Honeywell
- Outstanding Army Aviation Unit of the Year (ARNG), sponsored by Honeywell
- Outstanding Army Aviation Unit of the Year (Active), sponsored by The Boeing Company

ACCOMPANYING DATA FOR INDIVIDUAL AWARDS: The official "Nomination Form for Submission of All AAAA National Awards" is the only form used by the Awards Committee in its selection of annual AAAA National Awards winners. Additional forms are also obtainable from the AAAA National Office, 755 Main Street, Suite 4D, Monroe, CT 06468-2830. Telephone: (203) 268-2450; FAX: (203) 268-5870, Website: **www.quad-a.org**.

The forms should be accompanied by a recent photo and biographical sketch of the nominee. Photos of the commander and the senior NCO must accompany each unit nomination. The "Nomination Form for Submission of all AAAA National Awards" and the accompanying photo(s) must be received at the AAAA National Office on or before January 15. Please use stiffeners to protect the photo(s) being submitted. Awards nominations materials — including photographs — cannot be returned.

AAAA NEWS

Lost Members

Help us find our Lost Members. We'll give you an additional month on your AAAA membership free for each member you help us locate. Simply write, call or E-mail us with the Lost Member's current address. AAAA, 755 Main Street, Suite 4D, Monroe, CT 06468-2830. Tele: (203) 268-2450; FAX:(203) 268-5870; E-Mail: aaaa@quad-a.org.

Adams, Cynthia K., Ms.
Armenierovales, Jorge A., PFC
Blaise, Michael T., WO1
Bray, Dayna, SGT
Burger, Eric, SPC
Capps, Dudley R., 1LT
Carr, Benjamin E., SPC
Carr, Kathleen E., 2LT
Cothren, Marlin A., SPC
Deguzman, Torino P., SGT
DeVenney, Steven D., CDT
Eaton, Lotonya, SSG
Forster, David, PV2
Futch, Herbert L., SGT
Holcomb, Robert C., 2LT
Huggins, Bret T., CPT
Jabbie, Saidu, SGT
Jones, Randy, Mr.
Kelly, James W., SGT
Kidd, Jason A., PFC
Malzner, Frank D., CDT
Mastroianni, Jordan H., 2LT
McCraw, Jason L., PV2
Moore, Michael A., SPC
Parker, Diarra N., PFC
Patterson, Terrell, SGT
Pelton, Cyrus J., SGT
Phillips, Nickolas M., PFC
Robinson, Timothy J., PFC
Roe, Jacob M., WO1
Rohe, David, SSG
Rosado, Michael J., SGT
Schaefer, Don B., Mr.
Schneider, Benjamin D., PFC
Schwenn, Khirsten T., 2LT
Shuford, Mark K., CPT
Stevens, Richard B., SGT
Vantassel, Richard D., PFC
Williams, Jared T., SPC
Wilson-Rutan, Andrew G., 2LT
Wortman, Roger J., SPC

FUNCTIONAL AWARD NOMINATIONS

See our website www.quad-a.org or contact the AAAA National Office at (203) 268-2450 for nomination forms for these awards. Membership in AAAA is not a requirement for consideration.

Suspense November 7
(Awards Period Encompassing
November 1 Through October 31):

Army Aviation Logistics Support Unit of the Year Award
Army Aviation Material Readiness Award for Contributions by an Individual Member of Industry
Army Aviation Material Readiness Award for Contributions by an Industry Team, Group, or Special Unit
Army Aviation Material Readiness Award for Contributions by a Small Business Organization
Army Aviation Material Readiness Award for Contributions by a Major Contractor

Army Aviation Association of America
755 Main Street, Suite 4D
Monroe, CT 06468-2830
Phone: (203) 268-2450 Fax: (203) 268-5870
Email: aaaa@quad-a.org

❖CFC❖CFC❖CFC❖CFC❖CFC❖CFC❖CFC❖CFC❖

The AAAA Scholarship Foundation, Inc. (AAAASFI) is now part of the Combined Federal Campaign (CFC), a workplace charitable fund drive conducted by the U.S. Government for all federal employees. It is the single largest workplace fund drive in the country, raising approximately $195M in pledges annually.

In 2001, the AAAASFI received a total of 145 applications and awarded 107 grants and loans totalling $244,000. These awards are made on the basis of academic merit only and the applications are scrubbed to remove all references to the names and ranks of their AAAA member relative.

Don't forget, all overhead costs are borne by the AAAA so that 100% of your contribution (net CFC charges) go directly to AAAA Scholarship Foundation, Inc. awards. Help us reward more of these outstanding students with larger awards.

Tax-deductible donations may also be made directly to the
AAAA Scholarship Foundation, Inc.
755 Main Street, Suite 4D, Monroe, CT 06468-2830
E-Mail: aaaa@quad-a.org Telephone: (203) 268-2450
FAX: (203) 268-5870

Combined Federal Campaign

❖CFC❖CFC❖CFC❖CFC❖CFC❖CFC❖CFC❖CFC❖

- **Jan. 27-Feb. 2, 2002.** Aviation Leaders Conference, Fort Rucker, AL
- **Jan. 19.** Morning Calm Chapter Aviation Winter Ball.
- **Jan. 30.** Aviation Center Award Banquet, Ft. Rucker Officer's Club, Ft. Rucker, AL.
- **May 11-15.** AAAA Annual Convention, Nashville, TN.
- **Jul. 19.** AAAA Scholarship Executive Committee Meeting, National Guard Readiness Center, Arlington, VA.
- **Jul. 20.** AAAA Scholarship Selection Committee Meeting, National Guard Readiness Center, Arlington, VA.

Army Aviation Hall of Fame

The Army Aviation Hall of Fame sponsored by the Army Aviation Association of America, Inc., recognizes those individuals who have made an outstanding contribution to Army aviation. The actual Hall of Fame is located in the Army Aviation Museum, Fort Rucker, Ala., where the portraits of the inductees and the citations recording their achievements are retained for posterity. Each month Army Aviation Magazine will highlight a member of the Hall of Fame. The next triennial induction will occur in the spring of 2004. Contact the AAAA National Office for details at (203) 268-2450

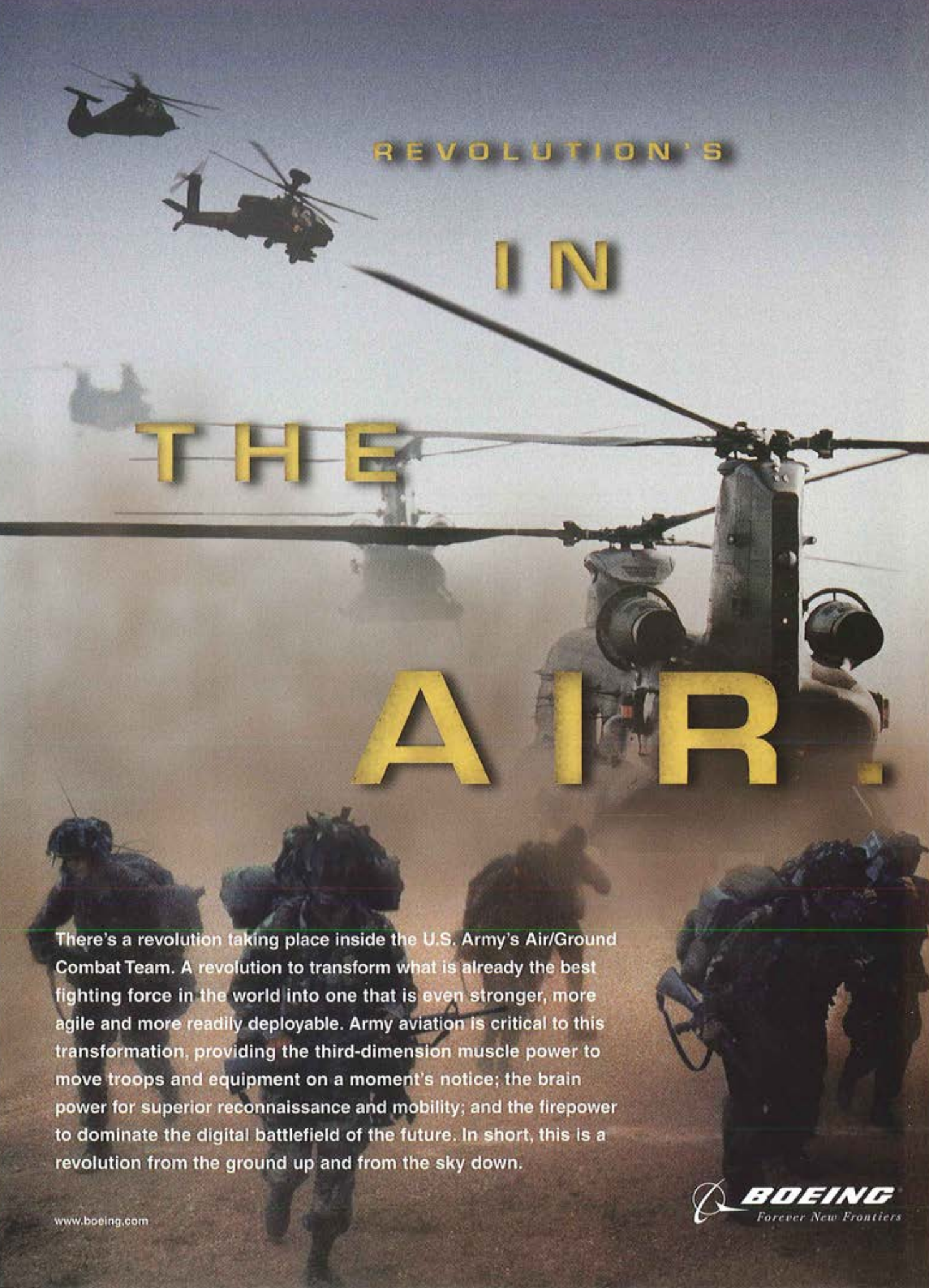
CW4 Billy J. Fulbright (Ret.)
Army Aviation Hall of Fame 2001 Induction

CW4 Billy J. Fulbright completed flight training in one of the early warrant officer candidate classes at Fort Sill, Okla. Shortly thereafter he was assigned to and became an instructor pilot in the H-21 transition school at Fort Riley, Kan. Dozens of his students, well-trained and experienced CH-21 pilots, manned the first five cargo helicopter companies sent to Vietnam in 1961 and 1962. He was next assigned as a standardization instructor pilot in the 8th Transportation Company in Vietnam, training replacement pilots in combat mission flying. Leading by example he flew many helicopter medevac missions and fixed-wing reconnaissance missions in the L-19.

In 1963 Fulbright was instrumental in forming a Caribou Transition Course at Fort Benning, Ga., and transitioned pilots in both fixed- and rotary-wing aircraft for the 11th Air Assault Division tests. In 1967 he was selected for training in the Navy P-2V Neptune patrol bomber. He supervised bringing six P-2Vs out of storage for the installation of top-secret radio research equipment. He then became the SIP for the newly formed 1st Aviation Radio Research Co. and deployed with it to Vietnam. His responsibilities included training pilots in all maneuvers, including emergency procedures, and for the Neptune's 10-to-12-hour mission profile.

After a tour in Hawaii as instrument flight examiner and U-21 instructor pilot, Fulbright attended the first Aviation Warrant Officer Advanced Career Course and was subsequently assigned to the Federal Aviation Agency as Army Aviation Coordinator for five southwestern states.

This outstanding master Army aviator retired in 1975 with more than 30 years service, more than 8,700 flight hours (of which 1,250 were in combat) and more than 1,000 hours in the P-2V. He was qualified in 25 aircraft types.



There's a revolution taking place inside the U.S. Army's Air/Ground Combat Team. A revolution to transform what is already the best fighting force in the world into one that is even stronger, more agile and more readily deployable. Army aviation is critical to this transformation, providing the third-dimension muscle power to move troops and equipment on a moment's notice; the brain power for superior reconnaissance and mobility; and the firepower to dominate the digital battlefield of the future. In short, this is a revolution from the ground up and from the sky down.

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