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ARMY AVIATION

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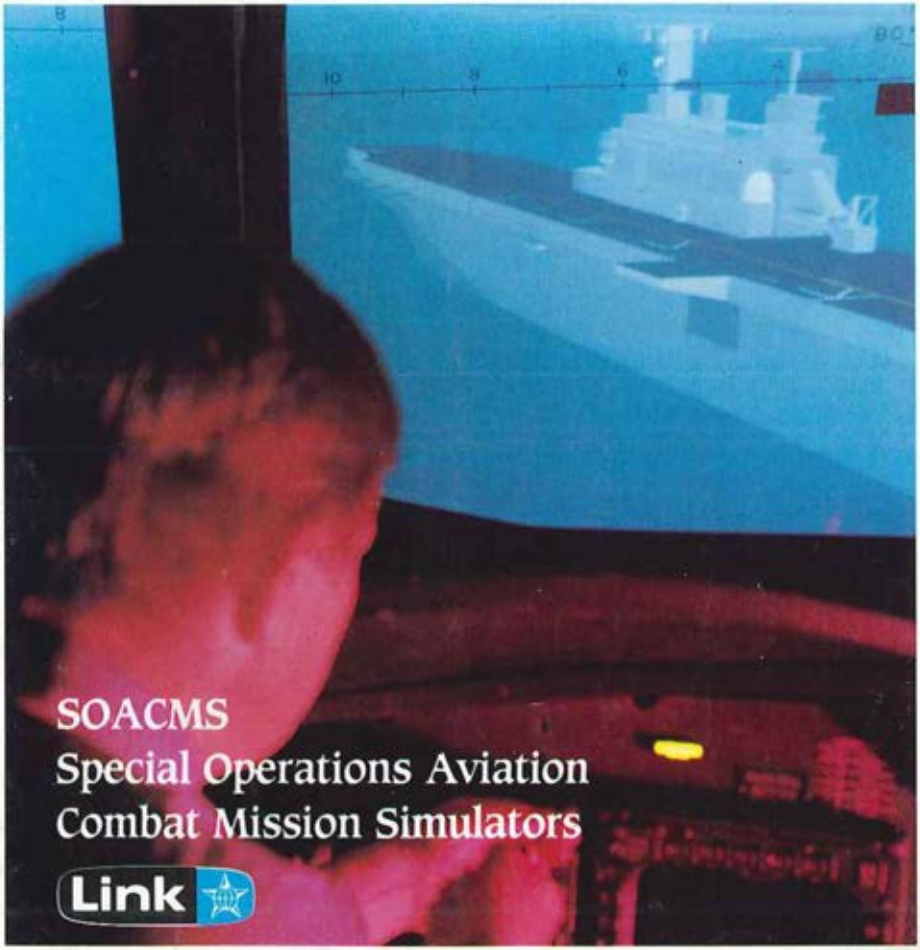


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July 1992 — Special Focus: Special Operations & Night Vision Devices.

August-September 1992 — Army Aviation "BLUE BOOK" Worldwide Aviation Directory.

FRONT COVER

Paid advertisement: CAE-Link Corporation's Special Operations Aircraft Combat Mission Simulator (SOACMS). Special Operations aviators will make their first shipboard "landings" on a computer-generated model of the Tarawa-class assault carrier. They will also be the first Army aviators to use the "glass cockpit" Integrated Avionics Subsystem in the MH-47E combat mission simulator currently in production. An MH-60K CMS is also being produced.

ARMY AVIATION

VOLUME 41 NUMBER 6

The Army Aviation Success Story

by The Honorable Michael P. W. Stone

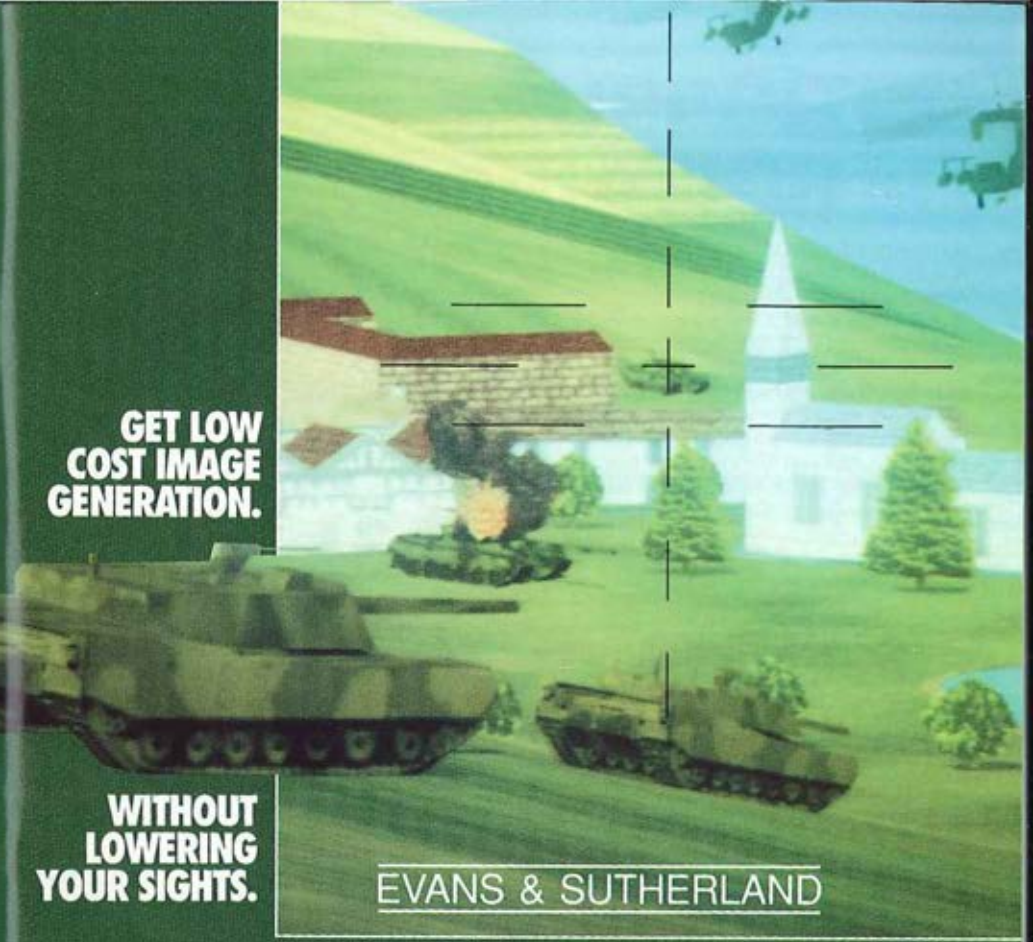
The men and women of Army Aviation can take great pride in a half century of exemplary contributions to America's defense. Army Aviation has always been ready to do the job right.

Thanks to generations of capable Army Aviators, today's battlefield commanders can count on attack, reconnaissance, command and control, and support aircraft piloted and sustained by the members of the world's finest aviation team. Tomorrow's commanders, equipped with a modernized rotary-wing fleet including the RAH-66 Comanche, will be even better served. But before I address Army Aviation's bright future, let me quickly review its remarkable recent past.

The AH-64 Apache is world renowned for having fired the first shots of Operation DESERT STORM, but that salvo was only a prelude to the impressive performance by each and every element of the Army Aviation team. Air cavalry teams roamed the battlefield with methodical efficiency and deadly effectiveness. The UH-60-borne, air assault soldiers of the 101st Airborne Division (Air Assault) executed an unprecedented "end run" of undeniable operational significance. Work horse CH-47D crews hauled ammunition and critical supplies to armored units engaged in the close-in fight while UH-60 and UH-1 units, themselves sustained by a supporting fixed-wing fleet, emplaced Forward Area Refueling and Rearming Points (FARRPs), carried water to the infantry, evacuated the wounded, and delivered commanders to critical points on the battlefield.

Mr. Stone is Secretary of the United States Army, Washington, D.C.

These DESERT STORM success stories just didn't happen by chance. Over five decades, Army aviators have worked hard to modernize equipment, enhance training, and grow safety-conscious professionals who deliver victory. Today's aviators are continuing that established pattern of success. Let me cite just a few examples.



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● ***Modernization*** — Having fielded that Black Hawk, Apache, and AHIP, Army aviators will complete the branch's high-tech metamorphosis with the emergence of the all-weather, technologically advanced Comanche. The RAH-66 is the Army's top modernization priority and the centerpiece of the Army Aviation Modernization Plan. It is a key component in the future of both Army Aviation and America's Army.

● ***Simulators and Simulations*** — Army aviators already rely heavily on simulators and simulations to build proficiency and sustain readiness, but in the future they will do so even more. Around the world, Apache, Black Hawk, and Chinook simulators prove their worth daily. Although few in number, they make a big difference. Our aim must be to produce low-cost, mobile simulators that give crews more convenient, efficient, and effective training opportunities wherever aviators happen to be.

● ***NTC Integration*** — Another aspect of our training efforts must focus on full integration of Army Aviation capabilities at the National Training Center (NTC). The Air-Ground Engagement System (AGES) has already proven its usefulness in force-on-force operations at Fort Irwin, CA. Recent unit exercises using Apache prototype systems demonstrated that Army Aviation is on the right track toward expanded participation, and I anticipate complete integration into the NTC experience by 1994.

● ***New Training Helicopter*** — Yet another particularly important aviation training initiative warrants special note: the New Training Helicopter (NTH). I am convinced that it will quickly prove its worth by improving pilot instruction, significantly reducing operating and support costs, and allowing us to retire the remainder of the Vietnam-era UH-1 fleet.

● ***Aviation Safety*** — Pilots and soldiers everywhere recognize Army Aviation's remarkable record of battlefield performance, aggressive modernization, and first-class training, but the safety record compiled by Army Aviation over recent years is especially impressive. Even though our pilots and crews routinely operate at high speeds in low-level night operations, during adverse weather conditions, and on extended-range missions, they do so safely. Danger is a fact of life for pilots, but Army aviators deal with that challenge by using good sense and sound judgment. The statistics are irrefutable: Army aviators are among the safest pilots in the world because they think safety.

"The RAH-66 is the Army's top modernization priority and the centerpiece of the Army Aviation Modernization Plan."

All told, when I think of the many dimensions and achievements of Army Aviation, I think of three things:

- 50 years of superb flying service to the nation.
- A dynamic branch leading the way into the 21st Century.
- And, finally a competent and committed team of soldiers and civilians who make Army Aviation the world's foremost ground support team.

In summary, Army aviators represent excellence and an uncompromising commitment to victory. As their motto says, they are truly "Above the Best!" IIIII

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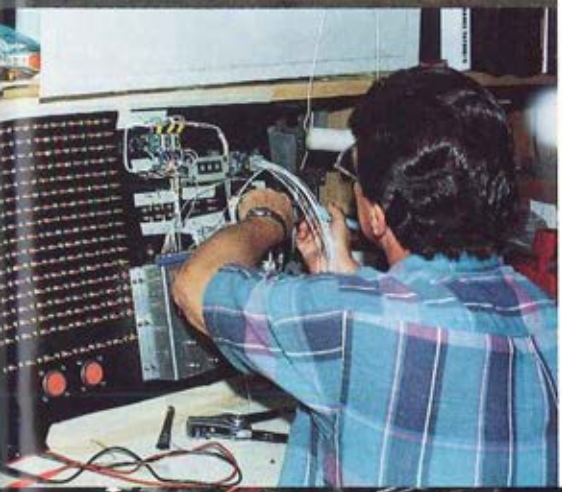

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Avionics and Future Warfighting

by Major General John D. Robinson

In recent months, the strategic environment has changed in dramatic ways. We have entered the Post-Cold War period and are now well along in restructuring the Army. The goal is a flexible, trained, and ready contingency force capable of decisive victory. This force must be capable of operating across a broad continuum of operations, ranging from peacekeeping to a major regional contingency.

Army Aviation is participating in this restructuring. Aviation assets must be ready for operations involving reconnaissance, counter-reconnaissance, security, attack, assault, and myriad combat support of the combined arms team. Because aviation breaks friction with the ground and is easily projected across the length and breadth of the battlefield, its elements must have a reliable command and control capability—this means situational awareness suites, effective communications, precise navigation equipment, and the ability to integrate its weapons systems.

These capabilities are generally grouped in the technical area known as avionics. It is interesting that avionics group devices are used in aviation, missilery, and astronautics. Each of these areas shares the third dimension.

MG Robinson is Chief, Aviation Branch, Commanding General, U.S. Army Aviation Center and Ft. Rucker, AL and Commandant, U.S. Army Aviation Logistics School.

Avionics /,a-ve-an-iks/n.pl (aviation electronics) (ca. 1949): the development and production of electrical and electronic devices for use in aviation, missilery, and astronautics; also: the devices and systems so developed.

We have come a long way in avionics since the days of the "coffee grinder" radio tuner, the radio compass, and directional gyro. Today, there is an entirely new set of terms in our lexicon. From the tank and infantry fighting vehicle to the helicopter, on to the Guardrail Common Sensor (GRCS) and the Joint Surveillance Target Attack Radar System (J-STARS) platform, electrons are being given connectivity in creative ways never before imagined. We have come to accept the benefits and limitations of FM, VHF, and UHF communications—but now, HF space satellites and other exotic technologies beckon our attention. Indeed, command, control, and communications are paramount on the battlefield where voice and complex data are broadcast in secure transmissions measured in seconds.

As you can see from Figure 1, the commander has a large array of electronic means to garner situational awareness. From the J-STARS platform and the GRCS to the OH-58D Kiowa Warrior with the Airborne Target Handover System (ATHS) communicating to the Apache, information may be passed at the speed of light. The Improved Data Modem (IDM) provides

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We contribute to the readiness of a variety of helicopters, including the AH-64, the UH-60, the CH-47, the OH-58, and the UH-1. With Lockheed, the Army has available the full range of the corporation's aerospace technologies and resources. Most importantly, though, we respond rapidly, whether it's to a stateside base or a forward combat zone like Panama or Saudi Arabia.

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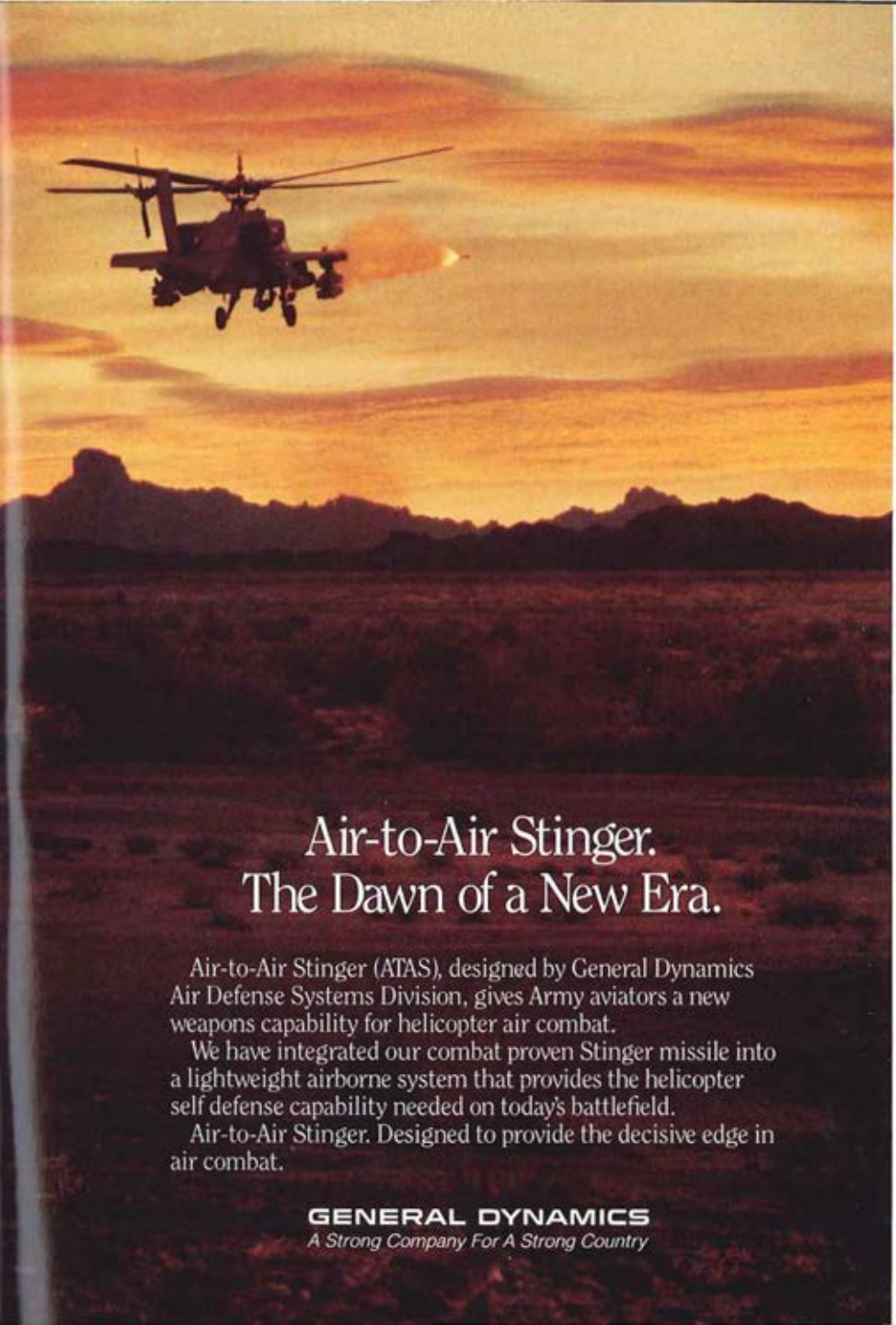
connectivity with the U.S. Air Force tactical assets while the Inter-vehicular Information System (IVIS) connects the ground force to the electronic network. Never before has there been such potential for information to be passed on the battlefield.

Avionics permit the field commander to command and control his force. While some consider these terms interchangeable, they are not. Command is an art; it is a reflection of the commander's intent on the multi-function nature of the force. It is highly stylized according to the personality of the commander. Consequently, the commander must have timely, relevant information to focus his staff and issue appropriate orders and guidance. On the other hand, control is a science; it is generally enacted by the commander's staff. Control tends to follow function across the force echelons. Accordingly, reliable communication is essential. Together, command and control combine so the commander may maneuver the force against the enemy capability, intent, and will.

At the heart of the commander's capability are his communications. For the most part, we are still very much linked to FM, VHF, and UHF frequencies. High-frequency radios are coming into the inventory. However, aviation generally must operate close to the earth. Radio energy propagation is a challenge. Antennas improperly mounted often prove unreliable transmitters, so the technical challenge is to find innovative ways to harness the frequency spectrum. One of these ways, using existing technologies, is digital data transfer. Using the radios currently in the aircraft and in the tactical operations center, digitally-formatted information can be sent and received with additional computer hardware. The time it takes to key the mike is about all that is needed to send a Fragmentary Order (FRAGO) or spot report. Other challenges include being jammed or problems associated with use of the Special Operating Instructions (SOI). New technologies like Havequick and SINCGARS operate by "frequency hopping", making it virtually impossible for enemy Meaconing Intrusion Jamming Interference (MIJI). Digital data transfer technology forgoes the traditional and cumber-

Figure 1



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"As uncertainty over the next conflict exists, we must harness the best technologies. . .

some SOI rituals. The authentication is done electronically, which is done in a fraction of the time it would have taken two radio operators using voice communications. While voice communications have not become obsolete, digital message traffic could revolutionize air-to-air and air-to-ground communications.

Avionics are essential in our ability to integrate the acquisition and fires of Army aircraft. Remote designators, target handoff systems, and ingress to artillery assets give the commander enormous flexibility. Integration within the airframe is as vital as it is between battlefield operating systems. Each of aviation's platforms must be electronically integrated. This means all the subsystems are cross-referencing a single point in, a single point out. All the information is shared by each subsystem. This integration includes communications, navigation, Identification Friend or Foe (IFF), and other sensor systems. There are plans to include into this module the fire control computer and the weapons system. The benefits from hooking up all these subsystems are they can now exchange information amongst themselves or with other systems without going through or being directed by the pilot. An example of this would be an ATHS Apache receiving target coordinates over a radio from an ATHS scout. This information can be automatically transferred within the Apache to the Target Acquisition Designation System (TADS), which can automatically point the sight at the target. System integration can do some amazing things.

As uncertainty over the next conflict exists, we must harness the best technologies for navigation. The Global Positioning System (GPS) has numerous applications throughout the Army. We seek to add the GPS to the avionics suite for all Army aircraft. This system is essential to situational awareness over terrain where Doppler technology is not effective. The intent is not to replace the Doppler with GPS; it is to integrate the GPS with the Doppler. The GPS navigates with the aid of satellites. Without satellites, the systems would be rendered useless. There are locations and times around the world without satellite coverage. The Doppler, on the other hand, is a stand-alone system; however, it has been known to be unreliable over certain terrain. The combination of the two systems proves to be more accurate and dependable than either system alone. This new hybrid system is being tested and taught at selected training units at the U.S. Army Aviation Center, Ft. Rucker, AL. In future conflicts, situational awareness with GPS integration, inertial navigation, and other technologies will contribute greatly to fratricide reduction.

The ground commander's requirement to maneuver in the third dimension and to control the timely effects of fires to the full depth of the battlefield demands the synchronization of airspace use. Avionics provide the medium to exchange critical information updates from Army Airspace Command and Control (A^2C^2) elements of the ground. Air pictures provide the commander situational awareness during mission execution in the form of air tracks. These air tracks allow early warning of an air threat, thus providing commanders time to make appropriate adjustments to their operation.

The science and technology of avionics are essential with the types of missions we must perform in the future. We will probably be deployed in the lesser contingency before the end of this decade. Situational awareness will be essential too, when the focus is on smaller but more lethal, agile forces. We must have electronic linkage throughout the force—from the tank to the fast movers to the J-STARS platform. Avionics—a small word, but one with a big mission. Without avionics, you might as well be dusting crops. IIIII

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AVRADA Becomes EID

by David V. Gaggin

In the January 1991 issue of ARMY AVIATION Magazine, I provided a brief summary of the transfer of the Avionics Research and Development Activity (AVRADA) from the Aviation Systems Command (AVSCOM) to the Communication Electronics Command (CECOM) at Ft. Monmouth, NJ, and the subsequent establishment of the Electronics Integration Directorate (EID). At this time, I would like to explain EID's responsibilities, capabilities, and future plans. Full mission transfer from AVSCOM to CECOM is expected to be completed during the Spring of 1992.

EID Mission

The mission of the EID is to serve as the lead organization within the Army for the application and integration of electronic technologies to Army platforms. This mission includes the responsibility for:

- research and development of platform integration technologies (i.e., electronic system architectures; functional integration and automation; processors; data busses; and controls and displays)
- navigation technologies;
- air traffic control technologies;
- application and integration of Command, Control, Communications, Intelligence, and Electronic Warfare (C^3IEW) and electro-optic technologies into Army platforms. Although EID's immediate focus will continue to be on Army Aviation, over the next several years EID's role will expand to include electronic support to all Army platforms (including tracked and wheeled vehicles, watercraft, and the soldier).

Mr. Gaggin is Director, AVRADA/EID, Ft. Monmouth, NJ.

EID's Role in CECOM

CECOM's acceptance of the aviation electronic support mission is the result of a technology-driven transition from an organization historically structured to develop

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"black boxes" to a focus on system integration.

CECOM supports the PEOs in the development of the tactical C³IEW system for the Army from corps level down to the soldier. The implementation of such systems results in a highly complex distributed processing network where each platform operates on an independent processing node using a common data base. The C³IEW functional architecture that is being defined will detail the information collection, distribution, processing, and display requirements for every node within the network. For example, the Apache Longbow Combined Arms Team requirements will be defined such that all data (protocol, timing, format, source, etc.) required by the aircraft to perform its mission will be defined, and all data collected or processed on board the aircraft and required by the other elements of the Army will be specified. In addition, the architecture will define the data path and interface protocols required for dissemination. Therefore, the requirements specified by the C³IEW architecture will become functional requirements for the aircraft avionic systems as well as for the other Army platforms.

EID is responsible for integrating these C³IEW requirements into the avionic system along with the other aircraft oriented avionic functions such as targeting, ASE, and visionics. Since the functional and environmental requirements are generally similar among all the Army platforms, it is clear that a single family of electronic hardware and software should be able to serve as the building blocks to meet the majority of the Army's needs.

The transition from a "black box" orientation to an integrated platform also impacts the role of all CECOM organizations. The elements of CECOM traditionally responsible for the development of avionic subsystems will remain critical to the integrated electronic development process. However, instead of being totally responsible for the independent subsystem development, they will be responsible for the implementation and performance of specific functions within the integrated system. This role will require a high degree of interdisciplinary technical expertise because of the distributed implementation of the functions.

Avionic Trends

Electronically implemented functions on board an aircraft can be divided into two broad categories: aircraft subsystems and avionics. Aircraft subsystems (flight control, engine instrumentation, electrical generators, fuel control, etc.) can be viewed as allowing the aircraft to "fly better." Avionics (communication, navigation, ASE, electro-optics, targeting) allow the aircraft to perform its "mission better." EID will be concentrating on the avionics portion of the electronics.

AVRADA's transfer to CECOM and evolution into EID will provide part of the structure needed to allow the Army to capitalize on the continuing revolution in electronic technology.

The Army Aviation mission has evolved from the Vietnam era, where each aircraft was a stand-alone platform connected together by a voice radio link, to the modern AirLand Battle scenarios, where each aircraft is an integral part of the combined arms team. This latter role has greatly increased the performance demands on the avionic systems. For example, communication must be continuous, automated, and handle far greater data than voice alone would ever allow. Mission plans must be rapidly created, dispersed in real time, updated and coordinated in the course of the mission. On board intelligence data must be automatically updated in real time and correlated with pre-mission data, on

board ASE and targeting data and distributed back into the C³IEW network. Each platform on the battlefield becomes part of a distributed processing network, functioning as a special purpose node with well-defined data collection, distribution, processing, and display requirements.

To achieve the required performance, the avionics need to be both highly integrated and automated. Integration has two aspects: physical and functional. Physical integration refers to the hardware configuration and results in the elimination of dedicated "black boxes" for specific functions. For example, SINCGARS radio as a discrete unit might not be required in a highly integrated aircraft, however, the SINCGARS function would still be performed but by a general purpose signal and data processor that may also perform other functions such as HAVEQUICK or ASE. Functional integration is software intensive and is oriented to combining multiple functions in an effort to enhance the overall system performance. For example, by combining the terrain data with the targeting search algorithms, areas such as swamps, lakes, or cliffs might be quickly scanned or avoided completely, allowing more time for the targeting system to search the most likely areas where ground vehicles would be located. This would allow either greater performance using the existing sensors or equal performance using less costly sensors.

Summary

AVRADA's transfer to CECOM and evolution into EID will provide part of the structure needed to allow the Army to capitalize on the continuing revolution in electronic technology. In times of reduced resources and expanding technology, responsibilities must be shared across Major Subordinate Commands (MSCs). Gone are the days when a weapon system was simple enough that a single MSC could command all the technical resources needed to develop and support it. Critical masses of highly specialized experts whose skills are applied across multiple weapon systems is the only practical way for the Army to meet its future requirements. IIIII

The Day the Signs Came Down

by Bobbi C. Campbell

As the AVRADA move to CECOM and the resulting establishment of an Electronic Integration Directorate (EID) continues to progress, the task of replacing the AVRADA signs with EID begins. I really hadn't noticed how many we had (even though I put them up). As I took the first down from a wall an employee requested the sign, but frugality won out. With diminishing resources I decided to do my part in saving money and had the artists paint over the old letters with the new. Oh dear, those two signs on the sides of the conference room have the AVSCOM AVRADA Logos on them ... they must be painted over too ... and the one on the outside of the building. Could there be more?

To minimize turmoil, AVRADA's present official division and office structure will be kept essentially unchanged; however, a few of the programs and branches will need to be reassigned to other EID divisions (that means more signs will have to be changed to reflect the names of the consolidated divisions!). One of the primary efforts will be to expand and realign the present AVRADA organization so that it can handle the integration/application of all the aircraft electronic systems such as ASE and visionics.

Mrs. Campbell is in the Technical Plans and Financial Management Division of AVRADA/EID.

Our Product Assurance (PA) and Integrated Logistics Support (ILS) offices have been combined to form the Installation Engineering Systems and Support Office. This office is absolutely critical to us. We do a lot of quick reaction work and when the systems are fielded we must make sure the manuals are there, the training is there, and the support system is there. Our job, even though we are an engineering activity, is to make the whole program work, not just the engineering. PA will make sure the products we put out there are quality products.

The Aviation Support Division at Ft. Monmouth will ensure that CECOM provides

necessary matrix support to the PEO, Aviation and AVSCOM. The Division has a branch located in St. Louis; this core group of electronics specialists will provide support directly to the PEO, Aviation and AVSCOM. Project leaders for specific aircraft will coordinate other matrix support within CECOM.

The Communications and Electronic Warfare Applications Division will apply communication and electronic warfare technologies to current and next generation platforms to satisfy near and long term user requirements. Technical support is provided to platform managers for the integration of communication and electronic warfare technologies.

The Navigation Division, to be redesignated Navigation, Air Traffic Control (ATC) and Sensors Application Division, is responsible for the conduct of the EID mission pertaining to application of technology and supporting the acquisition and initial fielding of navigation, air traffic control and sensor systems. This division will provide technical representation and support to Project Managers, Program Executive Officers, Army, DoD, NATO and other allied technical panels in the area of navigation, air traffic control, and sensors.

The Integrated Flight Systems Division is responsible for that portion of the U.S. Army CECOM EID mission pertaining to research, development, and initial production of integrated platform systems. The Division will define and develop advanced platform architectural, processing and control/display concepts. Demonstration of these concepts to Army user elements is accomplished by using system integration and simulation facilities and system test-bed platforms.

Responsibilities of the Tactical Information Systems Division encompass that portion of the EID mission pertaining to research and development of aviation/ground tactical information systems for Army Aviation to include defining the aviation interface to major command and control systems, defining the tactical information architecture for aircraft systems and the development of tactical Mission Planning Systems for Army Aviation.

The Joint Research Programs Office (JRPO), located in Hampton, VA, is responsible for selective Army aviation electronics (avionics) basic and applied research programs assigned by the EID Director and implemented through independent in-house research and related contracts. Assigned research programs are primarily related to airmobile (air/ground) Army electronics, for which unique facilities exist at the NASA Langley Research Center and which can be significantly enhanced by joint NASA/Army research teams.

Our Technical Plans and Financial Management Division will become the Business Management Division. The Support Services Office has been moved into this Division.

The JRPO and the Tactical Information System Division are the only offices that did not change their names, which means now we have all those new titles to remember along with learning how to say EID instead of AVRADA. I think I'll just say EID 'cause someone's going to ask "What's an EID?" if I pronounce the acronym. Oops, there's another AVRADA sign in my display lobby ... better get it down! If the transition is completed by 1993 we'll be EID at the AAAA Annual Convention in Fort Worth, TX, so you'all better remember ... AVRADA is EID! See you there. IIIII

Monmouth Chapter
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Theme:
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The Army Airborne Command and Control Console (A^2C^3)

by William M. Gill

The currently fielded AN/ASC-15B Command and Control Console was used extensively in DESERT STORM with great success. The console, installed in the UH-60 Black Hawk, was used at all levels from Theater to Brigade. The need for a command and control console equipped UH-60 to be also fielded to AH-64 Attack Battalions was well documented in DESERT STORM After Action Reports (AARs). The ASC-15B console was found to be very effective and in great demand.

Lessons Learned

Some field suggestions for improvement to the C^2 aircraft system included:

- adding a FLIR to the C^2 Black Hawks for more effective night operations, particularly at the brigade and battalion level;
- improving the Non-Line-Of-Sight (NLOS) High Frequency (HF) radios and installing them in the C^2 aircraft, as well as in other Aviation assets, particularly Attack and Scout aircraft, (this is a systemic problem that just happens to affect Army Aviation most severely, particularly on a fast moving deep strike, i.e., the aircraft must be able to communicate with the Tactical Operations Center (TOC) which must also have compatible HF radios, with Automatic Link Establishment (ALE) and Electronic Counter-Countermeasures (ECCM);
- add the Automatic Target Handover Systems (ATHS) to provide digital burst communications capabilities, between the C^2 aircraft and TACFIRE, and also between the C^2 aircraft and OH-58Ds (also, the AH-64B/C/D, which will also have ATHS);
- integrate GPS into all aircraft and provide GPS timing for UHF HAVEQUICK. The GPS provides accurate location of all of the aircraft, which is essential to good C^2;
- provide quick set-up of ground power and antennas to allow the C^2 UH-60 to set down and become an instant TOC;

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COMMUNICATIONS VERSATILITY

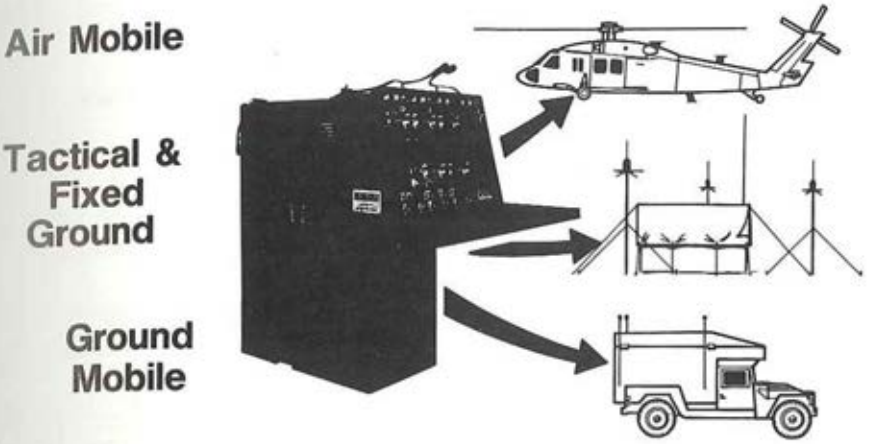

Figure 1

- the Corps and Division commanders need Mobile Subscriber Equipment (MSE) capability in their C^2 aircraft;
- re-arrange the seating in the command and control aircraft to allow the commander and his staff to face each other and be able to communicate face to face. An intercom switching capability also needs to be added to facilitate communications between the commander, his staff, and the cockpit.

Most importantly, all corps, divisions, brigades, and battalions need to have their TO&E changed to provide UH-60s for Command and Control aircraft, in lieu of the current UH-1s.

AN/ASC-15B Description

The current AN/ASC-15B utilizes three AN/ARC-182 (fig. 1) multi-band radios and one AN/ARC-174 HF radio. The ARC-182 provides VHF AM/FM, Maritime band, and UHF AM/FM, which also provides SATCOM. These radios provide voice capability only, i.e., no data communications capabilities are available in the current system. The ARC-174 HF radio is obsolete, no longer in production, and very expensive to maintain.

The ASC-15B has limited ECCM (i.e., frequency hopping) capability. A special control head has been added to the ASC-15B which provides HAVEQUICK ECCM on the UHF AM band. The AN/ARC-182 does not have SINCGARS (VHF FM) ECCM capability. An ARC-201 Airborne SINCGARS radio can be used to replace one of the ARC-182 radios, to provide the SINCGARS capability. A modification kit to add the ARC-201, in lieu of one ARC-182, has been applied to the ASC-15B systems fielded to Korea. Unfortunately, this replacement of one ARC-182 causes a loss of the other bands provided by that ARC-182, such as VHF AM and UHF AM/FM, and also the system's ability to perform radio relay is lost.

The ASC-15B system incudes a map board in which a paper map is inserted and a grease pencil used for annotation. Other system features include a complete ground setup capability with a power generator and ground antennas. The system can be removed from the aircraft, set up on the ground, and operated totally independently of the aircraft, i.e., the aircraft flies off to perform other missions. In fact, discussions

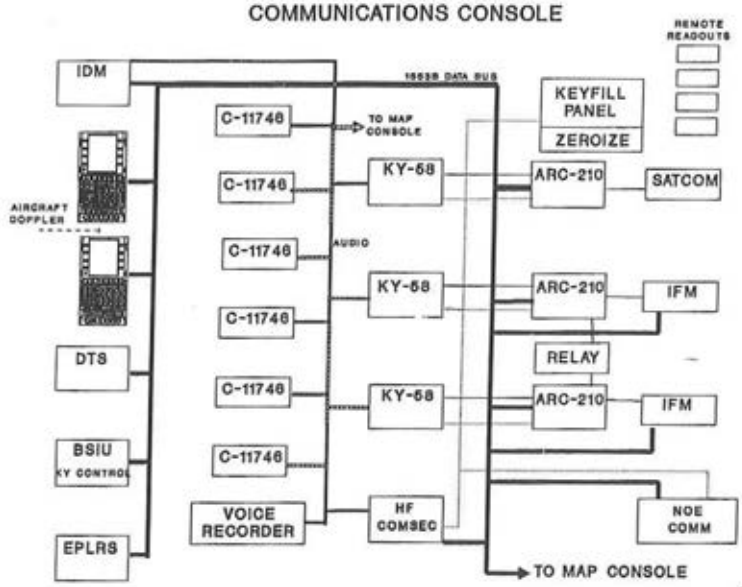

Figure 2

with the 18th Airborne Corps, the 82nd Airborne Division, the 101st Airborne Division, and the 24th Infantry Division, revealed that this mode of ground operation is rarely, if ever, used. During DESERT STORM, the tempo of the war was too fast to allow setup of the ground system at a stationary location. There were many reported instances where the UH-60 was set down, the power generator and the antennas removed and set up, and the aircraft was used as the TOC. One comment received several times concerning this mode of operation was that it took too long to remove and set up the power generator and the ground antennas. To remain on the air while this equipment was being set up required using the aircraft Auxiliary Power Unit (APU). Several APUs were used too long and burned out because of inadequate protection from the sand environment.

A^2C^3 Requirements

On 26 March 1991 the Aviation Center at Fort Rucker, AL approved a Required Operational Capability (ROC) for a replacement for the ASC-15B. Also, a draft Operational Requirements Document (ORD) is currently being staffed. The new console is referred to as the Army Airborne Command and Control Console (A^2C^3). The new requirements defined by the Aviation Center include:

- ECCM (SINCGARS, HAVEQUICK II, and HF ECCM);
- digital communications (EPLRS and an upgraded ATHS referred to as the Improved Data Modem—IDM);
- an integrated system using the MIL-STD-1553B data bus;
- automated mission planning capability;
- a digital map with a large color display;
- an Intelligence receiver to receive real-time INTEL from Guardrail, J-STARS, and National Assets. CECOM EID has an ongoing R&D program called Tactical Data Acquisition and Correlation (TDAC) to develop an airborne INTEL receiver that also correlates the INTEL data received. This system will be incorporated into the A^2C^3 in FY95.

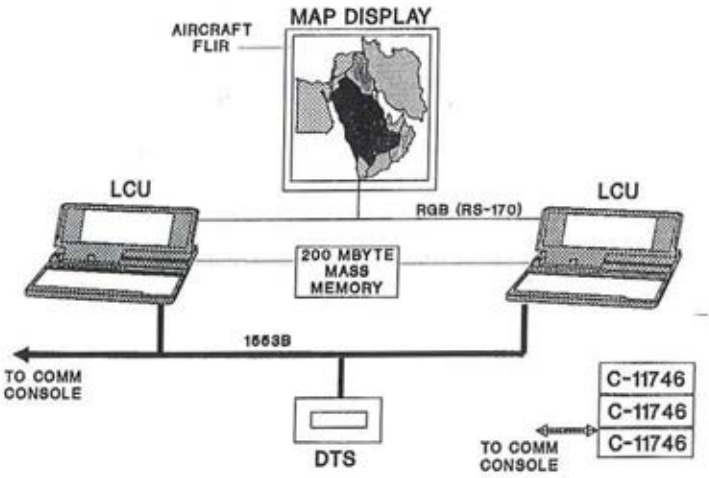

Figure 3

A²C³ Prototype

An upgraded command and control system, the A²C³, has been designed by the CECOM Electronics Integration Directorate (EID) to meet all of the ROC requirements. The new system consists of two consoles, the Communications Console and the Commander's Console. The Communications Console is fully integrated and controlled by two Control Display Units (CDUs) (Figure 2) over the MIL-STD-1553B data bus. The heart of the communications system consists of three AN/ARC-210 multiband radios. The ARC-210 is a Navy Standard radio that has all of the capability of the ARC-182, and also has integral ECCM (SINCGARS and HAVEQUICK II). The obsolete ARC-174 HF radio will be replaced by the new ARC-220 HF radio, which is currently under development by CECOM EID. The ARC-220 will include integral Automatic Link Establishment (ALE) and ECCM. ALE makes the HF radio easy to use by automatically picking the best frequency. ALE operates by sending out a digital burst to the receiving radio on each of several pre-assigned frequencies. The receiving radio then sends a return digital burst to the originating radio. This return burst tells the originating radio which frequency worked best. The originating radio then automatically tunes to that frequency.

The Enhanced Position Location/Reporting System (EPLRS) will provide position data and is also the communications link to the Forward Area Air Defense System (FAADS). FAADS will provide the friendly/enemy air picture to the system. This air picture will automatically be displayed on the digital map, which is integral to the Commander's Console.

The Commander's Console contains a full color digital map (Figure 3) display that includes overlays to depict INTEL data, FAADS air picture, and other data such as FARP locations, etc. The digital map has the aircraft position at center, showing either aircraft heading up position, or cardinal directions, dependent upon operator selection. All current tactical situation data received into the TOC from the Maneuver Control System (MCS), and other sources, is uploaded from the Aviation Mission Planning System (AMPS) using the Data Transfer System (DTS) memory cartridge.

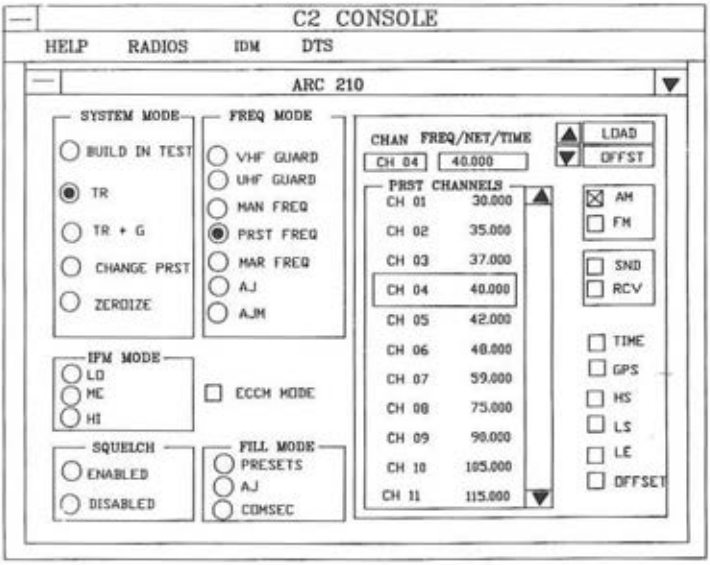

Figure 4

The DTS is Army Aviation's new Standard data loader and is also used on the OH-58D, the RC-12K and the B/C/D versions of the AH-64. The DTS memory cartridge has 256 kilobytes of memory, with battery backup and a zeroize switch. The AMPS is a user friendly, menu-driven computer system utilizing the Windows environment that, in addition to the tactical situation data, also loads all CEOI data necessary for setting up the radio nets, TRANSEC and hopset variables, radio presets, etc. During the mission, the latest tactical situation data is updated via a digital link from the TOC. This digital link will be the IDM/SINCGARS for Line-Of-Sight (LOS) or the HF/data modem for Non-Line-Of-Sight (NLOS) communications.

The Commander's Console (Fig. 4) is operated from two Lightweight Computer Units (LCUs). The LCUs are being procured by the CECOM Project Manager for Common Hardware/Software (CHS) and are ruggedized computers designed for Army field use. They utilize an 80486 processor, 16 megabytes of RAM, and have a removable 120 megabyte hard drive. The software approach to be used for the A^2C^3 system has been selected by CECOM EID and utilizes the Windows type design for ease of use with minimal training. The software will be written using the ADA, UNIX, and XWINDOWS environment. The entire system can be operated from either LCU, with the color digital map operated from the other LCU.

Embedded Training

The system will include embedded training and an extensive Built-In Test (BIT) program that will diagnose faults to the replaceable assembly and describe the replacement procedure. The embedded training software will allow anyone to become familiar enough with the system to operate the basic functions within 30 to 45 minutes. There is also a "HELP" screen for each individual function, such as setting up the radio presets, or using the IDM.

From discussion with the 24 ID and other divisions, it is recognized that operators and maintainers of the ASC-15B Command and Control Console received minimal training on the system. Typically, there is no dedicated operator or maintainer. The NET training is typically provided when the unit

first receives the system, and is not repeated thereafter. As troops rotate, this training is quickly lost. Therefore, it is essential that the new A^2C^3 have embedded training and a robust built-in-test capability. The system software has been designed to be very "user friendly" and easy to operate, for both the operators and the maintainers.

The A^2C^3 system, as well as most of the integral subsystems such as AMPS, the DTS, the ARC-220, and the IDM are being developed by CECOM EID for, and under the management of, the AVIONICS PM, who is located at AVSCOM, St. Louis, MO.

C^20TM

Some systemic lessons learned from DESERT STORM include the lack of command and control at the lower echelons, the brigades, battalions, and companies, where the actual fighting takes place. Two major initiatives have been launched by the Army to correct this lack of command and control at the lower levels. The Command and Control On The Move (C^20TM) and the Battalion and Below Command and Control (B^2C^2) programs have been established to provide both ground, mobile, and airborne command posts. The A^2C^3 is the center of the airborne effort and the ground effort will include a TOC mounted on wheeled and tracked vehicles. Common hardware will be utilized to the maximum extent possible. For maximum commonality, the same system software will be utilized. Operation of the ground and airborne TOC will be identical so a commander only has to learn the system operation one time. Since the operation of the systems will be controlled by an LCU, the same LCU control pages will be utilized in the ground and airborne systems.

A^2C^3 Configuration Options

CECOM EID is currently planning a test to put the Mobile Subscriber Radio Telephone (MSRT) in a UH-60 equipped with the ASC-15B. There are severe technical problems associated with putting the MSRT in the aircraft, since the MSRT operates on the same band as the Combat Net Radio (SINCGARS). If the MSRT can be shown to operate adequately on the aircraft, it may be included in all C^2 Black Hawks for the Corps and Division commanders.

In recent discussions with the XVIII Airborne Corps personnel, it became apparent that there should be two different A^2C^3 systems, one for Division and above commanders, and one for Brigade and below commanders. Due to the projected high cost of the A^2C^3 system, this two system approach may allow an overall reduced program cost, especially if the Division and above commanders don't require all the capabilities of the currently planned A^2C^3 system. This approach will be discussed with TRADOC, and may result in a change to the ROC or the Operational Requirements Document (ORD).

The A^2C^3 system is being prototyped by CECOM EID during FY92. The system software is being written in-house by EID. The product from this effort will be a system specification which will be used for the Full Scale Development (FSD) program planned for competitive award in mid-FY93. The FSD contract will include options for delivery of production A^2C^3 systems beginning in FY95.

Continued R&D

Concurrently with the FSD and production efforts, EID plans to conduct an R&D program to address A^2C^3 requirement for which the state-of-the-art at this time simply doesn't support including these capabilities in the initial program. Some of these capabilities are: voice interactive control of the A^2C^3, to support C^20TM; integration of Joint Tactical Information Distribution, particularly for the Corps that will not receive EPLRS (currently, EPLRS fielding is planned for only parts of the 18th Airborne Corps); addition of real time video reception, transmission and display for passing FLIR, radar, and INTEL images around the battlefield; and integrations of the TDAC intelligence system mentioned above. These R&D efforts will reduce the risk of incorporating these capabilities and will provide an orderly process for evaluation of these capabilities to refine the requirements.

Black Hawk Avionics Improvement

by Pete Csiky

The new UH-60 Black Hawk will meet its performance specifications at higher gross weights, higher altitudes, and higher temperatures. It will be able to carry heavier external loads. It will have to participate on the battlefield with AH-64 Apaches and OH-58D Kiowa Warriors. As the Black Hawk is called upon to do more, several improvements are needed. The Utility Helicopter Project Manager's Office is considering plans for upgrading the Black Hawk. Both flight performance and the aircraft's electronics are to be improved to provide a more powerful aircraft. Evolving Command and Control strategies focus the need for integrated avionics systems in helicopters. Apaches and Kiowa Warriors already have such systems. The user's needs, along with the budget constraints, will be a major influence on the results of the eventual program.

Mr. Csiky is Product Engineer, Black Hawk Improvement Program, AVRADA/EID, NJ.

Mission

u-til-i-ty (yoo-til'i-te) n., pl. -ties. **1.** the condition of quality of being useful; usefulness. **2.** A useful article or device.

The Army's UH-60 Black Hawk performs a variety of missions in its role as a utility aircraft: command and control, air ambulance, search and rescue, troop transport, cargo, external lift, special operations, VIP transport. . . the list goes on. The need for a flexible avionics system is apparent from the multitude of UH-60 variants that exist in the field. It seems that as soon as one special installation of avionics is completed, the phone rings with another request.

As inflation and congressional red pens reduce future funds for the Army, we must develop an avionics suite that can meet the user's varying needs and remain within cost constraints. User requirements, whether they are in materiel need documents or requests for specific aircraft airworthiness releases, cover a wide spectrum of avionics systems. Additionally, the need

for up to the minute information in a high speed battle also must be anticipated.

The shrinking budget means that the current fleet of aircraft will find even more roles. Aircraft must fly with heavier loads, require less maintenance, and handle more sorties per aircraft. Rapid advances in electronics technology make avionics a prime area for improvements in reliability and increases in mission capabilities for the Black Hawk.

Configuration

dis-crete (di-skret') adj. **1.** Constituting a separate thing; distinct. **2.** Consisting of unconnected distinct parts.

In the current configuration of the Black Hawk, the various avionics systems are discrete. The information must be tied together by the mind of a good pilot. Vital command and control information may be coming in to the crew. New intelligence reports have to be acted on, or there may be a change in the mission objectives. Communication and navigation radios have to be managed. Aircraft Survivability Equipment (ASE) has to be interpreted. Yet, the pilots still have to have time to control the helicopter. If there is some sort of trouble, the completion of the tasks become even more difficult.

With discrete systems, not only is pilotage and information exchange a problem, but so is space in the cockpit. Locating the controls for all the necessary systems in a way that is accessible to the pilots is nearly impossible. Some systems are being left off the aircraft and controls for other, less frequently used systems are being located in out of the way places. As new systems are added, the situation only becomes worse.

The old avionics systems are a burden for the support system as well as the pilot. The manufacturing and repair cost of the old systems will rise as the cost of the integrated systems comes down. Avionics developers target their new systems for integrated aircraft.

in-te-grate (in-ti-grat) v. -grated, -grating, -grates. -tor. **1.** To make into a whole by bringing all parts together; unify. **2.** To join with something else; unite.

With modern digital technology, the avionics systems can be tied together, reducing the burden on the pilot. Additional capabilities can be added that a pilot could not be expected to handle on an aircraft with discrete systems. Computers analyze and store the information. Integrated data buses communicate the information between the subsystems. The Control Display Units (CDUs) provide for single point control by the pilot.

Now, instead of the pilot having to combine the output from several navigation systems mentally, the navigation processor gives the best available answer. Communication systems automatically select the best available means to make a critical radio link. Command and control information is received and distributed to the appropriate systems on the aircraft. Output from the ASE sensors are combined to suggest a response to the pilot. Overall, the pilot has more time to devote to the priority tasks of flying the helicopter.

Even during the routine portion of a mission, the integrated system takes some of the burden. A single point interface for controlling the avionics eliminates multiple data entry keyboards. Premission planning and data loaders can be used to enter mission variables. Waypoints, communication channels, and communication electronics operating instructions tables, are stored on cartridges. These are loaded into the aircraft just prior to take-off, thereby reducing time spent "programming" the aircraft.

Planned Improvements

ca-pa-bil-i-ty (ka-pe-bil'i-te) n. **1.** The quality or condition of being capable; ability. **2.** Potential ability.

Information distribution and processing will be a key feature of the electronics upgrades. The data available before a mission is becoming more extensive. Command and control of aircraft on the move is essential with conflict durations being measured in hours rather than years.

Due to tight budget, the first step toward future Black Hawk configuration will be to integrate the radio and navigation functions and provide each pilot with a single control

display unit panel. The instrument panel will not significantly change for now. In the future, some type of electronic display surfaces may be incorporated.

The system will be based on the MIL-STD-1553 data bus. The Flight Data Recorder and ANVIS HUD, planned for the Black Hawk, also use the MIL-STD-1553 data bus. As new equipment becomes available, future upgrades will build on the integrated control system.

The impact of aircraft integration will be seen on the ground as well as in the air. Mission preparation will be done on the Automated Mission Planning System (AMPS), reducing pre-flight time. The integrated aircraft system allows a single data loader to distribute mission data quickly to various aircraft systems. Data transfer devices not only reduce mission data entry times but also reduce the possibility of entry errors.

Future

flex-i-ble (flek'se-bel) adj. **1.** Capable of being bent or flexed; pliable. **2.** Responsive to change; adaptable.

While the near term configuration integrates only the avionics controls, it is a basic step that will be built upon in the future. The ultimate configuration of the integrated systems proposed for the Black Hawk is nearly unlimited.

Command and control information will be passed to aircraft effortlessly. Electronic display surfaces will replace mechanical instruments, providing better reliability, lower maintenance costs, and flexibility. As new capabilities are introduced to the aviation community, the integrated system will readily allow their incorporation. When unforseen requirements surface, the integrated system will be reprogrammed to accept new equipment and provide the needed capabilities.

Some functions being discussed are real time intelligence reports, flight following, expert communication and navigation manager, ASE, and voice warning and control. With discrete systems, these capabilities could not even be considered.

Experimental aircraft, such as the System

Testbed for Avionics Research (STAR) at Ft. Monmouth, NJ, are already flying with such systems. Electronic display surfaces provide flexibility of information presentation. Critical information can be switched between screens or even combined if a screen were to fail. Even the engine monitoring and the caution advisory systems are integrated.

Aircraft can be tailored to meet specific mission needs with special avionics. Commanders will have additional capabilities in airborne command posts. Special mission aircraft can be configured by adding the avionics to the integrated data bus. The onboard computers will already be programmed to recognize the additional equipment and be ready to provide the special mission support.

The rapidly changing battle picture can be updated to the aircraft in almost real time fashion. New missions, changes to missions, and vital new information can be data linked to the aircraft over standard radios in the command and control nets. The integrated system will distribute the data aboard the aircraft. Radio systems and navigation systems working together will select the best communications means through a system known as the Expert Communications Manager. The pilots tell the system, using Voice Interactive Avionics (VIA), to whom they need to talk. The system selects the frequency band and adjusts the power to the minimum needed to make the contact.

As the user community has a chance to fly the integrated Black Hawk, the ingenious pilots surely will find new ways to maximize its potential. Ways which engineers may not even be considering.

Conclusion

We are planning the first steps to get a fully integrated Black Hawk. The tight budget will allow only for a basic control system integration but it is a step in the right direction. Many choices are available for the particular integration scheme. Regardless of the choice, the system will ultimately have to grow with the continuing need for the latest technology, the need for new capabilities, and the need for the latest battlefield information. As funding becomes available, subsequent steps can be taken which may include a "glass" cockpit, intelligent pilot assisting systems, and an aircraft linked to the battlefield information system. Integration of the communication and navigation systems will be a major step. The Black Hawk will be on its way to becoming a multifaceted utility player. IIIII

Tactical Data Acquisition and Correlation

by
Robert Leutwyler and Dr. Stanley Sokolowski

The Tactical Data Acquisition and Correlation (TDAC) program was initiated as part of Army Aviation's Rotorcraft Pilot Associates (RPA) Advanced Technology Transition Demonstration (ATTD) being conducted by the Army Advanced Technology Directorate (AATD), Ft. Eustis, VA. The original premise was to provide real-time tactical intelligence information, from various sources, directly to the on-board processor to provide correlated aircraft essential information pictorially as an overlay to a digital map. The RPA program has undergone revisions since the original TDAC premise was postulated and has evolved to the development of Cognitive Decision Aid (CDA) for the aircraft pilot. The TDAC program, as currently configured, will provide correlated INTEL data to the CDA, and the CDA will then utilize the INTEL in its decision making process and output situational assessments and tactics advisories to the pilot via the Pilot Vehicle Interface (PVI).

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Rapid decision making based upon quality data is expected to assure the favorable outcome of future combat as well as increase the survivability of weapon platforms with this capability. Advanced decision-aiding technology developments such as Pilot's Associate have postulated combat effectiveness payoffs based upon the effects of improved situational awareness and intelligent decision aiding.

The collection, analysis, and broad distribution of intelligence derived combat information and data on a near-real time basis for the Army must be addressed. Currently, the distribution of intelligence is structured in a way that individual

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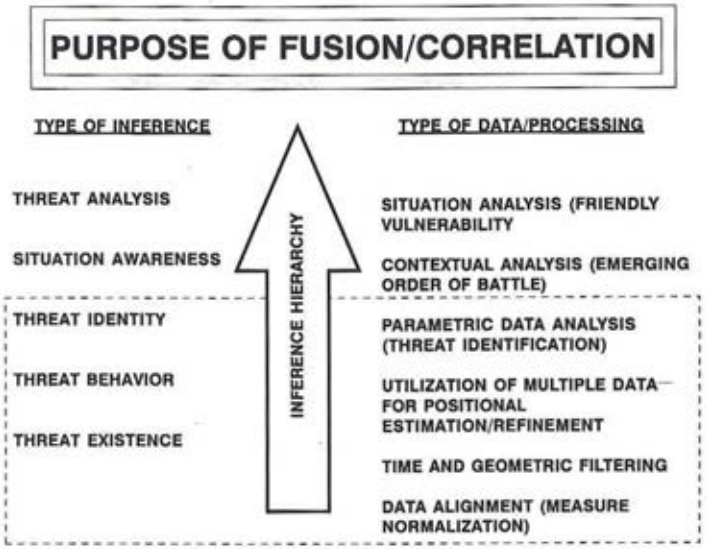

Figure 1

weapon systems are at the end of the chain resulting in time late intelligence and voids in critical data needed. In particular, data to any echelon is employed to render command decisions (i.e., value added activity) and/or the information may be passed on to subordinate users (i.e., as-is data for consumption); this data must be defined in the systems engineering and information management contexts so that RPA developers and advanced mission equipment package developers can design and engineer avionics systems for the use of this data.

This program has advanced the tech base under the assumption that real-time data would become available in the course of maturing Command, Control, Communications, and Intelligence (C^3I) developments. Since RPA must be planned to "fit into" the future C^3I environment, the current key interests in the emerging C^3I system to Army Aviation are the descriptions of available real-time data and how RPA can receive and utilize the data. It is important to the RPA program therefore to begin assessing this information and data and subsequently provide specific definitions to the technology demonstration developers.

Data Fusion

Data Fusion, as defined by the DoD Joint Directors of Laboratories Data Fusion Subpanel, is "A process dealing with the association, correlation, and combination of data and information from multiple sources to achieve refined position and identity estimates, and complete and timely assessments of situation and threats, and their significance." Figure 1 indicates that the overall process to achieve the stated goal of the subpanels definition is hierarchical in nature and is based on inferences derived from the source data.

Figure 2 depicts the overall data fusion process. As shown, the fusion environment is composed of several distinctly different processing functional areas; collection assets, preliminary filtering, correlation/tracking, situation assessment, threat assessment, database management, and the man/machine interface.

Under the TDAC program, the collection asset data sources in this case are provided through the Constant Source/TENCAP system, local air picture as extracted from the Forward Area Air Defense Systems (FAADS) Enhanced Position Location Re-

DATA FUSION PROCESS

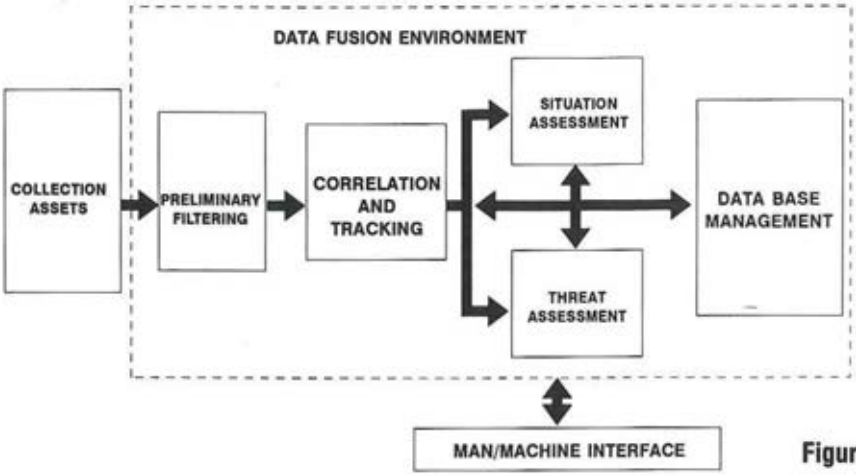

Figure 2

porting System (EPLRS) broadcast, and the local Electronic Intelligence (ELINT) threat lay down as seen from the on-board Aircraft Survivability Equipment (ASE). The TDAC preliminary filtering refers to the data filters applied to limit the amount of ELINT processing to the aircraft area of operational interest, i.e. filtering by geographic area, weapon system type, etc. The correlation and tracking is where the information from the various collection systems is merged to form a consolidated database of contact and track reports which are then passed to the RPA CDA processor. RPA then performs the situation and threat assessments, database management, and man/machine interface (PVI).

The TDAC program is a Technology Demonstration within RPA dealing with the issues of information, data fusion, and situation awareness for aviation at the attack aircraft. The scope of the program includes the identification of INTEL/Tactical Data sources that may be made available to the Army Aviator (through any source), the definition of the available data, and the connections necessary to import the data on board the aircraft. Further, the TDAC program investigates both the processes necessary to combine the data to form situation data and a way to present a situation awareness display to the Aviator.

Program Objectives

There are a number of program objectives which can be essentially divided into an INTEL/Tactical Data investigation and technology demonstration.

TDAC's primary effort is within the technology demonstration where several known INTEL/Tactical Data sources are utilized to form a situational awareness display to an aviator. For this demonstration three sources of data are utilized, mainly:

- National Source Data available over specific broadcast information data streams, specifically the Tactical Data Information Transmission System-Broadcast (TADIXS-B).
- The Air Picture Data available over the Forward Area Air Defense Command, Control, Communication, Intelligence (FAADC^{3}I) System, specifically over the EPLRS.
- The Threat ELINT data available from the on board ASE, specifically over the MIL-STD-1553 data bus.

These courses of data will be evaluated and "correlated" within a mission processor to form a consolidated situation picture. The

data from the three sources contain both ELINT and Raid Reports and come to the mission processor in the form of both track and contact reports. The specific processing of the information will be based on both the contact and track reports to complete the consolidated situation picture. The specific data correlation algorithm used is a Navy-developed multi-hypothesis correlation/tracking system named "Prototype Information Correlation Exploitation System" (PICES). The track fusion process is similar in that it utilizes a multi-hypothesis track fusion algorithm. Both algorithms utilize gating and hypothesis limiting to keep in check the processing time and memory size. Also common to both algorithms is the Extended Kalman filter implementation where measures on the innovation sequence are included in the scoring and ranking of the hypothesis.

A secondary INTEL/Tactical Data investigation effort focuses on system data identification, definition, networks, and evaluation of system data through simulations and employing Measures Of Effectiveness (MOE) and Measures of Performance (MOP).

This research work is needed to identify the types of real-time tactical information that currently exists (plus data projected from advanced development and full-scale development systems) within all Battlefield Functional Areas (BFA) which may be of value in the execution of an aviation attack mission. This work specifically focuses on identifying real-time tactical information that is unavailable (either currently or planned) to an aviation unit through ATCCS MCS database. Detailed research on the internal processes and systems used within each BFA to provide a data product identification and an information assessment from the BFA supplier is required to assess the potential usable data products down to the attack aircraft level.

Once useful INTEL/Tactical Data is identified, a feasible process for the information to be imported to the attack helicopter is required. This information link identifies methods, protocols, and data streams to create a "road map" for transmission of usable data products down to the attack aircraft for assessment.

The results of this work will be encapsulated in three documents, namely:

- TDAC Data Availability Document which identifies the data needed, where the data came from, where the data can be used, and the time line required for data at the attack aircraft level.
- TDAC Dictionary and Data Stream Description Document which is a comprehensive listing of all INTEL/Tactical Data available to include existing sources of relevant data such as that from the Army Tactical Command and Control System (ATCCS) (through the Maneuver Control System [MCS]) and National Source Data available over specific broadcast information data streams (i.e. Tactical Information Broadcast System [TIBS] and TADIXS-B).
- TDAC Information Transmission Document which identifies the data streams, transmission methods, and protocols.

Spinoff/Enhancements

The algorithms and data processing procedures developed under the TDAC program for RPA have direct application to satisfy Army Aviation's INTEL needs in the ground environment. The U.S. Army Aviation Center, Ft. Rucker, AL, has postulated a need for Aviation Tactical Operations Center (AVTOC) which must incorporate the functionality of an INTEL work station. The automated processing of real-time INTEL as developed under TDAC, coupled with map/image handling capabilities being developed under Army Aviation's Mission Planning System program, will provide the AVTOC with the basic tools to monitor and update the threat.

Future TDAC enhancements include the incorporation of other source data from J-STARS, Enhanced TIBS, Guardrail Common Sensor, and Secondary Imagery.

A pictorial representation of the threat with respect to the surrounding terrain and tactical situation will be a significant enhancement to Army Aviation. The TDAC program will provide this capability to Army Aviation through machine-aided situational analysis which will increase the situational awareness and survivability. IIIII

The Army/NASA LaRC Display Technology Program

by

Stephen P. Williams and Russell V. Parrish

The Joint Research Programs Office of AVRADA/CECOM conducts a joint program with NASA's Langley Research Center in advanced display technology for future aircraft cockpits. The program has the goals of providing new man-machine interface options for these crew/vehicle systems by exploiting the developing technology base in crew station technology. The technologies involved in the research program span the entire gamut of cockpit hardware and software from the specific formats of the displays that convey information to the pilots, the graphics computers that draw those formats, and the pilot/system interface mechanisms and concepts for control interaction, to the display media upon which the information is presented to the pilots. The research emphasis for the last several years has been placed on pictorial displays, and in particular the display of these pictorial concepts in large-aspect ratio, wide field-of-view venues. The program assesses the potential benefits of large-screen, integrated pictorial displays to provide operational benefits through gains in situational awareness, pilot/vehicle performance, safety, information management capability, and airport through-put capacity, as well as increased capability in low and restricted visibility operations. Application areas for the investigation of these bold new concepts in cockpit displays include advanced subsonic and future high-speed civil transports, and advanced rotorcraft.

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The Display Technology Program strives to provide a technology base and application guidelines for use by industry and DoD of large-screen pictorial

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display concepts. The program has efforts in both technology development and in display concepts and guidelines for specific and generic applications. The technology development efforts, which are largely leveraged activities with other government agencies (DoD, DARPA), include direct-view, wide-screen flat panels (mosaic or single screen), Helmet-Mounted Displays (HMDs), projections systems, and light-weight, high-speed graphics engines (airborne CGI). The emanating thrust of the development work is to provide a means to generate and present full-color, ultra-high-resolution pictorial display concepts in an airborne environment. The research efforts to provide display concepts and guidelines for their applications have concentrated on simulator investigations of pictorial concepts, with the possibility of carrying the more promising candidates to flight evaluation.

Technology Development

The recent accomplishments of the program in the technology development area have dealt with the projection and HMD technologies. A prototype CRT-based projection system was developed and has been incorporated into a wide-screen, full-color, simulation facility for large-screen, pictorial display research. This facility, known as Visual Imaging Simulator for Transport Aircraft Systems (VISTAS) includes a piloted workstation, which is interfaced to a generic aircraft model hosted on a general purpose simulation computer. The projection system, a dual CRT system capable of stereoscopic display, is interfaced to two state-of-the-art graphics generators capable of rapidly reconfigurable displays. This configuration allows for the quantitative evaluation of the effects of advanced flight display formats on pilot performance and situational awareness in comparison to performance with conventional flight display formats. Future efforts will pursue other technologies (e.g., laser, liquid crystal light-valve), as a CRT-based projection system is considered to have severe weight penalties in a flight environment.

The recent AVRADA/NASA Color Helmet-Mounted Display Study conducted by General Electric has resulted in two patentable approaches to achieve a wide field-of-view color HMD. The first invention, based on a sub-miniature CRT, allows a near-term path for full-color conversion of an existing monochrome HMD. This approach will be pursued under a research grant to Central Florida University. The second invention, based on a laser-scanned system, requires a longer development time and more significant funding to achieve higher resolution and a wider field-of-view in a full color, stereo-capable HMD.

Another recent accomplishment in the HMD technology arena is the completion by the Covert Night/Day Operations in Rotorcraft (CONDOR) visionics committee of the specifications for CONDOR Advanced Visionics System (CAVS). CAVS is the advanced display system to be used in a simulation/flight research program (a joint program between the United Kingdom and the U.S. Army) to address the need to provide an operational capability to rotorcraft pilots tasked with performing low altitude tactical missions under day/night adverse weather conditions. These conditions place excessive demands on the aircraft flight control and display systems. Due to the anticipated battlefield laser threat, conventional aircraft displays will not be accessible to the crew with individual eye laser protection devices in place. The CONDOR program was therefore conceived to provide the pilot with a virtual "real world" display compatible with a laser threat environment. The center piece of the effort is the development of a full color, wide field-of-view Helmet Mounted Display. The specifications for CAVS were largely based on the specifications developed within the AVRADA/NASA Color Helmet-Mounted Display Study conducted by General Electric, and LaRC personnel played a large role in the development of the CAVS specifications.

Concepts and Guidelines

The recent accomplishments of the program in the pictorial concepts and application guidelines arena have dealt with

pathway-in-the-sky pictorial displays, synthetic vision displays incorporating fusion of imaging sensor/CGI pictorial scenes for low-visibility operations, HMD format investigations, and guidelines for the use of stereopsis cuing in pictorial displays, and guidelines for specifying LCD ambient and solar lighting effects.

The development and validation of simulation software was recently completed for VISTAS and an in-simulator experiment was initiated comparing the spatial awareness of pilots flying conventional instruments versus pathway-in-the-sky displays. The pilots flew transport landing approaches to closely-spaced parallel runways while using:

- conventional flight displays without flight director;
- conventional flight displays with flight director;
- 40° pictorial flight displays;
- 70° pictorial flight displays.

Increased Awareness

Preliminary results indicate a dramatic improvement in spatial awareness with pictorial displays. The increment in performance gain with pictorial displays over conventional displays was equivalent to the increment gained in adding a flight director to conventional displays.

The synthetic vision research effort within the display technology program consists of a series of simulator and flight tests to develop and optimize displays which fuse pictorial scenes with imaging sensor data. Such a display system will enable pilots to perform takeoff, landing, and taxiing maneuvers under reduced visibility conditions. It is planned that validation of the first sensor and imaging system (TRW's passive millimeter wave camera) with aiding symbology will be performed in a series of flight tests conducted with the Langley Transport Systems Research Vehicle, a Boeing 737 aircraft, in 1995. Prior to the flight tests, piloted simulator research is being conducted, which required a real-time simulation model of the imaging sensor. Such a graphic model has been completed and is currently undergoing validation testing.

Emerging Concepts

Many of the emerging concepts for advanced pictorial flight displays to be presented to a pilot via HMD are predicated on full color, high resolution images presented with stereoscopic cuing in wide Field-Of-View (FOV) displays. To provide stereopsis, binocular HMD systems must trade some of the total FOV available from their two monocular fields to obtain a partial overlap region. The visual field then provides a mixture of cues, with monocular regions on both peripheries, and in the overlapped center, a stereo region. The addition of color cuing capability is more difficult, requiring a costly trade-off in resolution. A piloted simulation experiment has been completed that revealed the advantages from the use of color cuing in peripheral monitoring displays and stereopsis cuing in the foveal display of tracking information as may be encountered in future HMD systems.

The NASA LaRC monochrome HMD, with high transmissivity and variable overlap FOV, has been successfully integrated into the Differential Maneuvering Simulator (DMS) environment for research use. The DMS will provide the outside world view and in-cockpit instrumentation to the pilot, while the HMD, with head tracking capability, will be furnished with IRIS-based displays generated by the AVRADA/NASA Display Laboratory. Pictorial display formats for increased situational awareness through flight path vector knowledge, and concepts for efficient energy management are being evaluated currently as part of the High-Angle-of-Attack Technology Program.

The application of stereo technology has been investigated for years within the flight display community. These efforts have been particularly intense for helmet-mounted heads-up display applications, as the display of stereopsis cuing information is readily available with binocular helmet systems. Recent efforts are extending the emphasis to head-down display applications also. While most of these efforts have been effective in the application of stereopsis to

(LaRC Results — continued on p. 44)

Training for the Future

by
Colonel Burt S. Tackaberry and Captain Craig W. Harlow

The anniversary of our DESERT STORM victory has passed and like other aviation brigades, we in the 24th Infantry Division (Mechanized) have expended much energy over the past year identifying, analyzing, and disseminating the lessons learned during the war. Our focus must now shift to maintaining our readiness to succeed in any future conflict. The process of integrating the knowledge gained during DESERT SHIELD/STORM into SOPs and transforming it into action is long and arduous, but necessary as we shift our focus from the recent past to the training challenges of the future.

Aviation Brigades no longer have the resources available to conduct aviation specific training separate from divisional mission support requirements. Our challenge is clear. We must forfeit the luxury of training in a vacuum, and confront the training challenge of satisfying most of our internal training requirements during division exercises. In the 24th ID(M), the Aviation Brigade's focus is on deployment training and quarterly field exercises with all elements of the combined arms team to maintain our combat edge. Additionally, we have identified other areas requiring emphasis and close management in this era of limited resources. These include Command, Control, and Communications (C^3) capabilities, combined arms/joint training, and supporting the Total Army Readiness concept.

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Deployment Readiness

The first training challenge, given the Army's transition from a forward-deployed force to a largely U.S.-based contingency force, is deployment readi-

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ness. As a key element in the XVIII Airborne Corps, the 24th ID(M) must be able to rapidly and efficiently deploy. The 24th ID(M) plans to deploy a company-size heavy force in support of the lighter forces of the XVIII Airborne Corps to any contingency area within 18 hours. Battalion-size heavy forces can deploy within 72 hours and a Division Ready Brigade can begin rail load operations within that same 72 hour time frame to meet Navy SL-7 fast ships at the Port of Savannah. To support any Division deployment, the Aviation Brigade created four modules that can deploy within 48 hours:

Lift—5 UH-60
Attack—6 AH-64, 4 OH-58C, 2 UH-60
LIFT/GS—5 UH-60, 4 OH-58D, 4 UH-1H
C²—2 UH-60

The Brigade Aviation Intermediate Maintenance (AVIM) Company provides a support module that will deploy with any aviation module if a support base has not been established in the area of operations. The missions and requirements faced by the Division contingency forces drove the decision of what types of modules were created. However, it is imperative to remember that more often than not the limiting factor for deployment is space available on a ship or aircraft. Though contrary to normal planning guidelines, commanders must first receive a space allocation, then configure a force to support the mission. Therefore, the projected space available for load out was the deciding factor on the exact composition of the deployment modules.

The Aviation Brigade aggressively pursued the concept of using various modules to support Divisional deployments. Once the division endorsed the concept and included it in the N-hour sequence, continuous rehearsal and validation became the cornerstone of the Aviation Brigade's deployment plan. The 24th ID(M) has executed several Emergency Deployment Readiness Exercises (EDRE) since creating this plan for a quick reaction heavy force. Each repetition forces the Division staff to include aviation issues in their planning process. The Brigade will deploy one or more modules twice in the coming months. One exercise involves planning and executing the deployment of a module aboard a fast sea-lift ship. This exercise will validate the Brigade's ability to prepare the module in 48 hours and make it combat capable upon arrival. It will also help fine tune the support package deploying with the module. A second exercise, VIPER THRUST, is an EDRE that involves the self-deployment of an attack company with a support package that culminates in a live-fire exercise. These exercises allow the Aviation Brigade to continue development and validation of the aviation modules. The process of rehearsal, development, and validation must be continuous if the Aviation Brigade is to remain an integral part of Division deployment.

C^3

A second training challenge concerns Command, Control, and Communications (C^3). C^3 capabilities are extremely perishable and without a deliberate effort to exercise the C^3 system regularly, these capabilities will dissipate almost over night. Each time we deploy, the soldiers in the Brigade Headquarters know specific training will occur prior to redeploying, i.e. properly establishing the Tactical Operations Center (TOC) and maintaining communications with higher and subordinate units, running the battle from the TAC, setting up retrans sites, receiving and disseminating information, and developing orders. Routine events all, but ignore them more than 90 days and it will take your next entire field problem to correct deficiencies. An aggressive program must be pursued to ensure that we maintain our combat expertise. In the 24th ID(M), the Aviation Brigade exercises its C^3 systems quarterly as part of a Division CPX, fully integrated with all division C^3 systems. Additionally, monthly Aviation Brigade COMMEXs validate C^3 capabilities within the brigade.

Combined Arms/Joint Training

A third challenge is the execution of critical training tasks. Six to eight weeks prior to rotating through the National Training

Center (NTC), ground brigades of the 24th ID(M) conduct an intensive, three week exercise at Ft. Stewart known as VICTORY FOCUS. VICTORY FOCUS is an excellent opportunity for the 1st, 2nd, and 3rd brigade combat teams to coordinate Electronic Warfare, Field Artillery, Air Defense Artillery, and Aviation in true combined arms exercises prior to deploying to the NTC. The objective of VICTORY FOCUS is to prepare the brigade combat team to win both at the NTC and in our next conflict. This quarterly exercise allows participation by all elements of the combined arms team and is the critical training event within the Division. The ground brigade commander and staff emerge from VICTORY FOCUS with a better understanding of the capabilities and limitations of Army Aviation and a healthy appreciation of trying to manage a limited asset against an endless demand for support.

Joint Air Attack Team (JAAT) training is another critical event that occurs quarterly. JAAT usually occurs over a four day period during VICTORY FOCUS and involves elements of the ground brigade, DIVARTY, Air Force, and attack helicopters from the Aviation Brigade. In the past, these JAATs were viewed as firepower demonstrations. In our attempt to fully integrate aviation training with division training, the 24th ID(M) and the Aviation Brigade have made the JAAT exercise an intense, well planned, vigorously executed combined arms event. We conduct JAAT engagements either as close engagements in the main battle area or as deep attacks. The Aviation Brigade plans, controls, and executes deep attacks by using field artillery and Close Air Support (CAS) aircraft as appropriate. The deep attacks are realistically conducted as Suppression of Enemy Air Defense (SEAD) is fired into the impact area just ahead of the attack battalion to simulate crossing the Forward Line of Own Troops (FLOT). The battalion then flies a 30-50km route to simulate going deep, finally arriving at battle positions and integrating attack helicopter, Multiple Launch Rocket System (MLRS), and CAS fires into the attack. Other engagements occur as attacks into Engagement Areas in the vicinity of the

(Training — continued on page 52)

Let the Competition Begin: The NTH Formal RFP is on the Street!

by Lieutenant Colonel Pat Oler

On 30 April 1992, Mr. George Dausman, acting on behalf of the Army Acquisition Executive (AAE), approved the release of a Request For Proposal (RFP) to procure 157 New Training Helicopters (NTH) and 12 Cockpit Procedures Trainers (CPT) for use at the U.S. Army Aviation Center to train Initial Entry Rotary Wing (IERW) students. This represents a major milestone in a program that has been evolving since July 1986 when the Army's Vice Chief of Staff directed the development of a new primary trainer to replace the aging TH-55. The acquisition strategy has changed from lease to buy and program management responsibility has been moved from AVSCOM to PEO Aviation.

The original acquisition strategy, which we were operating under when the ARMY AVIATION Magazine article on NTH was published, would have allowed the Army to enter into a lease agreement for both the aircraft and CPTs, with an option to buy. The current strategy, as directed by Congress, authorizes the Army to purchase the aircraft and CPTs over a three year period. With the change in acquisition strategy came the decision by the AAE to move program management responsibility to PEO Aviation. Additionally, the AAE directed the acquisition process be streamlined to the maximum extent possible consistent with a "best value" procurement.

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The NTH RFP represents a lot of hard work by a team of dedicated professionals who have been given the backing and support necessary to ensure the requirements of the user are fulfilled, and the "non-value added" aspects of the acquisition process, as they relate to this unique procurement, are successfully challenged.

The RFP

The primary objective of the NTH program is to reduce operating and support

ONE NEW TRAINING HELICOPTER COMES WITH REDUCED OVERALL TRAINING COSTS.

AND 106 CUBIC FEET OF ELBOW ROOM. AND AN ALL-COMPOSITE MAIN ROTOR HEAD AND BLADES. AND 1805 POUNDS OF USEFUL LOAD. AND A MAXIMUM SPEED OF 155 KNOTS. AND OVER 3 HOURS OF ENDURANCE. AND A VARIETY OF LOW COST TRAINING OPTIONS.

The Army needs a new basic trainer. One that will stand up to student abuse and countless autorotations for twenty years or more. One with generous power and control margins for training safety, as well as outstanding hot day performance. And one with a safe and comfortable cockpit environment. In other words, the Army's need for a basic trainer is anything but basic.

And only one NTH candidate is ready to meet that need right now.

With over 3,000,000 flight hours in demanding applications all over the world, the AS350 AStar NTH offers the Army an unbeatable combination of performance, size and proven durability — making it not just the best choice, but the *only* choice for NTH.

AS350 ASTAR NTH READY & ABLE

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costs for the core IERW training without degrading training effectiveness. This will be accomplished by replacing the current primary trainer with a commercially available non-developmental helicopter. The Army wishes to purchase 157 NTHs and 12 CPTs with deliveries desired to begin 12 months after contract award with a desired Training Initial Operating Capability (TIOC) date six months later. TIOC will be achieved with the delivery of 29 NTHs and six CPTs. The NTH technical requirements include:

- a minimum of three crashworthy seats;
- a crashworthy fuel system;
- the ability to achieve and maintain a 500 feet per minute rate-of-climb on climb out;
- the ability to hover out-of-ground-effect at 2,300 feet density altitude;
- the ability to achieve and sustain 90 knots true airspeed at 2,300 feet density altitude;
- be Federal Aviation Administration (FAA) certified for operation under single pilot Visual Flight Rules (VFR) and dual pilot Instrument Flight Rules (IFR).

The aircraft are to be delivered in three configurations: IFR equipped, VFR equipped with complete provisions for IFR, and VFR equipped only. Forty-five of the aircraft are required to be delivered in the first configuration, at least 20 in the second configuration, and the remainder in the last configuration.

Offerors will propose a tailored logistics support program for both the NTH and CPT which utilizes the on-site maintenance contractor at Ft. Rucker, AL. Additionally, offerors will provide a catalog price list for parts, tools, overhauls, and technical services. The NTH contractor will also provide technical service assistance to the on-site maintenance contractor for a period of one year from delivery of the first aircraft.

Evaluating the Competitors

The Army is buying more than 157 aircraft and 12 CPTs. It is also buying a relationship with a contractor that will span into the 21st century. This fact makes the source selection process paramount to the long term success of the program. Consequently, the NTH contract will be awarded to the competitor whose proposal not only meets all critical requirements of the solicitation, and best meets the established program objectives, but also represents the overall "best value" to the Army.

The major areas to be evaluated in this "best value" procurement include Technical, Training Effectiveness, Cost, Logistics, Management, and Past Performance. In terms of the relative importance of each of the evaluated areas, Training Effectiveness comes out on top.

A Training Effectiveness User Evaluation (TEUE), or "fly-off", will be conducted at Ft. Rucker to assess each candidate aircraft's potential as a primary trainer. During the course of the TEUE, Instructor Pilots (IPs) will fly simulated training missions selected from the Aviation Center's Flight Training Guide. These missions will consist of Subtask Assessment, a Maneuver Evaluation, and a Right Seat Excursion. The Subtask Assessment and Maneuver Evaluation will include consideration of the aircraft as a safe learning environment, and the Right Seat Excursion will assess the training impact from a student's perspective with an emphasis on human factors and safety. Additionally, a qualitative assessment will be conducted by experimental test pilots to more precisely define any weaknesses identified.

Aircraft performance information will be recorded by the IPs and provided to the Source Selection Evaluation Board (SSEB) for consideration and for comparison with quantitative data submitted with each proposal. Safety, fuel consumption, and maintainability will be evaluated throughout the TEUE. At the conclusion of the TEUE, each competitor will conduct a maintenance demonstration of selected maintenance tasks. This demonstration will help assess the offeror's proposed operating and support costs.

Streamlining the Process

The NTH Program is truly a unique procurement that lends itself to streamlining. Armed with guidance from the AAE to do what makes sense and not just what's been done in the past, the NTH team has

attacked every aspect of the process and has taken a tailored approach to everything done to date. Listed below is a synopsis of some of our streamlining efforts:

- We are not asking for any military specifications on either the NTH or CPT. The NTH will be an FAA certified aircraft maintained to FAA standards.
- We have had industry involvement from the outset. By issuing draft RFPs, having face-to-face meetings with interested competitors, and conducting a pre-solicitation conference, we have tried to ensure industry's understanding of the requirements and take advantage of industry's experience in solving problems.
- We are taking advantage of using best commercial practices wherever possible. Technical publications will be provided in contractor format; key personnel training will be conducted under the "train the trainer" concept by the NTH contractor using best commercial practices; a configuration management program will be developed and implemented by the contractor; and we are asking for commercial warranties or warranties tailored to the NTH Program.
- The entire solicitation requires only six contract data requirements list items.
- We have simplified the evaluation process consistent with a "best value" approach to source selection.
- And, realizing we cannot eliminate all risk in the program, we have tried to optimize risk when appropriate. The underlying philosophy is that we are buying more than just an aircraft, we are also buying a company and a 20-year relationship.

Conclusion

Considerable progress has been made on this program in a very short amount of time. However, we still have a lot to do prior to achieving contract award and having aircraft delivered. Proposals are due in August, the TEUE and the Source Selection Process will begin in September, and contract award is targeted for February 1993. Thanks to the support of some real professionals, the program is on schedule and everything that can be done will be done to make sure it stays that way. IIIII

LaRC Results

(continued from page 36)

particular tasks, a program addressing stereo 3-D pictorial displays from a comprehensive standpoint has not been evident. The Army/NASA LaRC Display Technology Program initiated such a program in 1988. The program addressed human factors issues and display technology aspects, as well as flight display applications. A summary paper detailing the research results in this area was presented at the 1990 Army Aviation Electronics Symposium. The paper presents guidelines for the application of stereopsis cuing to enhance pictorial displays. Recent results within this effort correct for head movement effects, which can seriously distort the depth information embedded in stereo 3-D displays. An algorithm has been developed to provide parallax corrections for head movements, based on head positioning sensor input data, to the lateral disparity calculations used to generate stereo displays, and an experiment was conducted to verify the accuracy of the algorithm.

Lighting evaluations of a full-color Liquid Crystal Display (LCD) have been completed within the Aircraft Cockpit Ambient Lighting Simulation System. LCD displays are the leading flat panel candidates for CRT replacements within avionic cockpits. The color LCD exhibited no washout viewing problems under the lighting conditions examined, and the completed study will directly impact the specifications for the "all-glass cockpit" upgrade for the Space Shuttle Orbiters.

Conclusion

To achieve the needed advancements in technology for the 21st Century cockpits, continued research is required by both industry and government. This research must be performed in both technology development and display concepts and application guidelines arenas. The joint Army/NASA LaRC Display Technology Program continues to make contributions in both. IIIII

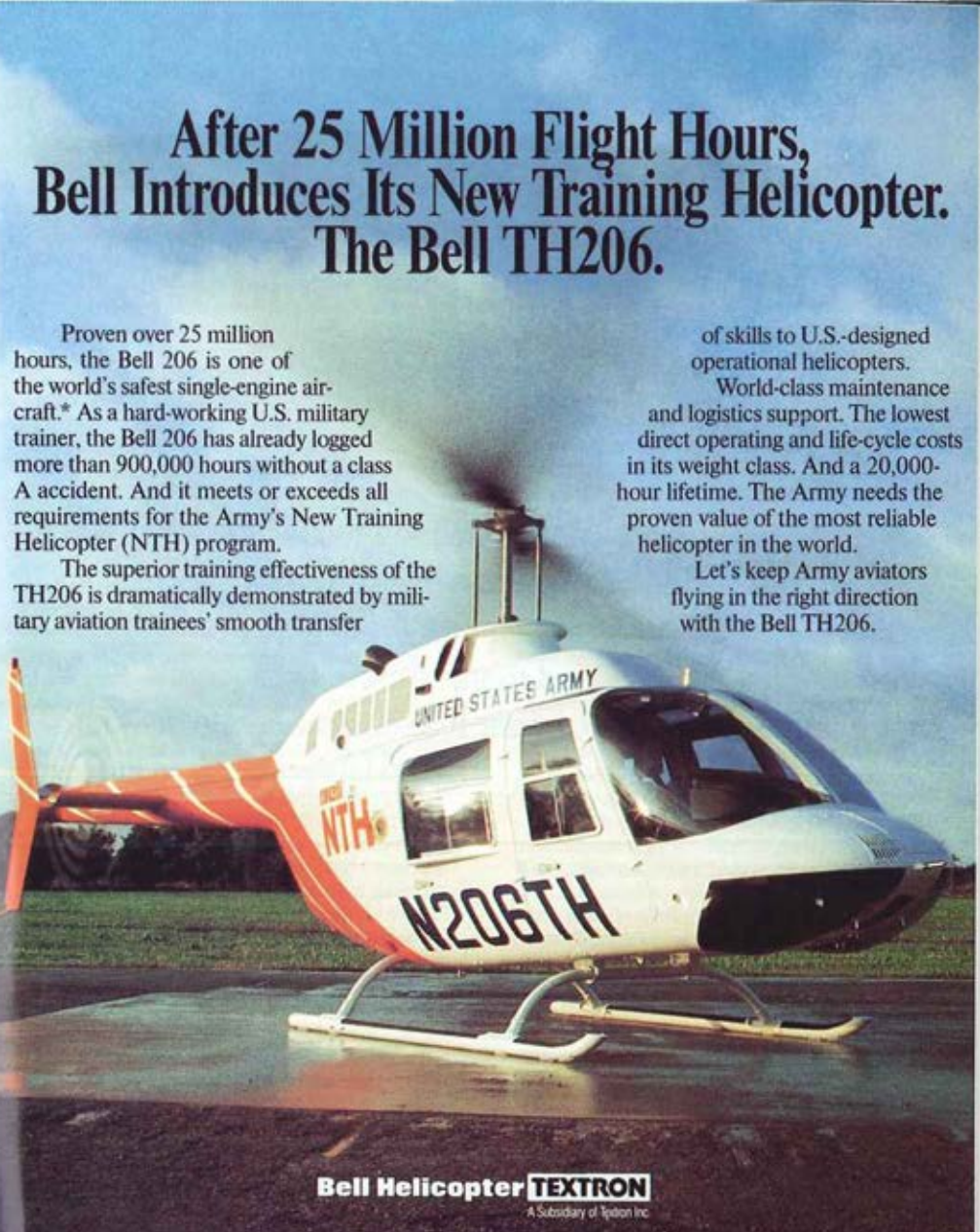
After 25 Million Flight Hours, Bell Introduces Its New Training Helicopter. The Bell TH206.

Proven over 25 million hours, the Bell 206 is one of the world's safest single-engine aircraft.* As a hard-working U.S. military trainer, the Bell 206 has already logged more than 900,000 hours without a class A accident. And it meets or exceeds all requirements for the Army's New Training Helicopter (NTH) program.

The superior training effectiveness of the TH206 is dramatically demonstrated by military aviation trainees' smooth transfer of skills to U.S.-designed operational helicopters.

World-class maintenance and logistics support. The lowest direct operating and life-cycle costs in its weight class. And a 20,000-hour lifetime. The Army needs the proven value of the most reliable helicopter in the world.

Let's keep Army aviators flying in the right direction with the Bell TH206.



Bell Helicopter TEXTRON
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*According to National Transportation Safety Board data.

Army Aviation and the Helicopter III: Utility Helicopters in the Korean Conflict

By Dr. John W. Kitchens

The Korean Conflict was the first war in which helicopters played a significant role. The rugged terrain and the primitive road system of the Korean peninsula caused there to be a tremendous need for aircraft—especially aircraft that could operate without airfields. During the course of that war, helicopters were used extensively, not only for evacuating wounded soldiers, but also for transporting supplies to isolated outposts, observation and reconnaissance, and other purposes.[1]

As I have shown in the first two articles of this series, the Army Ground Forces investigated the potential uses of helicopters during the latter part of World War II and first formally stated requirements for rotary wing aircraft in the Stilwell Board report of 29 May 1946. The Army continued its tests and studies, trained helicopter pilots and mechanics, and conducted experimental missions from 1947 through 1949. An Army Field Forces Board No. 1 study report dated 16 November 1949 stated that the Army had requirements for five types of helicopters of various sizes and for various purposes.

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Several factors hampered the Army's acquisition of the helicopters it needed. First of all, defense budgets declined drastically during the late 1940s. Next, some of the helicopters that the Army required were not available. Flying crane and heavy cargo helicopters, for example, were being planned and designed but were not in production, and light cargo helicopters were only beginning to be produced in limited quantities.

During that period, moreover, other military services as well as a few civilian companies were acquiring all types of helicopters as fast as they could be produced. The Marine Corps was developing and implementing the concept of vertical envelopment, and the Coast

Guard was increasing its acquisition and use of helicopters for land and sea rescue.

Although the Air Force (as the Army Air Forces) had led the military services in helicopter development during the war, it had become much less interested in rotary wing aircraft by 1950. The Air Force acquired and used helicopters for search and rescue operations and continued to conduct some cargo helicopter testing, but it did not give high priority to helicopter development during the early years of the Cold War. An increasingly widespread attitude in the Department of Defense, and especially in the Air Force, was that the only conceivable future war would be the big one—a nuclear conflict between the United States and the Soviet Union. For such a confrontation, many believed Army helicopters, or even an Army well trained and well equipped for a major ground war, would not be essential. For testing, development, and procurement of its aircraft, as well as for training its aviators and mechanics, the Army was dependent on the Air Force, whose leaders believed they had far more important concerns than Army helicopters.

Finally, the Army's proposed helicopter program was hampered by the National Security Act of 1947 (which had created an independent Air Force), the Key West Agreement of 1948, and the Joint Army Air Force Adjustment Regulations 5-10-1 of 1949. These documents limited both the functions and size of Army aircraft. The weight of Army helicopters was not to exceed 4,000 pounds when empty, and the missions of Army aircraft were effectively limited to observation and reconnaissance, local messenger and courier service, emergency wire laying and evacuation, and limited aerial resupply and photography.

Although additional tasks were not explicitly precluded, other aerial functions, including non-emergency courier, messenger, evacuation, supply, photography, and wire laying missions were assigned to the Air Force. Since the Air Force controlled aviation procurement and training for the Army, it could interpret in its favor any vague aspects of existing regulations regarding the missions and functions of Army Aviation.

When the Korean War began on 24 June 1950, the Army had 56 helicopters in its inventory; 52 were H-13B Sioux acquired in 1948 and 1949, and four were older model YH-13As, the first of which had been acquired in early 1947. The YH-13 was previously designated "YR-13" but, in 1948, the Army as well as the Air Force changed the helicopter letter designation from "R" to "H". The H-13 was the first Army aircraft named for an Indian tribe. After 1948, most Army aircraft were named for Indian tribes or Indian leaders. This practice was incorporated into Army regulation No. 70-28 from 1976 to 1988 and has continued as a tradition since then.

In June 1950, the Army had 1,155 fixed wing aircraft. By the end of the Korean Conflict, most of these aircraft had been phased out, but the Army had acquired around 2,000 L-19 Bird Dogs and over 100 L-20 Beavers. Notwithstanding this large number of L-19s, the Army's inventory of fixed wing aircraft only doubled during the Korean Conflict, while the number of helicopters increased by over 14 times, to 807. Although the helicopter era of Army Aviation had not arrived in June 1950, the Korean War definitely hastened its coming.

Insofar as I have been able to determine, there were no Army helicopters in Korea when the war began on 25 June 1950. The Air Force had a few Sikorsky H-5 (formerly R-5) helicopters there, and the first one was lost as a result of enemy fire while on a rescue mission on the second day of the war. On 16 July, several more Air Force helicopters arrived; these were organized as Detachment F of the Third Air Rescue Squadron.

In August, all Air Force rescue helicopters in Japan were ordered to Korea. Although intended primarily to rescue downed pilots, there were fewer calls than expected for this purpose and, conversely, far more calls than expected to evacuate wounded—especially after the United Nations forces began their offensive on 15 September.

As a result of the Air Force's successful experiences in the aeromedical evacuation

A Bell Helicopter H-13 Souix.

of airmen and soldiers during the first few weeks of the war, Eighth Army leaders became interested in expanding this function and sharing in its execution. The Army had few helicopters in the Far East, however, and also lacked experience in aeromedical evacuation. In August of 1950, in a schoolyard in Taegu, Korea, Air Force pilots demonstrated their techniques and procedures to senior Army representatives. The following month, the Eighth Army requested 50 helicopters for aeromedical evacuation, and both the Eighth Army and the Surgeon General began developing Army aeromedical evacuation procedures.

The Bell H-13 Sioux was by far the most widely used Army helicopter during the Korean Conflict. The B model H-13 in the Army inventory in 1950 was equipped with wheeled gear and a 200 h.p. Franklin engine. During 1951, the Army acquired over 70 D models. The D model had a skid undercarriage, stripped rear fuselage, and side stretcher carriers; it was a two seat aircraft with a single set of controls and a gross weight of 2,400 pounds.

New Army H-13 acquisitions from late 1951 until the end of the Korean War were E models. The E model was essentially the same as the D model except it had three seats with dual controls and a gross weight of 2,500 pounds.

The H-13 could fly approximately 60 miles without refueling. When outfitted for medical evacuation, it could carry two litter patients; under exceptionally good flying conditions, it could carry one ambulatory patient in addition to the litter patients. At the time of the armistice ending the conflict in July 1953, the Army had 460 H-13s (of which 405 were E models) in its inventory.

The Army first tested the Hiller H-23 Raven in 1950 and then ordered 100 H-23As, most of which were delivered in 1951. The H-23 made use of Stanley Hiller's simplified control system consisting of a hanging control column and "Roto-matic" aerodynamic control systems. The A model, with a 178 h.p. Franklin engine, proved to have insufficient power for aeromedical evacuation missions in Korea.

In mid-1952, the Army began acquiring B

model H-23s. The major modification was that the B model had a skid/wheel undercarriage and a 200 h.p. engine. At the end of the Korean Conflict, there were 262 Hiller H-23s (78 A models and 184 B models) in the Army inventory.

CPT Marcus L. Sullivan was reportedly the first Army aviator to fly a helicopter in Korea, at Ascom City in late 1950. The first Army helicopter unit in Korea, the 2nd Helicopter Detachment, commanded by CPT Albert C. Sebourn and consisting of four aviators, four mechanics, and four H-13s, arrived on 22 November 1950. The detachment was initially assigned to a light aviation maintenance company at Taegu.

During the early winter of 1950, the men of the 2d Detachment assembled their helicopters, fitted litter platforms on the skid assemblies of the aircraft, acquired litters from the Navy and mounted them on their aircraft, and also found time for some training. Additionally, they devised methods for enclosing and insulating the litters, and even heating the litter pods with aircraft exhaust.

Though far from ideal, the improvised pods and litters served fairly well until a litter mount manufactured by Bell Aircraft for the H-13B arrived in July 1951. The D and E model H-13s, which arrived later, were better equipped for carrying litters, but Army aeromedical aviators and mechanics continued making field modifications throughout the war.

When the 2nd Helicopter Detachment became operational on 1 January 1951, it was attached to the 8055th Mobile Army Surgical Hospital (MASH) at Ascom City, near Seoul, and began evacuating wounded soldiers from north of the Korean capital. The first Army aeromedical evacuation mission was executed by 1LT Willis G. Strawn and 1LT Joseph L. Bowler on 3 January 1951. Less than two weeks later, on 14 January, Army medical evacuation helicopters came under enemy fire for the first time when the detachment evacuated 23 wounded soldiers from a surrounded forward position.

The 3rd and 4th Helicopter Detachments, each with eight men and four H-13Bs, arrived in Korea in January 1951. The 3rd became operational with the 8076th MASH at Sangju on 25 January, but the 4th was diverted to Chunchon for extensive repair and replacement of parts. It was later attached to the 1st MASH on 9 March.

The 1st Helicopter Detachment reached Korea on 21 February, but Eighth Army headquarters stripped this detachment of its aircraft in order to provide organic helicopters to corps and divisions. Although the detachment was later supplied with Hiller H-23A aircraft, these were also reassigned to other units, and 1st Helicopter Detachment became non-operational in May 1951. The three remaining aeromedical detachments, consisting of 12 helicopters, 12 aviators, and 12 mechanics, conducted the vast majority of the Army aeromedical evacuations during the war.

Helicopters were usually in short supply during the Korean Conflict, and front line commanders often demanded the use of medical evacuation helicopters for tactical missions—especially before they received their own aircraft. In June 1951, it became Eighth Army standing operating procedure that medical helicopters should be used only: "to provide immediate means of evacuating non-transportable and selected critically injured or ill patients needing immediate surgical or medical care not provided by forward medical facilities."[2]

Because of the shortage of helicopters, there was a policy that they should not be employed in missions involving likelihood of danger from enemy action, but this policy was not always adhered to. Generally, if there was a reasonable possibility of completion, a mission was attempted, and the pilot was the final authority on whether a mission could be completed.

The Air Force did not try to prevent the Army from establishing medical evacuation detachments in 1950. The weight of the H-13 was well below the 4,000 pound limit on Army helicopters, the 1949 joint Army and Air Force regulations permitted "emergency" evacuation by the Army, and the need for an expansion of aeromedical evacuation was clear. Furthermore, in an MOU between the secretaries of the Army

A Hiller H-23 Raven.

and Air Force signed on 2 October 1951, the issue of aeromedical evacuation was not specifically addressed. The Army was authorized to use aircraft for: "transportation of Army supplies, equipment, and small units within the combat zone. . . though it is recognized that the Air Force is assigned the primary function of supplying the necessary airlift to the Army."

Only a month after the agreement was signed, however, the question of the Army's use of its helicopters was raised again. The occasion was an urgent request from the Far East Command for 72 additional helicopters for the Army and 50 for the Air Force to be used for re-supply, air drops, and aeromedical evacuation, among other functions. The Secretary of the Army claimed that the above-cited phrase of the 1951 MOU authorized Army aeromedical evacuations, but his Air Force counterpart disagreed. The Secretary of the Air Force maintained that he had not been informed that the Army had organized "evacuation units," and that medical evacuation was the responsibility of the Air Force.

Eventually, the Army and Air Force secretaries, on 4 November 1952, signed a second MOU, which superseded the 1951 agreement. According to the 1952 memorandum, the Army had primary responsibility for specified aerial support functions conducted exclusively within the combat zone. These consisted of control of Army forces; command, liaison, and courier missions; aerial wire laying; transportation of Army supplies, equipment, and personnel; aeromedical evacuation; and artillery and topographic survey.

The 1952 memorandum stated that the Air Force continued to have responsibility for the airlift of supplies, equipment, and personnel from outside the combat zone; for the evacuation of casualties, personnel, and materiel from the combat zone to the outside; and for the air movement of troops, supplies, and equipment in the assault and subsequent phases of airborne operations. According to the memorandum, the combat zone was understood to normally be from 50 to 100 miles in depth. The Army's primary responsibility for the

aeromedical evacuation of casualties within the combat zone was thus recognized almost two years after it had begun performing this role.

During the course of the war, the names of the three original Army medical evacuation units were changed twice. With the second name change in December 1952 (following the Army-Air Force MOU of that year), the units were brought fully under the administrative and operational control of the Surgeon General of the Army and made an integral part of the medical troop list.

The original three medical evacuation detachments, along with a fourth unit organized a month before the cessation of hostilities, were finally all assigned to the 1st Helicopter Ambulance Company in June 1953. Nothwithstanding the name and organizational changes, the units' locations remained remarkably stable after the front line stabilized in mid-1951; one was at Unchon-ni, another at Sochon-ni, and the third at Tochon-ni until January 1953, and then at Hugong-ni for the remainder of the war.

From early 1951 until the armistice on 27 July 1953, over 19,000 United Nations casualties were transported by helicopters from the battle area to surgical hospitals. Although all services participated in this accomplishment, the Army played the major role. The utility helicopters assigned to the Army medical evacuation units were by far the most important in the performance of this mission. More than 90 percent of the aeromedical evacuations from the battlefield were conducted by these three units, with a total of 12 helicopters. Their performance gave new meaning to the term "Angels of Mercy."

Some casualties were evacuated by organic Army utility helicopters assigned to divisions and corps. Most of these evacuations occurred during periods when medical helicopters were not available. During the battle for "Old Baldy", for example, the 7th Division helicopters conducted most of the aeromedical evacuations. Also, as I will show in the next article of this series, during the final months of the war, some casualties were evacuated from battle areas by H-19 cargo helicopters.

Most utility helicopters in Korea were involved in less spectacular activites than evacuating casualties. The rugged terrain and poor road system that caused aeromedical evacuation to be so necessary also caused division and corps commanders to require helicopters for observation and reconnaissance, command and control, and supply of food and ammunition to isolated outposts.

Before the arrival of H-19 helicopters in early 1953, the H-13s and H-23s performed missions that aircraft of that size were never intended to perform. One of the more interesting of these missions consisted of the rescue of 200 men of the 3rd Division stranded by the rapidly rising Imjin River in July 1952. On the same day, the organic helicopters of the 40th Division evacuated almost 1,000 men isolated by the floodwater of the Pukhan River.

During the Fall of 1952, LTC Charles W. Matheny, Jr., the 25th Infantry Division aviation officer, organized and participated in two resupply operations in support of front line infantry units. In the first of these operations, one H-13 was used for seven days to airlift 20,000 pounds of supplies, equipment, ammunition, water, and food to support a combat engineer unit constructing a secondary defense line on a mountain top. In another operation during the same time period, other H-13s airlifted over 17,000 pounds of supplies plus 25 passengers in support of an infantry unit on another mountaintop, 800 yards behind the MLR. This mission lasted 10 days; two H-13s were lost but were replaced immediately and the operation continued.

A total of 70 utility helicopters (not including those for medical detachments) were authorized for the Eighth Army in early 1951, but 20 was the maximum number of organic helicopters on hand in the Army's operating units at any time during that year. During the last four months of 1951, the average number of utility helicopters in each division and corps was two. After new shipments of H-19s arrived in early 1952, the average rose to three. From January 1953 until the end of

hostilities in July of that year, the average was four. In January 1953, 99 non-ambulance helicopters were authorized for Eighth Army units; 68 were on hand, but 15 of those were inoperable.

The major reason so few helicopters were available was that manufacturers could not keep up with the rapidly increasing demand during the Korean Conflict. Also, some early models, specifically the H-13B and H-23A, were not appropriate for use in Korea because of insufficient power and other defects.

The shortage of helicopters in Korea was exacerbated by the related problem of shortage of spare parts. Manufacturers were unable to produce adequate quantities of parts and often had insufficient empirical data for determining the quantities required. Even when key parts were available in the United States, shipments to Korea were often delayed at various points in the supply chain, partly because spare parts for Army aircraft were handled through the Air Force supply system. Not only were helicopter parts often lost in this vast network, but the Air Force generally placed a low priority on anything relating to helicopters.

Nothwithstanding the shortage of aircraft and of parts, utility helicopters performed services during the Korean Conflict that caused them to be widely recognized as absolutely essential in modern warfare. The widespread realization of their value is reflected in the observation of one officer in Korea near the end of the war that any military force without helicopters is "back in the days of the Civil War."[3]

[1] The first two articles of the series were published in the May and October 1991 issues of ARMY AVIATION Magazine.

[2] *Special Problems in the Korean Conflict* (Eighth U.S. Army, Korea, 1952) p. 91.

[3] Quoted by R. Earl McClendon, *Army Aviation, 1947-1953* (Maxwell Air Force Base, 1954), p. 37.

Training for the Future

(continued from page 39)

Main Battle Area. The ground brigade plans and controls these engagements, but the attack company commander executes them. The benefits derived from planning and executing detailed JAAT missions regularly are immense.

Total Army Readiness

Supporting Total Army Readiness leads to a fourth training challenge. National Guard and Reserve units played a key role in all aspects of the victory in Southwest Asia. Given the downsizing of the Army, Guard and Reserve units will play an even larger role in any future conflict. Army Aviation must do a better job of integrating these units into its training plans. The Aviation Brigade in the 24th ID(M) has done just that by establishing contact with the 1-151 AHB of the South Carolina National Guard. Initial contacts have led to an association that promises to be very beneficial to both units. The Aviation Brigade has gained a unit to help evaluate its attack battalion during an ARTEP planned for this summer. The 1-151st will also aid the Brigade by manning TOC and game board positions during selected Division CPX, MAPEX, and FTX events. The 1-151st gains the opportunity to fly VICTORY FOCUS and JAAT missions with the Brigade. Additionally, their chain of command will be exposed to the planning, coordination, and fast pace required to support Division level operations as they participate in the events listed above.

Conclusion

We in Army Aviation must take every opportunity available to assure aviation integration into the ground scheme of maneuver. With this philosophy, the Aviation Brigade has integrated aviation throughout the 24th ID(M) training calendar. Very few training events go by without input from the aviation community.

Throughout the process of issuing a Division operations order, from concept to finished product, there is continuous aviation input on how to exploit the capabilities of Army Aviation. Given the key role played by the 24th ID(M) as a member of the Rapid Deployment Force, training to the four training challenges discussed above provides the foundation for success. The final challenge for this Aviation Brigade lies in meeting the training challenges of the future and maintaining its level of excellence and status as a key player in the 24th ID(M).

What Makes a Good Aviation Safety Program?

by Brigadier General R. Dennis Kerr

As the new Director of Army Safety, this is my first opportunity to contribute to ARMY AVIATION Magazine. During the past few months, I've done a lot of travelling. And whether I'm talking with students at a pre-command course or with brigade and division commanders and sergeants major in the field, I'm asked the same basic question: "What makes a good aviation safety program?"

Leaders want to know how to improve or increase safety awareness in their organizations. Unfortunately, safety cannot be issued like fuel or ammo; it evolves through command leadership, designated safety personnel, proper risk management, training, and a well-defined aviation accident prevention plan.

Safety awareness involves many elements and is like morale—it's caught from the environment. Looking into those units that have successful programs, I have found that they all focus on these five important areas:

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Command Leadership

Of a commander's many policy letters and memos, none is more important than his safety philosophy statement. The objective of safety is to help units protect warfighting capability through accident prevention. And the degree of importance the commander places on safety will determine the priority it gets throughout the unit. The commander's safety philosophy must represent his style of leadership and must be written in his own words and backed by action.

Command involvement is paramount to a successful safety program, and safety must be integrated into every aspect of a unit's activities. Preventing an aircraft accident only to lose some crewmember in a POV accident just doesn't accomplish the Army's mission. Cheerleading from the sidelines is not enough; leadership at this

position demands personal involvement. Mission briefings, After Action Reviews, and flight line visits are important. Being involved in drivers' training is another vital command action. And commanders should review safety statistics at every command and staff meeting, not just at monthly or quarterly safety meetings.

Quality leadership is a 24-hour-a-day process. Commanders can use a variety of leadership techniques, but the following command actions are key to success:

- Establish performance criteria
- Ensure all personnel are aware of the performance criteria
- Ensure training is conducted to standard
- Ensure operations are by the book
- Take immediate and effective action against deviations from established performance criteria.

Designated Safety Personnel

The commander is the safety officer and needs to know what safety inspections, training, and reports are required. But a commander cannot do it alone. He must have a designated full-time Aviation Safety Officer (ASO), who should be a seasoned warrant officer who has the warfighting credentials to serve as a pilot-in-command in the unit. A good safety NCO is also critical. Additionally, every other NCO right on up to the command sergeant major must be involved in safety. They also have a shared responsibility in helping to protect the force, and without their leadership, senseless accidents will continue.

The advice of the ASO and safety NCO can be just as important as that of the flight surgeon or chaplain. Thus, designated safety personnel must fully understand their responsibilities and receive the necessary training to help ensure competency in their positions. Additionally, safety personnel cannot be effective if they are buried under a rock. They need access to and visibility with the commander to reinforce the importance of safety in the unit's missions.

Risk Management

Risk management should be the cornerstone of any safety program. This five step cyclic process—identify hazards, assess the hazards, make a risk decision, implement controls, and supervise—can be easily integrated into the decision-making process. Used in a positive command climate, risk management can become a mindset that governs all unit missions and activities.

In addition to setting the example by properly applying risk management principles, commanders must ensure that every unit member has a solid understanding of risk management and can apply the principles effectively. Safety is about preventing accidents, and if practiced by the command and every soldier in the unit, risk management will enhance the mission and help prevent accidents.

But we're missing the boat on risk management training. Most senior leaders are using risk management properly, but it's the young officers and NCOs who must apply risk-management principles in the cockpits, on the flight lines, and in the maintenance hangars daily. At the Army Safety Center, we're working with TRADOC to integrate risk management into the schoolhouse and our training management doctrine so that we can teach the specifics right down to platoon and squad level.

Training

A successful safety program goes back to the basic two-part safety equation: the individual and the leader. Soldiers must be trained to established standards and held responsible for their technical and tactical competence and knowledge of regulations. They must be trained to effectively identify hazards and manage risks, and they must have the self-discipline to consistently perform tasks to standard. And leaders must be ready, willing, and able to enforce standards. For anything less than by-the-book performance, leaders must make on-the-spot corrections and require that soldiers receive remedial training if necessary.

Aviators in units with good safety programs receive individual training to increase capabilities in basic tasks while minimizing limitations in accomplishing required aircrew training manual tasks. Aviators in these units demonstrate a high degree of

"Last year, we killed 372 soldiers. We had 50 Class A aviation accidents and severely damaged 1,500 ground vehicles. Total accident costs for FY 91 exceeded 500 million dollars. Since we don't budget for these kinds of losses—who's in trouble?"

professionalism and accept responsibility for policing their own.

Units with good safety programs also carefully plan flight missions and select crews. Crew coordination training is part of every mission. And instructor pilots and instrument flight examiners enforce the safety and standardization program and coordinate for immediate and effective action to be taken against violators of flight discipline. NCOs in these units are trained to perform maintenance operations by the book and require that their mechanics perform to standard, ensuring aircraft are mission ready.

Accident Prevention Plan

Units must have a clearly defined aviation accident prevention plan that formally establishes the safety program within the unit. That plan should outline personnel responsibilities and provide implementation instructions, goals, and methods the command will use to monitor the success of the safety program. The plan should be based on the philosophy that accident prevention is an inherent function of leadership and should be part of the commander's yearly training guidance.

The accident prevention plan should require at least monthly aviation safety meetings where current safety issues and lessons learned can be discussed among unit members. A requirement for a semiannual aircraft accident prevention survey should also be included. The commander can use information obtained from the survey to determine the effectiveness of the accident prevention plan. And it's also a good idea to include rewards for good results—such as a day off for no accidents for 90 days.

Following one of my recent briefings to students at the pre-command course at Ft. Leavenworth, KS, a student wrote on his critique sheet: "Sending the Commander or anyone from the Army's Safety Center all the way to Kansas was a complete waste of his time and mine! If we do not know all we need to know about safety by now—we are in trouble!" Let me assure you, that young leader *is* in trouble if he thinks he knows all he needs to know about safety. Last year, we killed 372 soldiers. We had 50 Class A aviation accidents and severely damaged about 1,500 ground vehicles. Total accident costs for FY 91 exceeded 500 million dollars. Since we don't budget for these kinds of losses—who's in trouble?

As a former aviation brigade commander and as the Director of Army Safety, I can tell you I do not know all the safety answers today. But I really believe that protecting the force requires command involvement, leadership by designated safety personnel and every NCO in the unit, proper risk management, training, and a well-defined accident prevention plan. These are the key elements to a good aviation safety program. Safety is awareness; being safety conscious will not impede training or readiness, it will enhance it.

Our units that train to standard and put safety in the mission-essential task list business are defining the programs with zero defects—that translates to no memorial services or major accidents. We are fortunate to have many organizations that fall into this elite category. Our challenge is for our brigades and divisions to follow this fine example in protecting the force. IIIII

Controlling the JAAT: The Attack Company Commander's Place On the Battlefield

by Captain Robert Douthit

"A synchronized, simultaneous attack by attack helicopters, close air support, and field artillery against an enemy force" is how FM 1-112, *Tactics, Techniques, and Procedures for the Attack Helicopter Battalion* defines Joint Air Attack Team (JAAT) operations.

Although brief, it is reasonably thorough in its coverage. It discusses planning considerations, employment methods, and the conduct of operations. What the FM does not adequately address in detail is the attack company commander's role in the conduct of JAAT operations. I would like to present two points. First, the attack company commander must execute duties as the Air Battle Captain. Second, the execution of these duties require that the attack commander fly in a scout aircraft.

JAAT is simply the modern application of the principle of war known as *mass*: concentrating combat power at the decisive place and time. Initially, artillery fires are directed onto the target area to Suppress Enemy Air Defense (SEAD), destroy targets, and disrupt enemy command and control. As with most aspects of combat operations, the length and location of the SEAD is based on Mission, Enemy, Terrain, Troops, and Time Available (METT-T). Once the SEAD starts, attack helicopters should begin the ingress to their initial battle positions. They should be in position to bring precision fires onto the target before the end of the initial SEAD. Depending on the enemy situation, Close Air Support (CAS) or attack helicopters will then engage the target either sequentially or simultaneously, using precision munitions (Hellfire, TOW, or Maverick), rockets, bombs, and 30 millimeter cannon fire to engage and destroy targets. A rotation scheme is developed for all three assets to continue engaging the target areas. The exact sequencing of these assets requires a great deal of situational awareness. The intent is to keep the enemy

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off balance, render him incapable of self defense, and destroy his armored forces.

The actual sequencing of these assets into the target area is the responsibility of the Air Battle Captain (ABC). The Air Battle Captain—is he a mythical character who slays dragons and possesses strength well beyond that of mortal men? FM 1-112 makes no mention of this hallowed individual, but he must exist. Another principle of war, *Unity Of Command*, demands that he exist. He is the individual who coordinates and directs this massive application of firepower known as JAAT. He must effectively orchestrate the attack, and through synergism, inflict the greatest losses possible on the enemy. An experienced Air Battle Captain can coordinate "times-on-target" such that there is effectively no break in fire on the target as different assets engage the target area.

Chapter 3 of FM 1-112 lists several responsibilities of the attack company commander. Among them:

- task organize the company
- coordinate indirect fire support and close air support
- control the Joint Air Attack during company-level JAAT operations
- control company fires.

Based upon the requirements of the ABC and the Attack Company Commander (ATKCDR), I would assert that these two individuals must be the same person. That is not to say that other members of the company should not be "ABC qualified". Certainly the platoon leaders should be capable of leading in the ATKCDR's absence. In fact, as many aviators as possible should be capable of controlling the JAAT. However, ultimate control of the JAAT is the ATKCDR's responsibility. According to FM 1-112 and good military common sense, the attack commander "fights the battle". For the remainder of this article, the Air Battle Captain is the Attack Company Commander.

Having decided that the ATKCDR must be the ABC, I would further assert that he must conduct his duties from a scout aircraft and not an attack aircraft. In order to effectively coordinate the JAAT, the ATKCDR must see the battlefield for himself prior to the beginning of SEAD and the imminent arrival of the attack helicopters and CAS fighters. This requires him to come forward to view the target area to verify his scouts' reports, confirm sectors of fire, and check for the best fighter approach angles. The JAAT concept should not change radically whether the unit is AH-1 or AH-64-equipped. In AH-1-equipped units, the ATKCDR most often fights from an OH-58C. However, it has been my observation that in AH-64-equipped units, that is not the case. Until an advanced scout aircraft is fielded to AH-64 units, the ABC must fight from an AH-64 during night operations. Only the OH-58D comes close to the AH-64 in providing the commander greatly needed night optics required for controlling night attack operations, and this aircraft is not currently fielded to AH-64 units. However, most JAATs are presently executed during daylight hours. Until the Air Force fields an aircraft better suited to high-threat night CAS operations, this will remain the case. Therefore, I will limit the concerns to day operations.

Two of the most common reasons given for the ABC fighting from an AH-64 is the speed of the aircraft and the high-powered Target Acquisition and Designation System (TADS) available. It is true that the AH-64 is considerably faster in flight than the OH-58C. However, considering the OH-58C's shorter run-up time, quicker Forward Area Refuel Point (FARP) turnaround, and greater accessibility in terms of landing areas, the ABC might find it just as timely to fly in an OH-58C. Additionally, raw speed is of questionable value once established in the target area.

The strongest case for the ABC to operate from an AH-64 is the TADS and the enhanced view of target area that it provides. The highest powered optics available for the OH-58C are binoculars, if the ABC chooses to use them at all. It is no secret that the OH-58C, having no optics with which to see the battlefield, is not the best answer in terms of providing scout support to AH-64s. In fact, the OH-58C is not even a good answer considering the

technology available today. However, for day JAAT operations, the OH-58C is still a better platform than the AH-64 for the ABC to control the JAAT.

While the AH-64's optics will not require the ABC to get as close to the target area as his scouts, he will probably have to approach the target area without an artillery SEAD. He will also present a much larger signature than a scout as he effects his coordination and views the target area. Additionally, JAATs are usually conducted against large and lucrative targets that should already be under observation by other elements. The obvious answer would be an organic scout aircraft with at least some kind of optics package for the ABC. Such an aircraft is not presently found in attack helicopter battalions.

There are other concerns with the ABC fighting in an AH-64. One is the limited visibility from the cockpit due to structural limitations. The AH-64 does not provide adequate visibility towards the rear of the aircraft. While the ABC is shifting the SEAD or controlling company fires, he must be able to confirm fighter run-in headings and clear them to desired targets. This may be difficult if not impossible in an AH-64 depending on the run-in headings of the fighters and the orientation of the ABC's aircraft. Constant maneuvering of the aircraft to maintain visual contact with attacking fighters will prevent the ABC's aircraft from effectively engaging targets.

That brings up the strongest argument against the ABC fighting from an AH-64; that is the unacceptable loss of firepower from the attack company by utilizing the AH-64 as a command and control platform and not as a tank killer. A common response to this view is that armor company commanders and mechanized infantry company commanders fight from their M-1 Abrams or Bradley and not an M-577. The analogy is not quite appropriate. These commanders fight from those vehicles for tactical mobility and survivability. It would be foolish to think that an M-577 could maneuver and survive during company-level combat operations. While M-1 Abrams and Bradley commanders can skillfully adjust indirect fires and simultaneously control the fires of their company, accurately directing CAS fighters to targets from their M-1 tank or Bradley may be difficult while they are engaged in a direct fire battle. When they do perform all these duties, their particular vehicle will probably not be utilizing its major weapon system to its fullest extent. However, in these companies, that would only be one vehicle out of 14. In an attack company that would be one aircraft out of five or six, almost 20% of the company's combat power.

The method by which the ABC controls the JAAT varies according to Mission, Equipment, Time, Terrain, and Troops (METT-T). Even if the ABC delegates certain duties, such as having the scout platoon leader initiate the SEAD or having the Air Force Forward Air Controller (FAC) direct the CAS fighters, he is ultimately responsible for maintaining the split-second timing that makes a JAAT so successful. It is highly unlikely that he will have time to accurately engage targets with Hellfire and rockets if he is to perform his duties as the Air Battle Captain.

This is a significant issue confronting attack company commanders today. The final decision concerning which aircraft to use must ultimately be METT-T-driven. There may in fact be some overriding reason that the ATKCDR must perform his ABC duties from an AH-64. The AH-64 has both speed and optical advantages over the OH-58C. Alternately, the OH-58C offers better peripheral visibility and a smaller target signature for the enemy to acquire. Ultimately, it is the requirement to orchestrate the JAAT and maximize combat power that demands the commander fight from an OH-58C during day JAAT operations. There are a number of inexpensive aircraft that would make much better ABC aircraft than the OH-58C. However, in these days of drastically shrinking budgets, it is highly unlikely that there will be any change to the status quo. So Attack Company Commander, get out of that multimillion dollar tank-killer, strap on something that burns less fuel than an AH-64's APU, and control the JAAT!

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Reserve Forces: A New Beginning

by Major James A. Houston, III

"Twice the citizen" soldiers will soon have a single chain of command providing their leadership. Aviation units in particular stand to benefit from the activation of the U.S. Army Reserve Command (USARC), specifically in the areas of force modernization, stationing, and facility construction.

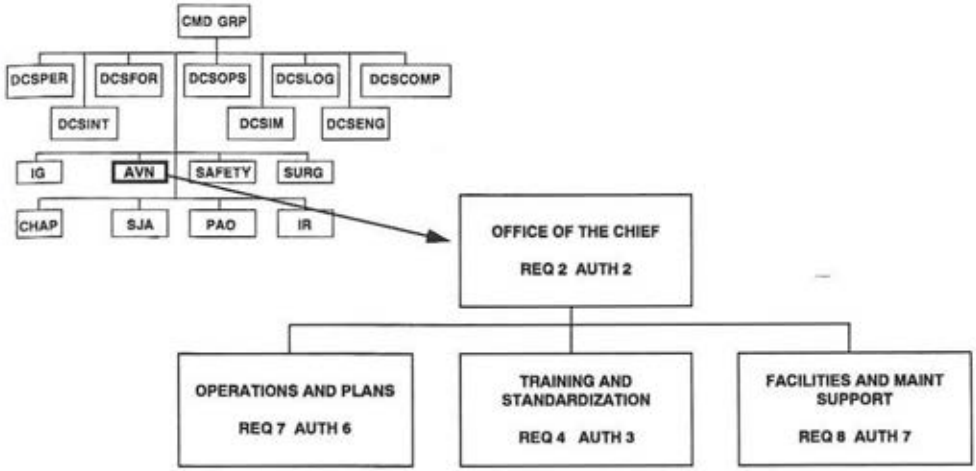
On the 18th of October, 1991, the USARC, a major subordinate command under Forces Command (FORSCOM), shed its provisional status and became a full team player. The USARC, operating provisionally since October 1990, has planned the orderly transition of functions, and command and control of assigned U.S. Army Reserve (USAR) units from the Continental U.S. Armies (CONUSA). The execution of this plan is already taking place for some units. The new command is the result of a Congressional mandate to the Department of the Army to increase the role of the Chief, Army Reserve (CAR) in the Command and Control of USAR units and the management of USAR-specific resources. Upon completion of the transfer of functions from the CONUSAs in October 1992, the USARC will provide consolidated command authority for all USAR units reporting directly to the FORSCOM Commander.

The USARC is commanded by MG Roger W. Sandler, who serves as the CAR and reports directly to the FORSCOM Commander. MG Sandler also serves as the Deputy Commanding General, Reserve Affairs, FORSCOM. MG Sandler's primary duty station is in Washington, D.C. The Deputy Commanding General, MG Max Baratz, oversees the daily operation of the headquarters, which is located on Forts McPherson and Gillem, in Atlanta, GA. The CAR Command Sergeant Major Collin L. Younger, is also dual-hatted as the USARC CSM.

The command's responsibilities extend to all Army USAR units assigned to FORSCOM. The CONUSAs will remain

MAJ Houston is an Aviation Staff Officer, United States Army Reserve Command (USARC), Fort McPherson, GA.

AVIATION OFFICE ORGANIZATION



TOTAL: REQUIRED 21 AUTHORIZED 18

responsible for training, operations, mobilization, and deployment functions. The USARC provides centralized control of resource allocations, including funding, to assigned USAR forces. This will improve the effectiveness and efficiency involved in the distribution of those allocations. To assist the command in managing resources the USARC is developing a winning staff comprised of a mix of 70 percent civilian employees, 21 percent Active Guard and Reserve (AGR) soldiers, and nine percent Active Component soldiers. By October 1992, the staff will mature to 814 personnel.

Initially, the USARC's primary focus was to identify and work through systemic problems while establishing a new command. To meet the needs of USAR aviation forces, the USARC Aviation Office was formed. The Aviation Office works directly for the Chief of Staff. The formation of the office enables the USARC to focus a concentrated effort towards improving all aspects of aviation. The Aviation Office provides the command a single voice and point of contact for both information and responsibility in aviation matters.

The Aviation Office has 18 authorized positions and is led by Colonel George F. Francioni. COL Francioni serves as the principle advisor to the commander and staff on all aviation matters within the USAR aviation program. He provides guidance and leadership to approximately 7,000 aviation and aviation-related soldiers in USAR Troop Program Units (TPUs)

To manage the USAR aviation program, COL Francioni has three divisions within the Aviation Office. The Operations and Plans Division manages current USAR Aviation Program operations. This division manages such diverse actions as special mission requests, military aviation assistance to counter-drug operations, and requests for flight orders. The division manages aviation funds to include a flying hour program of 90,000 hours at a cost of over $40 million. Current and future aviation program planning needs and requirements are also prepared by this division. A major

action for the division has been planning for the conversion of two AH-1 Attack Helicopter units to the AH-64 Helicopter configuration.

Another area of interest that the Operations and Plans Division is involved with is that of equipment acquisition and distribution. The fielding of night-vision goggles and the distribution of U-21 and UH-60 aircraft to USAR units are examples. The efforts of this office toward purchasing and fielding the C-12F aircraft will bring a new era to reserve aviation.

The Standardization and Training Division is responsible for developing and implementing USAR standardization and training policies. One facet of the division's duties that reaches to the individual soldier level is the prioritizing and coordinating of course quotas at both formal and regional schools and training sites. In order to administer the standardization policies for the USARC, Army Regulations 95-1 (Flight Regulations), 95-3 (Aviation: General Provisions, Training, Standardization, and Resource Management), and 140-1 (Mission, Organization, and Training) are being supplemented and revised by the Standardization Division.

The third division in the Aviation Office is the Facilities and Maintenance Support Division. The division is very active in monitoring the material readiness of the Army Reserve's 513 rotary wing aircraft and 47 fixed wing aircraft. The Facilities and Maintenance Support Division is also involved in the Aviation Support Facilities Program. The division is also responsible for overseeing budgeting, stationing, and management for 33 of these facilities.

As the USARC matures, and the functions and responsibilities of command are transferred from the CONUSAs, the aviation community, and the Army at large, will see the cohesive effect the USARC brings to the Total Army Force. The Aviation Office will play a big role in developing that cohesiveness for the Aviation Community. IIIII

CAREER TRACK

If you'd like to take advantage of the Career Track employment referral service, but you're not yet a member of AAAA, the solution is simple: Fill out a membership form and send it in along with your request for a Career Track application. Your ad will run in the next available issue.

Active AAAA members may have a 30-word classified employment ad published in two consecutive issues of ARMY AVIATION MAGAZINE free of charge. Write to the AAAA National Office, 49 Richmondville Avenue, Westport, CT 06880-2000, or call (203) 226-8184 for Career Track applications. Inquiring organizations contact the National Office.

Program Manager, 12 years industry experience. Seek new opportunity in Program Management, Customer Support or Contracts. Have international experience and masters degrees. Immediately available. 91-05-01

Avionics/Electronics technician seeking position working with aircraft avionics and electronics systems. Ten years military aircraft experience. Experience in a variety of bench test equipment. Will work stateside or overseas. 92-06-01

Proven Project Director experienced with training/simulation systems. Government contracting experience. Strong organizational abilities. Excellent communication skills. Held Top Secret clearance. Seek Program/Contract Management position. Available October 92. 92-06-02

Data Automated Tower Simulator

by Joseph LaBalbo

In July 1991, the U.S. Army Project Manager, Training Devices awarded a contract to Contraves USA for the production of four Data Automated Tower Simulators (DATS). DATS will provide the U.S. Army Aviation Center with a training capability that will challenge any student by realistically recreating both the situations and the environment that they might encounter.

The existing trainers consist of a magnetic board depicting Cairns Army Airfield (CAAF), the student stations, and one instructor position. The magnetic board provides a bird's-eye view of the airfield, and small magnetic aircraft and vehicles are moved by an instructor in response to student commands. The students work from an essentially dead mock-up of a three position Air Traffic Control (ATC) tower. The radios, telephones and instruments are not functional. One instructor initiates the recorded radio messages with a cassette player, manually moves the magnetic aircraft, and supervises the local control position. The other instructor monitors ground and flight data, and reads telephone traffic over the shoulder of the flight data student. To make matters worse, there are two labs crowded into converted projection rooms between the classrooms and the voices from one lab can be distracting for the other. (Of course, anyone can work under ideal conditions!)

Mr. LaBalbo is the DATS Project Director, PM TRADE, Orlando, FL.

A realistic simulation will provide so many advantages that space does not permit a full discussion in this article. First and most importantly, the targets will move in real time. The students will see and react to changing situations as they develop. Secondly, the physical environment of the trainer (equipment, weather, etc.) will make the students feel as though they're really there.

DATS will simulate a typical fixed ATC tower (see Figure 1). The airfield and the immediate environment will be modelled after

". . . this acquisition was planned and implemented to use mostly off-the-shelf hardware and software. Scarce funds and limited time are driving DoD procurement toward nondevelopmental systems."

Cairns Army Airfield to be consistent with the rest of the training curriculum. The out-the-window view will be simulated using Silicon Graphics Iris image generators, high quality commercial projectors, and a high-brightness ellipsoid screen. The field-of-view will be 240 degree horizontal by 40 degree vertical, and provide students with a realistic panoramic view of the simulated airfield. The image will consist of a background scene created by digitizing photographs of Cairns AAF, with computer generated images of aircraft and ground vehicles integrated into the scene. Changes in the time of day, visibility, ceiling and wind conditions may be introduced to enhance the realism of the training environment.

There will be three student positions. The Local Controller is responsible for the separation and sequencing of aircraft in the air or on the runway. The ground controller is responsible for aircraft and vehicle operations on the ground. The Flight Data position accomplishes the important coordination between the tower and other agencies (obtaining clearances, receiving advisories, and so on). Simulated telephones, radios, weather displays, digital radar, and field lighting controls will be included in the fully functional equipment consoles.

The instructors will use three identical consoles for "piloting" aircraft, driving vehicles, and role-playing various agencies for telephone communications. The Motorola host-computer will control most air and ground movements to relieve instructor workload. For most scenarios, only two instructors will be required. There are communications hook-ups to allow the instructors to step into the student area to provide over-the-shoulder guidance. The instructors will be able to stop, freeze and replay the scenarios at any time, and they may take control of any aircraft or ground vehicle at any time. The consoles are the same off-the-shelf Motorola workstations that are used in the U.S. Navy's ATC Proficiency Trainer (Device 15G33), and much of the same software is used.

In fact, this acquisition was planned and implemented to use mostly off-the-shelf hardware and software. Scarce funds and limited time are driving DoD procurement toward nondevelopmental systems. If you consider that there were several systems already developed when PM TRADE began this effort, it is clear that DATS fits this approach perfectly. The DATS specification described the performance requirements for the trainer, not how to build it, to allow the bidders to use their existing systems and their creativity to meet our requirements.

Contraves USA (Simulation and Systems Integration Group), located in Tampa, FL, was competitively selected from a field of strong competitors. Contraves is teaming with DME Corporation, Orlando, FL, and Paradigm Simulation, Inc., Dallas, TX. The fielding of the first DATS is on schedule for December 1992.

The Naval Training Systems Center (NTSC) provides PM TRADE with engineering support and administers the contract. NTSC brings extensive experience in ATC simulation to this effort having recently procured tower and radar simulators for the Navy and the FAA. In addition to being PM TRADE's customer, the Aviation Center is also an important part of the government acquisition team. The Defense Contract Management Area Office, Clearwater, FL, is currently providing contract management and in-plant quality assurance support, and will participate during the testing. IIIII

AWARDS AND HONORS

The following information is provided by the U.S. Army Aviation Center at Ft. Rucker, AL:

Initial Courses:

Class 91-14 UH-1 Track (15/1/92): 2LT Scott R. Linette, Dist. Grad.; 1LTs Andre M. Escoffery and Nathan C. Tripp, Honor Grads.

Class 91-14 UH-1 Track (15/1/92): WO Kenneth R. Darlington, Dist. Grad.

Class 91-14 OH-58 Track (15/1/92): 2LT Bradley C. Shealy, Dist. Grad.; 2LTs David R. Emlet, Michael P. Koval, and David B. Reinke, Honor Grads.

Class 91-13 UH-60 Track (15/1/92): WO Jimmy r. Gurr, Dist. Grad.

Class 91-12 AH-1 Track (15/1/92): 2LT Frank A., Minella, Jr., Dist. Grad.

Class 91-12 AH-1 Track (15/1/92): WO James T. McCormick, Dist. Grad.

Class 91-13 UH-60 Track (15/1/92): 2LT Fredrik Jomaas, Dist. Grad.

Class 91-15 UH-1 Track (29/1/92): 2LT Randy G. Masten, Dist. Grad.

Class 91-15 UH-1 Track (29/1/92): WO Gary D. Williams, Dist. Grad; WOs Thomas W. Zimmermann and John G. Roberto, Honor Grads.

Class 91-15 OH-58 Track (29/1/92): 2LT Patrick J. Houtman, Dist. Grad.

Class 91-15 OH-58 Track (29/1/92): WO Michael D. Dessinger, Dist. Grad; WO David J. Watson, Honor Grad.

Class 91-14 UH-60 Track (29/1/92): 2LT Michael S. Kelly, Dist. Grad.

Class 91-13 AH-1 Track (29/1/92): 1LT Timothy J. Eich, Dist. Grad.

Class 91-13 AH-1 Track (29/1/92): WO Gregory S. Reyes, Dist. Grad.

Class 91-16 UH-1 Track (14/2/92): 1LT William S. Drennon, Dist. Grad.

Class 91-16 UH-1 Track (14/2/92): WO Kurt R. Kettler, Dist. Grad.; WOs Mark G. Kelso and Cecil T. Crawford, Jr., Honor Grads.

Class 91-16 OH-58 Track (14/2/92): WO Todd L. Treadway, Dist. Grad.; WOs Charles I. Cook and Brian M. Kostecki, Honor Grads.

Class 91-15 UH-60 Track (14/2/92): 2LT Kelley R. Powell, Dist. Grad.

Class 91-15 UH-60 Track (14/2/92): WO William J. Northup, Dist. Grad.

Class 91-14 AH-1 Track (14/2/92): 2LT Scott J. Halverson, Dist. Grad.

Class 91-17 UH-1 Track (28/2/92): 2LT Jason J. Turner, Dist. Grad.; 2LT Scott W. Howard, Honor Grad.

Class 91-17 UH-1 Track (28/2/92): WO Laura W. Beal, Dist. Brad.

2LT Kelvin B. Scribner, Dist. Grad.; 2LTs David L. Shute and Eric L. Vickery, Honor Grads.

Class 91-16 UH-60 Track (28/2/92): 1LT Ian R. Ashcroft, Dist. Grad.

Class 91-16 UH-60 Track (28/2/92): WO Michael W. Jordan, Dist. Grad.

Class 91-15 AH-1 Track (28/2/92): 2LT Michael A. Carr, Dist. Grad.

Class 91-15 AH-1 Track (28/2/92): WO Michael D. Garrett, Dist. Grad.

Class 91-18 UH-1 Track (13/3/92): 1LT Leon P. Shoffler, Dist. Grad.

Class 91-18 UH-1 Track (13/3/92): WO Kevin L. George, Dist. Grad.; WO Timothy R. Lane, Honor Grad.

Class 91-18 OH-58 Track (13/3/92): CPT Mark H. McDonald, Dist. Grad.

Class 91-18 OH-58 Track (13/3/92): WO Christian L. Frank, Dist. Grad.; WOs Stephen E. Jones and James R. Griffith, Honor Grads.

Class 91-17 UH-60 Track (13/3/92): 2LT William L. Shepherd, III, Dist. Grad.

Class 91-17 UH-60 Track (13/3/92): WO Joseph B. Hill, Dist. Grad.

Class 91-16 AH-1 Track (13/3/92): CPT Gerald M. Walsh, Dist. Grad.

Class 91-16 AH-1 Track (13/3/92): WO Eugene S. Vandergrift, Dist. Grad.

Class 92-1 Aviation Officer Advance Course (20/3/92): 1LT James R. Schenck, CPT John L. Cannon, IV, CPT David M. Fee, Dist. Grads.; CPTs John M. Harwig, Carl L. Giles, Todd L. Smith, Michael E. Nerstheimer, Forrest L. Carpenter, Michael L. Schodowski, Thomas J. Perlewitz, David A. Bradstock, Austin L. D'Alton, Jr., Richard P. Peterson, Gary E. Pearcy, Robert J. Ogden, Jr., Gregory E. Stewart, Mark C. Patterson, Joseph L. Ingignoli and Nobuki Ito, Dist. Grads.; 1LTs Thomas J. Perlewitz, Michael S. Mitchiner, Walter T. Rugen and David N. Gereski, Honor Grads.

Class 91-20 UH-1 Track (10/4/92): 2LT Todd E. Brucker, Dist. Grad., CPT John I. Woodbery and 2LT Walter D. Wiese, Honor Grad.

Class 91-20 OH-58 Track (10/4/92): 2LT Alfred N. Franco, Jr., Dist. Grad.; 2LTs Kevin D. Mobley and Steven A. Rodriguez, Honor Grads.

Class 91-19 UH-60 Track (10/4/92): 2LT Kyle D. Williams, Dist. Grad.

OPERATIONS:

9-227TH AVIATION SUPPORT BATTALION IN SOUTHWEST ASIA

BY LIEUTENANT COLONEL (P) DONALD P. TOWNSEND

HANAU, GERMANY — Who would have thought that 11 months after its activation, a battalion would undergo its ARTEP in combat in Southwest Asia (SWA) during Operation DESERT SHIELD/DESERT STORM. That is exactly what happened to the 9-227th Aviation Support Battalion from Hanau, Germany.

Provisionally activated as the Division Aviation Support Battalion (DASB) on 15 January 1991, the Battalion was redesignated as the 9-227th ASB on 9 August 1991. The Battalion is comprised of three companies: Headquarters and Supply (A Co), Ground Maintenance (B Co), and Aviation Intermediate Maintenance (C Co).

The Battalion deployed to SWA on 27 December 1990 as part of the 3d Armored Division Support Command in direct support of the Combat Aviation Brigade and redeployed on 17 May 1991. Additional personnel and equipment came to the Battalion prior to deployment and upon arrival in SWA. Bravo Company did not get above 70% in personnel at any time. Despite a shortage of personnel and equipment the Battalion performed in an outstanding manner.

The Battalion had not been to the field as a complete unit prior to its deployment. In fact, several of its missions were performed for the first time during combat operations. This included: Class I ration break; II and IV operations; Class V Ammunition Transfer Point (ATP); and Graves Registration (GRREG). The ATP and GRREG are not doctrinal missions for the ASB. I strongly believe that the ASB should have an ATP section. The ASB ran the Division GRREG site.

Expanded SPAM on HEMTT cargo carrier used to support mobile operations

LTC(P) Townsend is Commander, 9-227th Aviation Support Battalion, Hanau, Germany.

One of the concepts developed by the Battalion was the use of a highly mobile AVIM contact team. AVIM Shelter Protective Aircraft Maintenance (SPAM) were loaded on a HEMTT cargo truck (M-977) with 4x4s used to stabilize the SPAMs once they were expanded. The entire set up took approximately 40 minutes. This concept worked great, the Battalion provided mobile AVIM support during the ground war and follow-on operations. Having the only mobile AVIM operations in Theater permitted the Combat Aviation Brigade to receive timely support. Other

(9-227th — cont. on p. 68)

OPERATIONS:

NEW ACTIVATION IN XVIII ABN CORPS

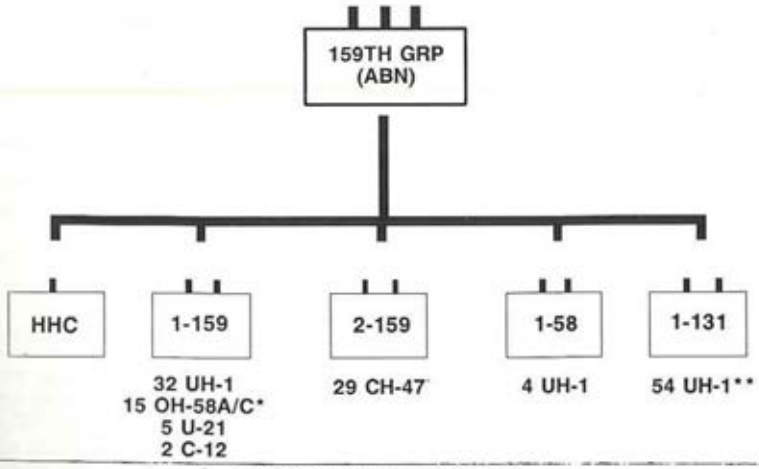
BY CAPTAIN BILL MORRIS

FORT BRAGG, NC — At Seay Field, Ft. Bragg, NC, a new unit with a rich tradition was activated. The 159th Aviation Group (Airborne), 18th Aviation Brigade (Airborne) is the second aviation group within the 18th Aviation Brigade to be activated this year. Formerly the 6th Brigade, 3rd Infantry Division, the 159th Aviation Group (Airborne) is an EC[3] (Enhanced CONUS Contingency Capability) unit from Giebelstadt, Germany. The Headquarters and Headquarters Company of the 159th Aviation Group moved in total after returning to Germany from Operation PROVIDE COMFORT. The main body arrived at Ft. Bragg, NC on 27 January 1992 with final elements arriving on 15 February 1992.

The commander of the 159th Aviation Group (Airborne) is COL E.E. "Butch" Whitehead, who continues with his command as the former 6th Brigade, 3rd Infantry Division inactivated. The Group Command Sergeant Major is CSM Harold G. O'Berry. The units within the Group are made up of the workhorses of the XVIII Airborne Corps. The 1st Battalion, 159th Aviation Regiment, is commanded by LTC James P. Rindler, and CSM Bernard Timmons is the Senior NCO. They have two UH-1 Assault Companies, one OH-58A/C Observation Company, and a Command Aviation Company comprised of U-21 and C12s, as well as a Headquarters Company. 2nd Battalion 159th Aviation Regiment, the Corps Medium Lift Helicopter unit with its CH-47Ds continues to provide the necessary combat

CPT Morris is with Headquarters, 159th Aviation Group, XVIII Airborne Corps, Ft. Bragg, NC.

159TH AVIATION GROUP (ABN)
COMMAND STRUCTURE AND AIRCRAFT



* TO BE FILLED BY OH-58D
** UH-60 UPGRADE LATE IN FY92

forces to multiple Combat Support (CS) and Combat Service Support (CSS) missions. It is commanded by LTC Patrick Thomas and the Command Sergeant Major is CSM Julian Blackwell, Jr. 2-159th Aviation also has a Headquarters and Headquarters Company, with Alpha Company stationed at Ft. Bragg and Bravo Company stationed at Hunter Army Airfield in Savannah, GA.

The 1st Battalion, 58th Aviation Regiment is one of four ATC Battalions in the Army. It is commanded by LTC Christopher L. Hill, and the Command Sergeant Major is CSM Ronald W. Strahan. The battalion is an integral part of the XVIII Airborne Corps warfighting contingencies providing both Air Traffic Control and A^2C^2 control measures across the Corps Area of Operations. In addition to their companies at Ft. Bragg, NC, they also have units located at Ft. Drum, NY, Ft. Campbell, KY, and Ft. Stewart, GA.

A CAPSTONE unit taking part in the activation ceremony at Ft. Bragg and a member of the 159th Aviation Group team is the 1st Battalion, 131st Aviation Regiment commanded by LTC Don E. Stagg. The Command Sergeant Major is CSM Harold B. Johnston. As the Assault Battalion for the Group (UH-1), the 1-131st Avn Bn, located in Montgomery, AL, will be a pivotal player in all Group Wartime contingencies. Later this year, they will also be outfitted with UH-60s as part of their force modernization package.

As the sun broke through the clouded skies halfway through the activation ceremony, a new chapter commenced for the 159th Aviation Group (ABN). With "Press On" as their motto, the Group is ready to accept the challenge of meeting contingency missions anywhere in the world. IIIII

9-227th

(continued from page 66)

aviation units had to fly over 400 kilometers to receive AVIM support. The M-977 proved to be an invaluable asset in desert operations and should be added to all AVIM unit MTOE's.

Class IX resupply proved to be the biggest headache in SWA. Availability of parts was limited. The Battalion went to extraordinary lengths trying to locate repair parts throughout the Theater. Organic aircraft flew countless hours and wheeled vehicles drove numerous miles trying to locate parts. The Support Operations Section and Supply Support Activity of the Battalion did a great job and certainly earned their pay. Customer support was the primary mission.

Another change made in the Battalion was to separate Alpha Company into a Headquarters Detachment and Supply Company. The company commander was simply overwhelmed trying to keep control of the mission support and could not devote time to the headquarters element. The Battalion S-1 was appointed the detachment commander. This concept worked well and will be submitted as an MTOE change.

The Battalion's success in combat is directly attributable to its outstanding soldiers. They never quit despite significant personnel and equipment shortages. All mission requirements were met. The soldiers did not just meet the standards, they exceeded them.

The chain of command in the 3d Armored Division provided great support to the Battalion. Their support allowed the Battalion to do its job.

The Battalion passed its ARTEP, but what a test! I am very proud of the Battalion and its accomplishments. If needed, the 9-227th Aviation Support Battalion stands ready to answer the call for freedom. IIIII

OPERATIONS:

ARMY AVIATION IN CENTRAL AMERICA

BY CAPTAIN JACK PARKHURST

SOTO CANO AIR BASE, HONDURAS — Many Army aviators have done their "time" at Soto Cano Air Base, Honduras as part of FORSCOM rotational units in the past six years. In 1989, Honduras became a short tour overseas assignment and a great many improvements, both operationally and aesthetically, have been made. An aviation short tour in Honduras can be a very demanding and rewarding opportunity in an Army aviator's career. There is a rapidly growing number of aviators volunteering for a short tour there.

Activation

On 16 January 1990, the 4th Battalion, 228th Aviation Regiment activated its first two companies, HHC and B Co (UH-1) at Soto Cano Air Base, Honduras. The battalion activated its final two units, A Co (UH-60) and 3rd PLT/F Co (AVIM), on 16 November 1991. The MEDEVAC detachment and C Co (CH-47) are still FORSCOM supported with soldiers and aircraft on four month rotations. The battalion is the first permanent party rotary wing unit stationed in Honduras. It is a USARSO asset and their headquarters, the 128th Aviation Brigade, is located at Ft. Clayton, Panama, where all in and outprocessing is done for assigned soldiers. The Military Intelligence Low Intensity (MILI) battalion, which is stationed in Orlando, FL, also operates some fixed wing assets there.

The Mission

The aviation mission in Honduras is to provide nation-building support to the Honduran government as part of Joint Task Force-Bravo. This support takes many forms, including medical readiness exercises, immunization readiness exercises, and construction exercises. The major exercise of the year is FUERTAS CAMINAS, which runs from January through July and assists the Hondurans in building a major road network in the northern part of the country. This buildup of the country's infrastructure stimulates the economy through ease of transporting goods and services. Additionally, the 4-228th provides aviation support to U.S. MILGROUPs throughout Central America. These are very challenging and demanding missions in the rugged terrain of Central America. Daily operations can cover hundreds of miles of mountainous and isolated terrain in Honduras and frequently extend into other Central American countries. Until recently, there was always a flight platoon from B Co, 4-228th in El Salvador in support of the U.S. MILGROUP and the U.S. Embassy there. Due to a decrease in threat to American forces and other operational reasons, they have been extracted.

CPT Parkhurst was S-1, 4th Battalion, 228th Aviation Regiment, Soto Cano Air Base, Honduras, in 1991.

Presently, there remains a small operations cell in El Salvador. Aircraft are now sent into the small country on a mission-by-mission basis. Nearly every type of mission profile is flown in this battalion, including NVG, overwater, and mountain operations.

All air crews are sent stateside to Jacksonville Naval Air Station for DUNKER/HEED training, and pilots attend Synthetic Flight Training Simulator (SFTS) twice a year. Currently, the flying hour program is extremely demanding for all mission aircraft assigned there. Few aviation units in the Army have a higher OPTEMPO for UH-1s or UH-60s than this battalion.

Modifications

Some recent equipment modifications increase safety and enhance capabilities. All UH-1 and UH-60s are equipped with the AN/ALQ-144(V)(I) Infrared Countermeasures and AN/APR-39A(V)(I) Radar Signal Detectors. All UH-60s are equipped with permanently mounted GPS and BASS XIV systems. UH-1s have handheld GPS units. All UH-1s and most of the UH-60s are equipped with the ARC-199 High Frequency Radio. Soon, Soto Cano will receive its first Non-

(continued on page 71)

OPERATIONS:

A LOOK AT A YEAR GONE BY

BY COL WILLIAM D. McGILL, II & CPT ALTON W. WOMACK

FORT HOOD, TX — If variety is the spice of life, then the past year would make Kentucky Fried Chicken's Spicy Hot Wings look mild. It has been a year to the month since we stepped off the planes at Robert Gray Army Airfield (RGAAF) at Ft. Hood, TX.

There to greet us was a small contingent consisting of the Corps Commander and a few special guests. Very quickly we turned in our sensitive items and were given a few administrative instructions on what was to take place.

This hardly prepared us for what we were to experience, however. The normal fifteen minute drive from Robert Gray Army Airfield took nearly ninety minutes, as well-wishers from the local community thronged the roads between RGAAF and Abrams Gymnasium. What a thrill to know that all those you had spent the last six months with were there to enjoy the experience. However, this was just the beginning to this year of variety.

COL McGill is Commander, Aviation Bde, 1st Cavalry Division, Ft. Hood, TX.

Where Now, Sir?

Our first challenge was to determine where we were going to live and work now that we are back. III Corps was faced with the challenge of trying to fit the 1st Cavalry Division, now consisting of three brigades instead of two, into the same relative area as when we deployed. Unfortunately, that meant that you were not going to "fall in" where you were dismissed from six months earlier. Soldiers' personal property had all been placed in storage and had to be relocated. Inventories, allocation of barracks, and administrative space had to occur. Repair and preparation of buildings had to be made.

The small advance party that we had sent home early and the small rear detachment who had remained had done an excellent job preparing for our return.

After about a two week break in which to reunite with loved ones, our soldiers were ready to tackle the task at hand. Within another two weeks, our amazing soldiers had things set up and we had an administrative base to work from to command and control the upcoming year's activities.

Goals and Objectives

Our first goal was readiness: prepare to go to war again if needed. We established a 1 October 1991 date in which to be fully recovered and prepared to go to war again. Intermediate objectives were established. The recovery of equipment from the Seaport of Debarkation (SPOD) was the first objective to accomplish. We sent our teams to Houston on a rotating basis and within three weeks, about 95% of our equipment was recovered. We were now ready to roll up our sleeves and tackle the task at hand.

Pleasant Distractors

Anytime you strive to accomplish a goal, there are always distractors to your attainment of that goal. What a pleasant distractor though, when you are invited to participate in numerous parades and activities to honor you for your accomplishments and pay tribute for the success you enjoyed.

Trips to local communities as well as far off places like Washington D.C. and New York City abounded. Everyone wanted to see the equipment and speak to the soldiers who had accomplished one of the most successful campaigns in military history. Of course, you did not want to deny any group or community. They had supported you and provided tremendous encouragement

CPT Womack is Brigade S-1, Aviation Bde, 1st Cavalry Division, Ft. Hood, TX.

throughout the campaign. As mentioned before, what a pleasant distractor to support these various activities.

Change of Seasons

Success! The coming of Fall found us transitioned and ready for the next stage of the operation. Despite the large number of personnel who were veterans of DESERT SHIELD/STORM, we had a high percentage depart due to the lift of stop-loss and the requirement for overdue reassignments to relieve many overseas organizations. It had been a turbulent summer.

The next goal was to ensure that experience was not lost. For the Command and Staff we were pointing to a Corps Level Warfighter Exercise at the Battle Simulation Building in early December. This would involve the 1st Cavalry Division, along with all other III Corps units.

We prepared by conducting three Command Post Exercises, including battalion through division level staff. These exercised command and staff to ensure we had the capability to perform our combat tasks. We did.

In addition, the Cavalry Squadron conducted a Bradley Gunnery Exercise for their soldiers. We were able to conduct AH-64 Gunnery Qualifications, AH-1 aerial gunnery familiarization, and Joint Air Attack Team (JAAT) exercises. We were also able to provide training at virtually every level without a full scale exercise. 1-7 Cavalry had an AH-1 crew receive the Army Top Gun Award. Our Assault Helicopter Company, E Company, 227th Aviation Regiment, received the 1991 FORSCOM Commander's Aviation Accident Prevention Award. Significant accomplishments.

A New Year

Christmas with the family was a pleasant change from the year prior. With the coming of the new year came something that has not changed significantly for several years: a National Training Center (NTC) rotation.

Despite our best efforts, we were unable to obtain the MILES/AGES II equipment for the AH-64. We did deploy an Aviation Task Force consisting primarily of 1-227th Attack Helicopter Battalion, sans AH-64s and some slice elements from the rest of the Brigade. In spite of "Red Cycle" taskings in January, we were able to deploy, train to standard, and redeploy in a highly successful manner.

We have since conducted another Bradley Gunnery, Individual Weapons Qualifications, Expert Field Medical Badge Training and Qualification, and the Cavalry Cup Competition. All of these designed to remain fit to fight.

The Challenges Ahead

We will continue to meet new and varied challenges in the future. Evaluations of National Guard Units, a Brigade Command Post Exercise, moving again as part of the restationing plan to prepare for the arrival of the 5th Infantry Division, a Brigade Change of Command, a Squadron Change of Command, the formation of the new Command Aviation Battalion this summer, and a Brigade Deployment to the NTC in September. The soldiers of the "Warrior Brigade" will continue in the proud tradition of the 1st Cavalry Division. IIIII

Central America

(continued from page 69)

Directional Beacon (NDB) and VORTAC, in addition to its PAR and TACAN, which are currently operational there.

The battalion is located on the west side of the air base on Camp Pickett, named in honor of LTC David H. Pickett, who was shot down over El Salvador in January 1991.

Although soldiers are still restricted to the base, living conditions have improved tremendously. Almost all hootches have been upgraded, adding more living space. Every hootch has cable television and a VCR. A chapel, gym, and pool are the latest additions to Camp Pickett.

The climate is very comfortable year round with temperatures in the mid-80s to low 90s during the day, while cooling to the low 70s in the evenings.

The future appears very promising for the 4-228th Aviation Regiment. There is a great deal of support for continued good U.S.-Honduran relations. There remains no let-up in the need for rotary wing support in the theater of operations.

As the U.S. advances its anti-drug war, Joint Task Force-Bravo continues to be a key asset in Central America. An Army aviator considering a short tour will not find a better assignment that will expose him or her to more diverse aviation operations than a short tour in Honduras.

For more information, write the 4-228th's S-1 at 4-228th Aviation Regiment, Unit #5704, APO AA 34042. IIIII

OPERATIONS:

6TH SQUADRON, 6TH CAVALRY: THE SIXSHOOTERS

BY LIEUTENANT COLONEL VIRGIL TACKETT

ILLESHEIM, GERMANY — The 6th Squadron, 6th U.S. Cavalry (SixShooters) continues the aggressive pace established at our Fort Hood, Texas activation 6 June 1990. Corps operations in a desert environment was the primary focus for the Squadron's training, as the DESERT SHIELD buildup began. The SixShooter playbook (tactical procedures/battle drills) was specifically designed to compliment night desert operations over extended distances. Designated "combat ready" in an Apache Training Brigade ceremony at Fort Hood, Texas, 9 October 1990, the Squadron began the deployment process heading to its new home with the 11th Aviation Brigade, Illesheim, Germany.

A 6/6 AH-64A Apache, equipped with one extended range tank, conducts a daylight armed reconnaissance mission in Northern Iraq during Operation PROVIDE COMFORT.

An intense European training program began in January 1991, in anticipation of DESERT SHIELD/STORM deployment. The Squadron's attachment to 4th Bde, 3rd ID, provided the opportunity to introduce the Apache's capabilities to each Brigade in the division. As the European transition progressed, shifting the tactical thrust to close battle operations became essential as we trained with the 3 ID. Volume II of the playbook evolved to compliment operations with the division, European terrain and winter conditions, rounding out our tactical prowess for deep, close, and rear battle responsibilities.

Each challenge was met head on, honing the scout/gun team effort which included maximizing all available simulations, Air-to-Air Stinger NET, New Equipment Training, and fielding the remainder of the Squadron's MTOE equipment. Training programs included OH-58D integration, Combat Mission Simulator program of 20 hours per crew, Observe Fire Training simulation and Aircraft Survivability Equipment Trainer (ASET) II training. The Squadron trained at the Combined Arms Maneuver Training Center (CMTC), Hohenfels Germany, under the auspices of 4th Brigade, 3rd ID and with 3-3 Attack Helicopter Battalion from February-April 1991, as well as shooting a February gunnery and April Combined Arms Live Fire Exer-

LTC Tackett is Commander, 6th Squadron, 6th U.S. Cavalry, Illesheim, Germany.

UH-60 Black Hawks from the 6/6 insert QRF ground forces in Northern Iraq to secure downed aircraft. Also on hand were the Squadron's Apaches (not pictured), which flew top cover.

cise (CALFEX) at Grafenwoher. Polygon Electronic Warfare training also highlighted the readiness efforts during training in Europe along with conducting a seminar and the first deep attack for the Central Army Group (CENTAG) commanders.

The Squadron received its call to duty 21 April 1991, to conduct the Army's first strategic Apache self-deployment to a combat theater of operations. The mission was to conduct joint security operations as part of a multinational peace keeping force (Operation PROVIDE COMFORT) assisting in Kurdish resettlement in Northern Iraq. All 18 Apaches, equipped with one auxtank, and three UH-60s launched four days after notification, completing the 3,000 mile journey within four days. The flight route traversed France, Italy, Greece, and Turkey before reaching the forward operating base in Iraq. Aircraft ordnance was loaded in Incirlik, Turkey and the uploaded aircraft then flew to Zakho, Iraq, where we operated from a forward base through June 1991. Operations moved in June to the Iraq/Turkey border near Silopi, Turkey until redeployment in October 1991.

Split operations spanning 400 miles expanded the maintenance effort; however, through a myriad of support hurdles and with a lot of help from all agencies we met the challenge. Ten phased maintenance procedures on AH-64s and 1 UH-60 phase were performed over the 6 month deployment. A grand achievement by our maintenance was enhanced by the Augusta team, AVSCOM LARS and CFSRs.

During operations in Iraq, the Squadron developed a new Mission Essential Task List (METL) to support, the armed reconnaissance missions in the mountainous environment, completing Volume III of our playbook. The playbook also encompassed Combat Search and Rescue operations with USAF Special Operations and USN SEAL Teams. The October redeployment commenced, after 4300 flight hours, over 2000 sorties in Iraq, and countless miles driven in this austere region of South West Asia. Again all operations were made possible by a monumental maintenance effort and a true team effort by all.

As equipment returns to Illesheim, the SixShooters are sitting tall in the saddle anticipating the next opportunity to perform their duty. IIIII

BRIEFINGS

CAE Electronics, Inc. of Montreal, Canada, recently held an acceptance ceremony for the Simulator Complexity Test Bed (SCTB). The SCTB will enable the U.S. Army to investigate the best methods of meeting training objectives for helicopter aircrews. The SCTB simulates an AH-64 Apache helicopter. CAE is planning to perform continuous research and development and support of the SCTB at Fort Rucker for at least five years.

The Army Aviation Museum Foundation, Inc. is accepting contributions in memory of the 39 U.S. Army Aviation personnel killed in Operations DESERT SHIELD/DESERT STORM. A bronze plaque containing the names of these dedicated soldiers will be erected in the Recognition Center of the U.S. Army Aviation Museum at Ft. Rucker, AL. Contributions may be sent to Army Aviation Museum Foundation, Inc., DESERT STORM Memorial Fund, P.O. Box 610, Ft. Rucker, AL. Commercial Telephone: (205) 598-2508. All contributions are tax deductible.

The U.S. Army has awarded **Sikorsky Aircraft** a five-year, $1.54 billion contract to produce 300 **UH-60 Black Hawks**, mission flexibility kits, and to provide related program support. It is the largest single contract ever awarded to Sikorsky. The contract, Sikorsky's fourth multi-year Black Hawk contract, calls for delivery of 60 aircraft per year in fiscal years 1992 through 1996 and brings the total number of Black Hawk helicopters delivered and on order for the U.S. Army to more than 1,400.

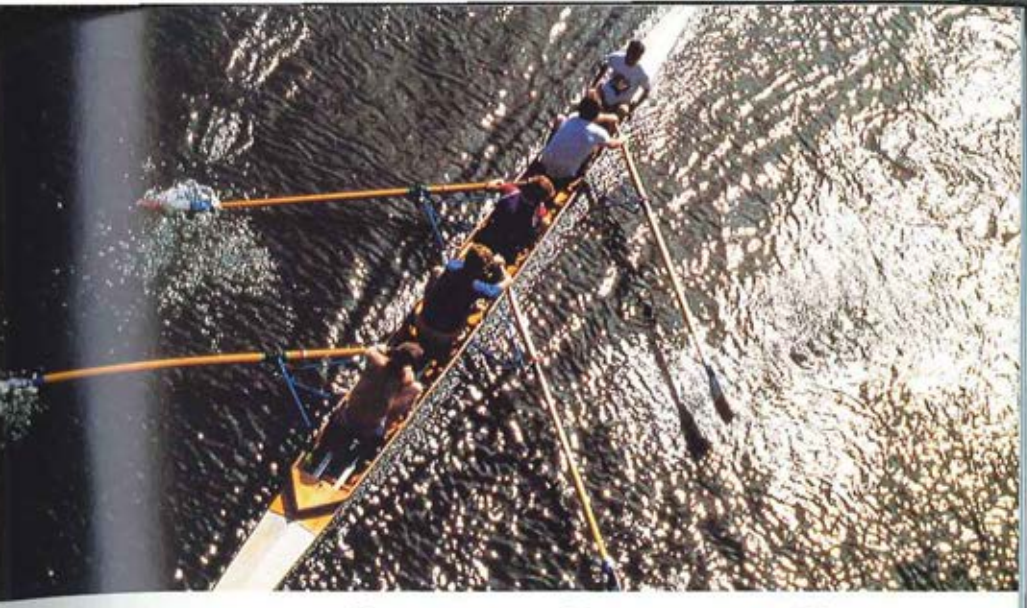
The **Second Annual Air Assault Challenge** will be held at the U.S. Army Aviation Center, Ft. Rucker, AL, 17-19 November 1992. A pre-challenge pamphlet and entry information are available by writing: Commander, D Company, Air Assault School, 1st Battalion, 10th Aviation Regiment, 1st Aviation Brigade (Air Assault), Ft. Rucker, AL 36362-5000. The Air Assault School can also be contacted at (205) 255-6336/4787 or DSN 558-6336/4787. Registration deadline is 6 November.

The **OV-1 Mohawk Association** will hold its Third Annual Reunion and Fly-In 14-16 August 1992 in Minneapolis, MN. All Mohawkers and anyone with an interest in Army Aviation are invited, and those with an Army warbird are encouraged to fly it in. Interested parties should write: OV-1 Mohawk Association, 11724 67th Place North, Minneapolis, MN 55369. Phone: (612) 488-0419.

The **Second "Indian Head" Division Association** will hold its 71st Annual Reunion 15-18 July 1992 in Albuquerque, NM. Interested parties should contact Henry Calder, 1511 Matagorda Dr., Dallas, TX 75232.

The AH-64D Longbow made its first engineering test flight 15 April 1992, two weeks ahead of schedule. The AH-64D prototype is one of four being produced for the U.S. Army by **McDonnell Douglas Helicopter Co.** at its Mesa, AZ facility under a 70-month development contract. The AH-64D Longbow will have more advanced computers than the AH-64A, full multiplexed high-speed data transfer capabilities, vapor cycle cooling, increased electrical power, and other enhancements that take advantage of technological developments in the past decade.

Corpus Christi Army Depot's Dwight D. Eisenhower Conference Room in Building 8 was renamed the Joseph P. Cribbins Conference Room in honor of the "Godfather of Aviation" 20 April 1992 at 9 a.m. This was one of the many honors bestowed upon **Joseph P. Cribbins**, Special Assistant to the Deputy Chief of Staff for Logistics and Chief, Aviation Logistics Office, Deputy Chief of Staff for Logistics, DA. Cribbins has been instrumental in the development of Army Aviation programs throughout his career, which has spanned over 52 years. He has been affiliated with the Army since 1942, when he was commissioned in the U.S. Cavalry as a lieutenant.



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BRIEFINGS

A $12 million research facility at Picatinny Arsenal, NJ, will be dedicated to **MAJ Marie T. Rossi-Cayton**, a member of the Army Aviation Hall of Fame, who died in Operation DESERT STORM. MAJ Rossi-Cayton was the first woman aviation unit commander to see combat. The ground-breaking ceremony for the Rossi-Cayton Armaments Technology Facility was conducted 27 March 1992. It will take 18 months to complete the construction.

David R. Smith is restoring what is reportedly one of only two **Stinson L-1**'s left flying in the U.S., L-1F, s/n #41-18915. He is looking for an original Pilots Flight Operating Instruction Book T.O. No. 01-50DA-1, dated 1944. Also needed are various Army Field Manuals, articles, and parts. Contact Mr. Smith at 6605 Ashwood, Arlington, TX 76016. Phone: (817) 483-4777.

The first three places in the **1992 U.S. National Helicopter Championships** sponsored by the **Helicopter Club of America (HCA)** were claimed by Oregon-based crews. In first place was a crew made up of pilot **Warren Fortier**, a commercial pilot from Scappoose, OR and his student co-pilot **Marian Christensen** of Deer Island, OR who bested 16 other crews in the two day, three event competition held at Silver Bowl Park on 21-22 March 1992. They accumulated 580 out of a possible 600 points to beat the second place Transwestern Helicopters, Inc. team of **Terry Kaplan** of Vancouver, WA and **Mark Beckius** of Portland, OR with 574 points. The third place crew was **Bob Edwards** of Roseburg, OR and **Roger Kieffer** of Portland, OR with 561 points. The Seventh World's Helicopter Championships will be held in the vicinity of Swindow Aerodome, west of London, England, 1-6 September 1992, immediately preceding the Farnborough Air Show.

Jim Hurst is trying to locate former students that went to **Yokohama American High School** in Yokohama, Japan, from 1947 through 1953. The third national YO-HI Reunion will be held in Nashville, TN, 7-9 August 1992. Interested parties should contact Jim Hurst, 9 Walker Circle, Clarksville, TN 37042. Phone: (615) 647-5963.

Errata: The January Briefings contained a typographical error. The new marketing manager for KLM/Era Helikopters, B.V. is **Richard C. Oeder**.

The May issue of ARMY AVIATION Magazine did not correctly identify **Mrs. Everett Franklin Smith III**, wife of the 1991 Soldier of the Year SSG Everett Franklin Smith III on page 44. Pictured above is Mrs. Smith (left) with **Mrs. Charles F. Drenz** (right) at the 1992 Annual Convention's Spouse Breakfast.

Two Army aviators have been promoted to Brigadier General. They are **BG David H. Hicks**, Command Director, North American Aerospace Defense Command, Peterson AFB, CO and **BG Johnny M. Riggs**, Assistant Division Commander, 3d Infantry Division, USAREUR.

Rotary Wing Aviator Class 68-516 will be holding their 1st Annual Reunion in Atlanta, GA 2-5 July 1992. Former members of aviator class 68-516 please contact Claire Mendenhall at (205) 598-9459, or at P.O. Box 1302, Enterprise, AL 36331, or Larry Little at (713) 484-1127 for further information.

Congress has authorized a memorial to **Women in Military Service**, to be built at the gateway to Arlington National Cemetary. It will honor our mothers, daughters, and sisters who have served America from the Revolutionary War to DESERT STORM. While Congress has authorized the Memorial, it must be built with non-Federal funds. Call toll-free to preserve a place in history and help build the Memorial: 1-800-4-SALUTE, Women in Military Service Memorial.

AAAA LOST MEMBERS

A listing of AAAA members whose mail has been returned to the National Office as "undeliverable." If you have a current address for any of these members, please contact the AAAA National Office, 49 Richmondville Avenue, Westport, CT 06880-2000 Tel: (203) 226-8184.

Ackerman, Charles J., WOC
Acosta, Edmund O., Mr.
Adams, James R. Jr, MAJ
Adams, Michael, SPC
Adams, Richard M., COL
Alford, Wayne L., CW3
Allen, Eddie E., SFC
Allen, Gary L., SGT
Allston, Tracy D., SPC
Ally, Bernard, CPT
Alvarez, Eduardo G., WOC
Ambrose, David K., CW4
Amegin, Daniel G., WOC
Amos, Steven W., SPC
Anderson, Carlos E., SSG
Anderson, David P., WO1
Andrew, Raymond A., Mr.
Arnberg, Andrew B., CPT
Baker, Donald R., 2LT
Baldini, Riccardo, Mr.
Balloy, Scott A., SGT
Barbee, Michael J., CPT
Bardwell, Kenneth W., SSG
Baron, David S., SPC
Bartee, Brad A., SPC
Bell, Dewayne, SGT
Bess, Michael J., WOC
Bezore, Jeffrey, SFC
Bianchi, Joseph S., 2LT
Biere, Edward M., CPL
Blackburn, John E., Mr.
Boehm, Scott A., CPT
Bohman, William E., 1LT
Bouchard, Charles, LTC
Bowman, James, SGT
Bowns, Nicolas D., LTC
Boyer, Patrick M., 2LT
Braley, William, Sr, CPT
Bratton, William M., CSM
Brokate, Ulrich, Mr.
Brown, Matthew D., 1LT
Brown, Michael C., WOC
Brown, Robert W., WOC
Bruckart, James E., MAJ
Bryant, Isaih, SPC
Buckner, Michael, SSG
Buino, Michael F., PV2
Burke, James L., COL, Ret.
Canaday, Leemoyne A., CPL
Castellano, Benedict D., 2LT
Castle, A. W., WOC
Cavazos, Brigido G., Mr.
Champley, Margaret R., MAJ
Chandler, Darrell S., CPL
Chandler, Jerry L., Mr.
Chang, Bong Kyu, Mr.
Chapman, Jimmy R., MAJ
Choi, B.P., CPL
Chrisman, Darren F., WOC
Christmas, Columbus W., CW2
Christman, Douglas M., MAJ
Christopher, Gregory C., 2LT
Chubboy, Marshall A., CW2
Clah, Steve L., SGT
Clark, Edward H., PFC
Clark, Leslie B., Ms.
Clayton, Anette L., SGT
Coe, Daniel K., SFC
Coker, Greg S., WO1
Croley, Patrick Kev, WOC
Crook, Shawn A., PV2
Cross, Jeffrey M., WOC
Crytser, Timothy, SPC
Cummings, Donald G., WOC
Cummings, Michael, SPC
Dalee, Jeremy S., PFC
Damon, Charles P., LTC, Ret.
Dawson, Lucia, Mrs.
Day, John D., Mr.
Deane, Thomas B., WOC
Deschaine, David Alan, CW2
Detra, Dick, Mr.
Dickens, Anthony W., 1LT
Donna, Kelly P., 2LT
Dowd, Richard R., 2LT
Dracon, Harry, Mr.
Ducote, Michael, SPC
Dudick, Ronald A., PFC
Duff, Michael, CPT
Dumond, Jeffrey P., WOC
Duncan, J. Blair, CPT
Duplessie, Mark L., WO1
Edwards, Rollie J., LTC
Egan, Kevin P., SPC
Elmer, Heath, SPC
Elkins, Chris E., WOC
Elliott, Frank A., WOC
Elzey, Sean W., WO1
English, John B., WO1
Erins, Colette M., PFC
Eudy, Mebben M., Mr.
Evans, Mark A., 1LT
Eyre, Tait L., WOC
Farroll, John E., SGT
Ferebee, Carl, MSG
Ferguson, William W., 2LT
Fernandez, Gregory M., PV2
Flynn, Melvin D., WOC
Fowler, Kevin J., 1LT
Franklin, Sonja, PFC
Gambel, Donald C., WOC
Gardner, Alfred H., SGT
Garnisoh, Douglas W., WOC
Gattenby, Virgil L., WOC
Gayer, Kristy, PVT
Genetti, Michael G., MAJ
Gibson, Carl, SPC
Gillespie, Randal A., PFC
Gomez, Jeffery R., WOC
Gonzalez, Reinaldo, WO1
Goode, Haywood N., 1SG
Gosselin, Ernest J., Mr.
Green, Daniel R., 2LT
Greenway, John R., MG, Ret.
Greenwood, Karen J., Ms.
Grider, II, Kenneth H., WOC
Gruenig, Steven A., 2LT
Gunderson, Brian S., WOC
Hager, John L., WOC
Hall, Thomas Neil, SPC
Hammond, Robert M., 2LT
Hansler, Miles W., CW3
Hapner, Brian M., SGT
Harrick, Jeff P., 2LT
Harris, David E., SP4
Hayes, Matthew C., CDT
Hennessy, Roberto V., 2LT
Heyl, Frank G., LTC/P, Ret.
Heyland, Lloyd B., WOC
Hill, Kendal A., SGT
Hines, Richard A., CW3
Hirschinger, Mark R., 1LT
Hogans, William R., 2LT
Holder, James M., WO1
Hollars, Jerry D., SPC
Horn, Reinhold J., CPT
Hubbard, Paul C., SPC
Hudson, John G., Sr, Mr.
Huh, Yoo Sung, PV2
Hurtt, Kevin R., WO1
Hutchins, Robert K., SPC
Irvin, Dane I., WOC
Jayne, Robert K.Jr, COL
Jenkins, Gregory R., MAJ
Jensen, Michael P., CPT
Jepson, Jeffrey F., 2LT
Johnson, Derrick B., PFC
Johnson, Montie J., 1SG, Ret.
Johnson, Richard, SPC
Johnston, Becky L., SSG
Jones, Brian C., 2LT
Juhn, Kwang In, Mr.
Jung, Yung Suk, SGT
Kain, Joel L., 2LT
Karas, Frank P., PV2
Keenan, Kevin B., CPT
Kendon, Eve, Ms.
Kidd, Justin Eric, 2LT
Kim, Hak Soo, Mr.
Kim, Jong Pil, Mr.
Kime, Edward C., WO1
King, Edward J., LTC
Kirkland, Gary W., PFC
Kohnen, Patrick K., WOC
Kryger, Patricia M., CPT
Kunsman, Robert A., CW3, Ret.
Kvarivig, Jeannie M., 2LT
Ladlier, Bertrand, SPC
Lamb, Trent E., 1LT
Laporte, Roy C., CPT
Larson, Edward D., Mr.
Lawrence, Gene Roy, CSM
Lebbin, David L., PFC
Lind, Greg A., 1LT(P)
Lindsley, Fred, CW4, Ret.
Long, Brian J., CW2
Long, Sam, SPC
Long, Thomas D., WOC
Loomis, Paul A., CW3
Lutts, Glen W., 2LT
Lynch, Kathleen L., WOC
Lynd, Allyn D., 2LT
Mabe, Kurtis T., SFC
Maddox, John A., WOC
Mahannah, Jesse L., SPC
Marcowsky, David, CPT
Marshall, Gwen G., 1LT
Martin, Gary R., CW4
Martin, Rickey L., Mr.
Martin, William A., Mr.
Masarik, Jerry L., 1SG
McClure, Dennis J., WOC
McCray, Coby D., SPC
McFadden, Brian S., 1LT
McGann, Patrick D., WO1
McKay, Michael D., CDT
McLaughlin, Richard C., MAJ
McNamara, Michael E., WOC
McRill, Glenn M., CDT
Medrick, James S., PFC
Minichiello, Angela L., 1LT
Monday, Pamela J., SPC
Monla, Hardin L., SGT
Mooney, Herbert J., WOC
Morehead, Edwin C., MAJ
Morris, Peter C., Mr.
Morse, George L Jr, SPC
Moseley, Michael S., COL
Moss, April J., 1LT
Murphy, Michael P., 2LT
Murray, Brian R., SPC
Murray, Randy, 2LT
Naylor, Sean P., Mr.
Nee, Richard M., WOC
Nelson, Jerred L., WO1
Neuhaus, Peter J., MAJ
Newland, Bryan D., CW2
Noisette, Garick, SPC
Noser, Russie L., PFC
Olson, Charles S., 1LT
Oneill, Dennis C., SPC
Ortiz, Camilo V., WOC
Papp, Gary L., SPC
Paquette, Roger K., LTC
Patton, Kenneth E., WOC
Paul, Franklin Jr, CW2
Payton, Robert, SGT
Peppler, T.P., Mr.
Perkins, Scott M., 2LT
Perrich, Robert A., LTC
Perry, James S., 2LT
Phyall, William P., Mr.
Picardi, Mike, Mr.
Pinkham, Martin C., LTC
Pontious, Jeffrey L., CW2
Posey, James O., 2LT
Powell, Scott M., CW2
Presnell, Larry D., MSG
Price, Gary G., CW2
Puryear, Jeffrey D., Mr.
Ramsey, Willie, SSG
Rastella, Mary A., SPC
Reese, Raymond, SPC
Reis, Frank J., SGT
Reppa, Robert S., 2LT
Ressler, Ronald K., Mr.
Reynolds, Ronald, SFC
Riedel, Jeffrey A., 2LT
Riopel, Norman D., LTC
Roach, Michael W., WOC
Robinson, Eric, Mr.
Robinson, James M., 2LT
Rogers, Daniel H., SPC
Rogers, Warren D., CPT
Rue, Donald B., MSG
Salvatore, Robert M., 2LT
Sasser, William E., 2LT
Scherzberg, Michael K., WO1
Schoenhofer, Bruce E., WOC
Schumann, Ronald F., SGT
Scott, Samuel J., PFC
Seamster, Thomas L., PFC
Shay, Michael E., CW2
Shepherd, Johnnie L., COL
Shubert, Martin W., MAJ
Siegmund, James E., SPC
Simmons, Billy E., CW3, Ret.
Slusser, Keith E., CDT
Smith, Christopher, WOC
Smith, Colin P., Mr.
Smith, Donald K., SGT
Smith, Michael A., PFC
Streips, Eugene A., Mr.
Strickland, Christopher, 2LT
Stuverude, Howard N., Mr.
Sullivan, Timothy S., CPT
Summers, Lawrence C., CW3
Susag, Jeffry T., CW2
Tack, Lowell W., PFC
Taylor, Richard P., MAJ
Thompson, Patrick M., WOC
Thompson, Scott A., WOC
Titanski, Michael C., WOC
Tomlinson, Lance, PFC
Tope, Jeffrey H., CW2
Townsend, Kristen L., 2LT
Trocinski, Eric T., WOC
Tuttle, Mechelle M., 2LT
Tyrrell, Harriett G., WOC

— cont'd. on pg. 90 —

THE EVOLUTION OF ARMY AVIATION

The **Balloon Corps** of the Army of the Potomac was created on 25 September 1861 by the Secretary of War. Professor Thaddeus S. C. Lowe was named to the civilian position of Chief Aeronaut. The **Balloon Corps** was disbanded in June, 1863.

In 1892, Brigadier General Adolphus W. Greeley, the Chief Signal Officer, created the **Balloon Section of the Signal Corps**. This was the first military aeronautic organization in the U.S. Army.

On 1 August 1907, the **Aeronautical Division of the Signal Corps** was created by Office Memorandum No. 6 at the direction of Brigadier General James Allen, Chief Signal Officer of the U.S. Army.

Congress created the **Aviation Section of the Signal Corps** on 18 July 1914. At the same time, the ratings of Military Aviator, Junior Military Aviator, and Aviation Mechanic were established by Congress.

On 24 May 1918, the War Department merged the **Bureau of Aircraft Production** and the **Division of Military Aeronautics** into a single agency, known as the **Air Service**. On 27 August 1918, the position of Director of Air Service was created, this officer also serving as Second Assistant Secretary of War.

The Army Air Corps

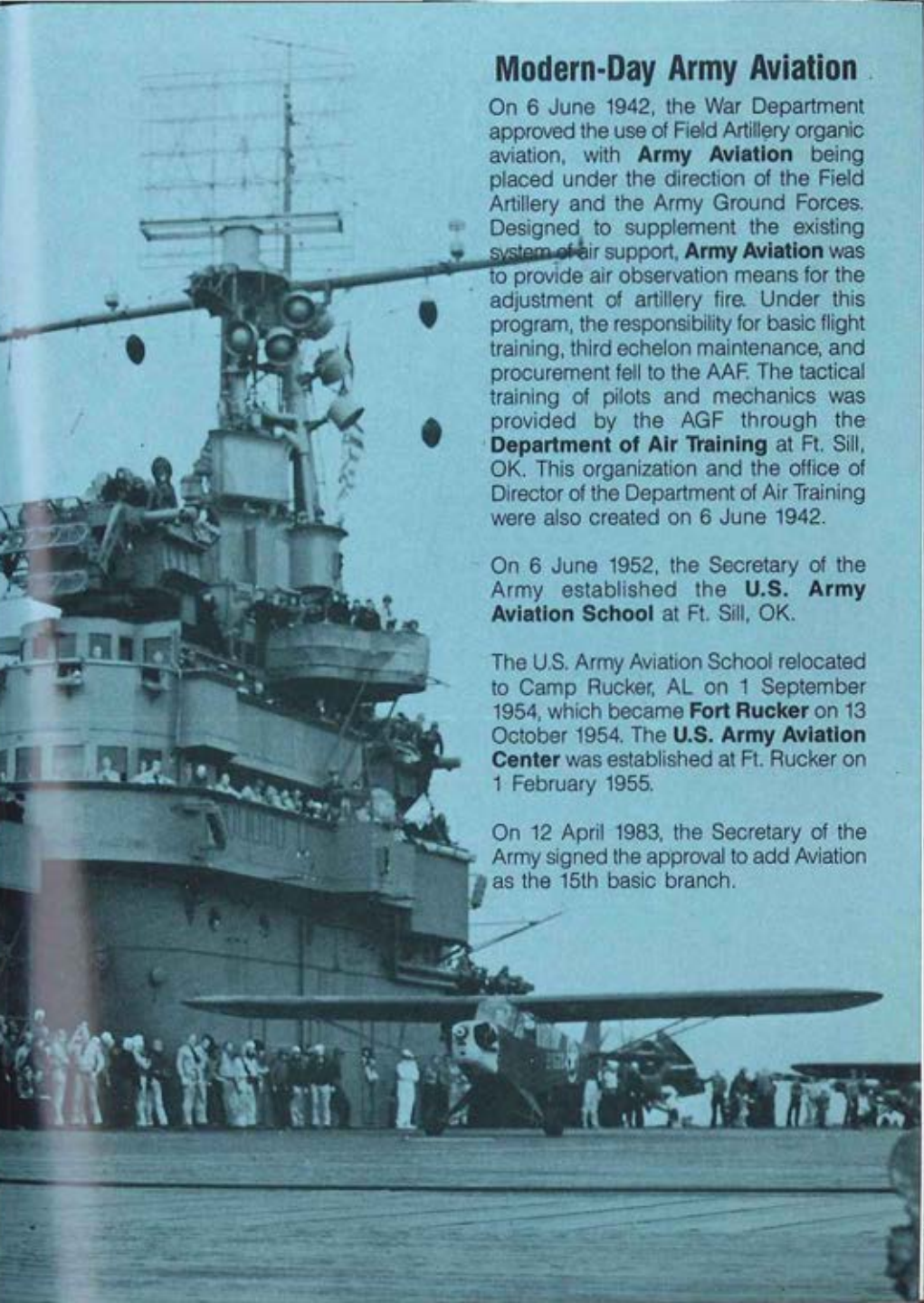
Congress created the **U.S. Army Air Corps** by the Air Corps Act of 2 July 1926. The Act also established the position of Assistant Secretary of War for Air.

On 1 March 1935, the War Department directed that a **GHQ Air Force** be created to assume control of tactical units and to come directly under the General Staff. This organization existed as a separate command apart from the **U.S. Army Air Corps.** Four years later, on 1 March 1939, **GHQ Air Force** was made responsible to the Chief of Air Corps, rather than the General Staff.

The Army Air Forces were created on 20 June 1941 by Army Regulation 95-5, with the AAF headed by a chief who also served as Deputy Chief of Staff for Air.

On 9 March 1942, the War Department established three autonomous commands: the **Army Ground Forces**, the **Army Air Forces**, and the **Army Service Forces**.

On 9 November 1942, Army Aviation entered combat when an L-4 Cub flew from the U.S.S. *Ranger* during the invasion of North Africa.



Modern-Day Army Aviation

On 6 June 1942, the War Department approved the use of Field Artillery organic aviation, with **Army Aviation** being placed under the direction of the Field Artillery and the Army Ground Forces. Designed to supplement the existing system of air support, **Army Aviation** was to provide air observation means for the adjustment of artillery fire. Under this program, the responsibility for basic flight training, third echelon maintenance, and procurement fell to the AAF. The tactical training of pilots and mechanics was provided by the AGF through the **Department of Air Training** at Ft. Sill, OK. This organization and the office of Director of the Department of Air Training were also created on 6 June 1942.

On 6 June 1952, the Secretary of the Army established the **U.S. Army Aviation School** at Ft. Sill, OK.

The U.S. Army Aviation School relocated to Camp Rucker, AL on 1 September 1954, which became **Fort Rucker** on 13 October 1954. The **U.S. Army Aviation Center** was established at Ft. Rucker on 1 February 1955.

On 12 April 1983, the Secretary of the Army signed the approval to add Aviation as the 15th basic branch.

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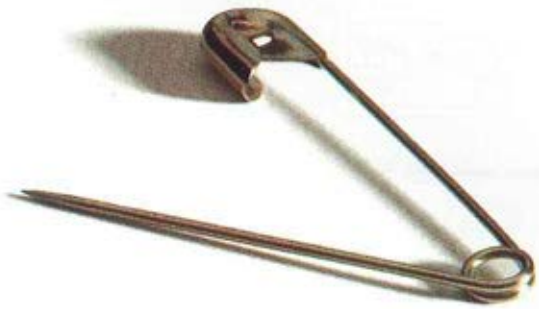

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SGT Melinda L. Kirk
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SGT Fredrick L. White, Jr.
SGT Paul A. Wierda
1SG(P) Virgil E. Wilhite
SGT Douglas L. Williford
SPC Charles W. Wilson
SPC Scott L. Wolfe

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WOC John P. Carlton, Jr.
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2LT Ingrid I. Centurion
WOC Gregory J. Cody
MAJ William F. Cole
WOC Timothy M. Connor
LTC Keith T. Cooley
WOC Troy C. Dabney
LT William P. D'Albora
WOC Steven C. Dunn
WOC William J. Duntzee III
WOC Brian J. Eckley
WOC Russell L. Edwards
CPT Rickey L. Ely
WOC Kenneth W. Engasser
CPT Bertrand P. Finkenbeiner
2LT Heath J. Fisher
WOC Sam C. Flaten
2LT Jeffery W. Freeman
2LT Roy R. Fuhrmann
CPT Wido C. Gerdsen
WOC David T. Gillespie
2LT Charles B. Granger
WOC Charles G. Graves
WOC Gregg T. Gray
WOC Kyle A. Grogan
WOC Marlin B. Halstead
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Mr. William J. Hayes
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1LT Michael J. Hertzendorf
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SPC Steven O. Jackson
WOC Matthew D. Johnson
WOC Russell E. Julian
WOC Rex C. Kenyon
WOC Frank P. Knight
WOC Luis A. Lampon
WOC Paul R. Lawrenz
WOC Phillip M. Letts
WOC John J. Lill
2LT Frederick D. Long
2LT Glen W. Lutts
CPT Robert S. Lyman
CW3 Michael S. Mace
CPT Fred V. Manzo, Jr.
WOC Juan A. Marrero
WOC Victor W. Marsh
2LT James A. Marshall
WOC Scott T. Massey
CW3 Michael J. Meely
CW2 Wilton C. Menchion
WOC John G. Meredith
2LT Troy D. Meuth
WOC John R. Moon
CW4 Charles L. Murphy
WOC Steven D. Nevels
WOC William B. Noyer
CPT Brent R. Overton
2LT John D. Price
WOC Alan E. Reed
2LT Christian F. Rees
WOC John J. Reopell
WOC David S. Reynolds
WOC Timothy O. Reynolds
CPT Anthony Sabb
MW4 Alberto Y. Salinas
WOC David A. Saunders
WOC Sean E. Sebern
2LT Richard W. Settino
WOC Brian L. Sexton
WOC Matthew A. Silverman
CPT Ricky R. Sims
2LT Mark A. Sisco
WOC Paul M. Sivacek
WOC Jonathan D. Smith
WOC Christopher A. Sorrell
WOC Todd A. Spor
WOC Timothy A. Stallings
WOC Stephen R. Stolarczyk
WOC Robert R. Vaughn
WOC Joseph J. Waters
2LT Kurt A. Williams
WOC Ulric A. Williams
WOC S.J. Woody Woodworth
WOC David W.R. Wyatt II
WOC Craig D. Yerdon
WOC Mark D. York
WOC Corey M. Zeigler

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BRUSSELS, BELGIUM

MAJ Glen C. Ellingsworth

BLACK KNIGHTS CHAPTER
WEST POINT, NY

CDT Darren S. Mitchell

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LtCol Hans H. Schlieben

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ORLANDO, FL

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Mr. Walter F. Dailey
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LTC Patrick O. Kelly, Ret.
Mr. Gary W. Mowery
CW4 Gary L. Stinson, Ret.
SPC Eric J. Stroup
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Mr. Lorenz Knecht

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CW3 Allen R. Kyle
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CHARLESTON, SC

CDT Christopher D. Hazen

COLONIAL VIRGINIA CHAPTER
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COL Richard T. Poore, Ret.
Mr. Steven R. Tisdale
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BG Donald E. Joy, Jr.
Mr. John R. Penn, III
Mr. Ronald C. Perry
Mr. David L. Shumaker
Mr. Stephen H. Silder
CPT Philip J. Wegh

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CORPUS CHRISTI, TX

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Mr. Joseph Carreno
Ms. Leslie B. Clark
Mr. Robert L. Grady
SFC Arthur H. Gutierrez, Ret.
Ms. Norma N. Haskin
Ms. Pat F. Marcha
Ms. Liz A. Murtaugh
Ms. Linda C. Williams

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PHILADELPHIA, PA

Mr. Ronald Denny

EDWIN A. LINK MEMORIAL CHAPTER
BINGHAMTON NY AREA

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Ms. Frances S. Oliver
Ms. Suzanne Outman
Mr. Lloyd E. Smith
Mr. Joseph M. Strano
WO1 James P. Wilkerson
Mr. Kevin R. Williams

GREATER ATLANTA CHAPTER
ATLANTA, GA

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Mr. Robert J. Blasingame
Mr. Jerry L. Chandler
Mr. H. Neal Cheek
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Multiple missions at a fraction of the cost.

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CPT Mark W. Robinson
CDT Charles T. Schell
MSG Johnny L. Shepard
CDT Chris Stallings

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CW3 Val M. Mertens
MG John E. Scully

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CPT David J. Sexauer

HUDSON-MOHAWK CHAPTER ALBANY, NY

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SSG Raymond W. Hayman
CW3 Mark R. Wilkinson

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COL Harvey L. Player

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CW2 Michael J. Brillant
1LT Charles C. Collins
CPT Michael J. Karr
SGT Corey D. Korpela
MAJ David L. Leftwich
15G Richard E. Long
CW2 Steven R. Lopez
MAJ Stephen D. Milburn
CW2 Dale P. Moczynski
CPL William L. Quenga
WO1 Kurt E. Schultz, Jr.
CPT Stanley O. Smith
CSM Thomas Speaks
MAJ Alan D. Swain
1LT Frank W. Tate
SFC Darryl Todman
CSM Wayne O. Wyatt

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CPT Bruce G. Smith

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MAJ Curtis D. Potts

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Mr. Michael Danko
Mr. Donn C. Descoteau
Ms. Kerry L. Duvall
Mr. Jim E. Gray
Lt.Col. Paul B. Hoar
Mr. Sam Merrifield
Mr. James J. Schmidt
Ms. Donna J. Stephens
Mr. Douglas H. Sundmacher
MAJ Peter Tiroch, Ret.
Ms. Melody J. Vernon
Mr. Robert D. Wright

MACARTHUR CHAPTER NEW YORK/LONG ISLAND AREA, NY

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Mr. Russ Vaughn

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CW2 Gregory M. Wren

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1LT Aaron M. Brown
1LT David Burns
WO1 Donal J. Cunningham
CW2 Wayne Grimes
1LT Allan Grines

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MAJ David S. Klein
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Mr. Robert E. Luippold
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CW2 Thomas J. Nye
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Mr. Robert J. Price
Mr. Jay Yudof

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Mr. Robert E. Hayner
1LT Jennifer L. Jensen
LTC James A. Kelley

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MAJ Jae Yeol Chung
1SG Edward L. Davis
SFC Frank J. Godines
1SG Larry J. Green
SFC Ralph H. Gunn
SGT James R. Gunther
CPT Donald F. Herzog
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SGT Jeffrey L. Howard
COL Jung Hwan Jun
CW3 Deok Hyoung Lee
MAJ Kang Bok Lee
SSG Mark W. Lupus
COL Seung Soon Noh
SSG Glenn D. Osowski
SPC Darrell G. Reamer
MSG Donald B. Rue
PFC Daniel L. Schultz
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Mr. John T. Buck
Mr. Lawrence Burdette
Mr. James Gero
CW4 Michael K. Hall
Mr. Jerry S. Kelly
WOC Kerry A. Kirch
CPT Conrad P. Kopczynski
SSG Alan R. Lee
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Mr. Paul W. McGillick
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MAJ Joseph S. Songin

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CW3 Robert S. Wold

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Mr. Jim C. Schmit

NORTH TEXAS CHAPTER DALLAS/FORT WORTH

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Mr. Donald G. Homan
Mr. Tony R. Shelton
Mr. David P. Spencer
Mr. Harley L. Wills

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SGT Donald W. Dussetschleger
SSG Daniel F. Powers

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CPT Raymond C. Monty
1LT Lisa A. Pietsch
2LT Agustin Ramos
Mr. Ronald J. Reynolds
2LT Brian C. Rushforth
2LT Michael P. Schaefer
1LT Michael J. Smith
CPT Michael J. Swanson
CPT Patrick E. Tierney
CPT Wesley L. Wylly

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CW4 Raymond L. Watson

REDCATCHER CHAPTER NURNBERG, GERMANY

Mr. Kendrick A. Taylor

RHINE VALLEY CHAPTER MANNHEIM, GERMANY

CPT Lorenzo Riddick
CSM Elmer L. Woodard

SAVANNAH CHAPTER FT STEWART/HUNTER AAF, GA

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SPC Tracy L. Copley
CW3 Thomas J. Fischer
SPC Robert J. Fry
CW3 Kevin S. Fyle
WO1 Michelle K. Hand
CPT James M. Harvey
SPC Duane E. Huff
CW2 Kenneth D. Loggins
SPC Lance R. Ranck
CPT Warren D. Rogers
CPT Joel B. Schlachtenhaufen
SFC Gerald Scott
CW2 David A. Swann

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Mr. Roger Brown
Mr. T.J. Donovan
Mr. Ben B. Feinreich
Mr. Naginder K. Gaur
MAJ Edward J. Helms
Mr. Gary K. Hodgson
Mr. James L. Joyner
Mr. Jeff A. Lambert
Mr. Robert D. Lambert, Jr.
Mr. Ronald S. Lambert
Ms. Lori J. Miller
LTC Thomas E. Murray, II, Ret
Mr. John Scott Norquist
Ms. Paula Pena
Mr. Louis C. Ritt
Mr. Marvin J. Rozner
Ms. Sidonie Shearer
Mr. Tyrone M. Trbovich
Mr. Tom Truesdell
Mr. Marcel A. Wiedmaier

TALON CHAPTER ILLESHEIM, GERMANY

CW2 Terry W. Braughton
Mr. John R. Ham

TARHEEL CHAPTER RALEIGH, NC

1LT Michael D. Hill

TAUNUS CHAPTER WIESBADEN, GERMANY

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CPT Randy J. Cook
CSM Wylie B. Estes
MAJ Pauline Knapp
CW3 Steven W. Lindsey
SFC Fred L. Mosley
1LT John P. Ruedisueli
MAJ Garald J. Sauer
1LT Richard G. Scholtes
1LT Rufus J. Timberlake
CPT William J. Zaharis

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LTC Jerry D. Craig
LTC Stephen G. Kee

THUNDERHORSE CHAPTER FULDA, GERMANY

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SPC Chris J. Broussard
PV2 Scott W. Martin
CW2 Jimmy L. Moore
2LT David W. Rhone
Mr. Edward D. Ward
PFC David A. Widmyer

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Mr. Gregory H. Bradford
Mr. Floyd J. Crosslin
SFC Cynthia L. Elliott
CW2 Randy J. Grunow
Mr. Larry B. Higgins
SPC Douglas H. Holler
Mr. Jacques M. Huyghe
Mr. Peter S. Jensen
LTC Jack R. Leib
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Mr. Don A. Roberts
WOC Mark E. Shumway
LTC Philip R. Stewart
Mr. Robert Van Dyk

WINGS OF THE DEVIL CHAPTER FORT POLK, LA

CW4 Thomas C. Daley
CPT(P) Stephen J. Dillard
COL Brian L. Thom

— cont'd. on pg. 89 —

NOMINATIONS OPEN

Army Aviation Trainer of the Year

Background

Sponsored by the CAE-Link Corporation, Link Flight Simulation Division, this AAAA National Award will be presented "to the trainer who has made an outstanding individual contribution to Army Aviation during the awards period encompassing CY 92."

Eligibility

A candidate for this AAAA National Award may be a military or civilian nominee and must be actively involved in Army Aviation training. Membership in the AAAA is not a requirement for consideration. The individual contribution of the nominee should have been initiated and completed during the awards period encompassing September 1, 1991 through August 31, 1992.

Documentation

The official nomination form should be used and is attainable from the AAAA National Office, 49 Richmondville Avenue, Westport, CT 06880-2000; Telephone (203) 226-8184.

Suspense Date

The nomination(s) should be mailed so as to arrive at the AAAA National Office not later than September 30, 1992.

Presentation

The AAAA's "Aviation Trainer of the Year Award" will be presented at an AAAA Awards Banquet sponsored by the Army Aviation Center Chapter in December.

Army Aviation Air/Sea Rescue Award

Background

Sponsored by Lucas Aerospace, this AAAA National Award will be presented "to the crew or crew member who have performed a rescue using a personnel rescue hoist that saved the life or eased the suffering of an individual or individuals during the awards period encompassing October 1, 1991 through September 30, 1992."

Eligibility

A candidate must be in the U.S. Army, Active or Reserve Components, and must have had an active role in an air rescue effort using a personnel rescue hoist. Membership in the AAAA is not a requirement for consideration. The contribution of the nominee should have been initiated and completed during the awards period encompassing September 1, 1991 through August 31, 1992.

Documentation

The official nomination form should be used and is attainable from the AAAA National Office, 49 Richmondville Avenue, Westport, CT 06880-2000; Telephone (203) 226-8184.

Suspense Date

The nomination(s) should be mailed so as to arrive at the AAAA National Office not later than September 30, 1992.

Presentation

The AAAA's "Army Aviation Air/Sea Rescue Award" will be presented at an AAAA Awards Banquet sponsored by the Army Aviation Center Chapter in December.

New Members
(continued from p. 88)

WRIGHT BROTHERS CHAPTER COLUMBUS, OHIO

Mr. John A. Binger
Mr. Gene S. Johnson
Mr. Wayne A. Stimpson
Mr. V. Pete Werwick

MEMBERS WITHOUT CHAPTER AFFILIATION

Mr. Marvin Allen
MAJ John P. Apel
CW2 Leo B. Armbrister
Mr. David Yorke Armstrong
2LT Scott A. Arpin
CPT Stephen W. Barksdale
Mr. Richard L. Barnett
Mr. John E. Beard
Mr. Joseph J. Becker
Mr. Angus M. Bell
CPT Bob Boidock
CPT Paul L. Booterbaugh
CW2 Jeffery J. Brooks
WOC Kenneth W. Bryant
Mr. Robert T. Burns
Mr. Lee C. Butler
CPT Christopher P. Callahan
SSG Paul J. Cleary
Mr. Richard C. Cloy
LTC Hubert M. Cochran
CW2 David M. Conboy
Mr. James R. Crowder
Mr. John T. Domalski
CW3 Theodore J. Doucette
COL Joe I. Durant
SFC John L. Fritz
SFC Carl T. Hampton
CW3 Thomas J. Hicks
1LT Mark A. Hinds
CW4 Stephen D. Hope
MAJ Phillip E. Ide
CPT Gregory L. Kennedy
SSG/CPT James T. Kerr, Ret.
SSG Bob F. Lara
CW2 Joseph M. LeBlanc
CW4 David H. Lee
MAJ Wilton A. Little
CW2 Paul Lozito
CPT Michael Lundy
Mr. Frank Mastin
Mr. T. Scott Millar
MSG Aaron Miller
CPT Arcangel Morales
MAJ Barry K. Morrison
COL Larry G. Mullendore
Mr. George E. Nicholson, III
Mr. John J. Ozovek
Mr. John A. Peerson
PV1 James Joseph Perez
MSG Charles J. Rains
Mr. Charles E. Robert
Mr. Louis Alan Rusch
LTC Lawrence W. Shannon
Mr. Robert B. Smalley
CPT Henry F. Smith
Mr. Devendra Sood
Mr. Jack T. Stebe
MAJ Didier C. Tanfin
LTC Billy J. Taylor
CPT Robert A. Taylor
SGT James W. VanDeluyster
CW4 Richard C. Wisner
Mr. J. David Wright

AAAA NEWS

Lost Members
(continued from page 77)

Vangulder, David D., PVT
Viets, Thomas J., WOC
Villarreal, Manuel, Mr.
Voelke, Walter E., SSG
Von Rinteln, James J., MAJ
Walthouse, Robert J., CDT
Ward, John M., LTC
Ware, Robert P., LTC
Wasdyke, James, SFC, Ret.
Watson, Charles P., WOC
Weber, William J., CW3
Weldinger, Kandal K., CPT
Wertz, Michael E., 2LT
Whitcomb, Glenn K., SGT
White, Robert D., 1LT
Whitehurst, Leon c., CW4
Whitlatch, David P., CW3
Williams, Gary D., WOC
Williamee, Mary E., CW3
Willis, Kevin D., 1LT
Wolfe, Douglas M., SPC
Wood, H. Dave, 2LT
Wright, Charles W., WOC
Wright, Harold T., WOC
Wriglesworth, Leslie C., CPT
Yester, Daniel C., CPT
Young, Rodney, PFC
Zabrowski, Zina G., Ms.
Zuger, Dennis J., SPC

New AAAA Chapter Officers

Aloha:
MAJ John C. Burns (VP, Memb. Enroll); CW3 Bud W. Wheeler, Jr. (VP, Prog)

Indiantown Gap:
CW4 Donald E. Beatty (Pres); CPT Scott D. Wagner (Secy); CPT Sheryl A. Rozman (VP, Programming)

Mainz:
CW2 David F. Voynow (Pres); WOC Carlos A. Cascante (Secy); WOC Michael S. Rosenberg (Treas); CW2 Jon C. Weston (VP, Memb. Enroll); WO1 Neil R. Hermoso (VP, Memb. Renew)

Niagara Falls NYARNG:
LTC Richard T. Dillon (Pres); LTC Herman J. Kuhn, Jr. (Sr VP); CPT William P. Woods (Secy); MAJ Michael J. Drongosky (Treas); 1LT Leroy V. Woods (VP, Memb. Enroll); CW4 Bruce E. Shafer (VP, Programs)

Redcatcher:
MAJ Eric R. Cunningham (President)

NEB Minutes

AAAA's National Executive Board (NEB) conducted its Spring meeting at the AAAA National Convention, Atlanta, GA, 8-12 April 1992. Major actions included:

AWARDS. A motion was made to approve the criteria and procedures for the Bronze, Silver, and Gold Medals.

Gold Medal: The awardee has made significant and lasting contributions to Army Aviation.
Silver Medal: The awardee has made an outstanding contribution to Army Aviation.
Bronze Medal: The awardee has made a conspicuous contribution to Army Aviation and support of the Branch.

AWARDS COMMITTEE—STATUS REPORT. MG Stephenson advised the NEB that at the Awards Committee Meeting on February 1, 1992, he appointed MG Rudolph Ostovich III to chair a subcommittee to conduct a top-down review of the AAAA awards program. Among the subcommittee's conclusions were: that the AAAA National Awards were adequate and represent the areas of merit that the AAAA wants and desires to recognize, and that the AAAA increase the funding of and expand the program of awarding Certificates to Distinguished Graduates to include the Basic and Advanced courses for officers, warrant officers, and enlisted at both Ft. Rucker and Ft. Eustis.

BY-LAWS & LEGAL: PETITION TO AMEND AAAA BY-LAWS SECTION 4—FINANCE. MG Drenz referred the NEB to the Agenda and called for a motion to amend the By-Laws. A motion was approved to amend AAAA By-Laws as follows:

4.10—INVESTMENT POLICY.
4.101 *— The National Executive Group shall determine what investments shall be made with association operating/reserve/emergency funds. The overall investment policy shall be predicated on the preservation of principal with reasonable return to offset inflation. Conservative, high-quality investments, such as "Blue Chip" stocks and bonds, along with short-term money funds, U.S. Government-backed securities and certificates of deposit, shall be utilized for investment purposes.*

4.108 *— Investment decisions made by the National Executive Group shall be forwarded to the Association's broker through the Executive Director and reported to the National Executive Board in a timely manner.*

POLICY & PLANS: POLICY PROHIBITING MEMBERSHIP TO INDIVIDUALS FROM WARSAW PACT COUNTRIES. There was general consensus in favor of making AAAA membership available to non-U.S. citizens of all countries friendly to the United States.

On 7 May 1992, the USAREUR Region hosted the USAREUR Aviation Ball in Heidelberg, Germany. The Guest Speaker at the event was LTG David M. Maddox, Commanding General, V Corps. Above, MG Charles F. Drenz, Ret. (left), AAAA National President poses with LTG Maddox (center) and COL Gregory Johnson (right), USAREUR Region President, after LTG Maddox had been presented with a Bronze Order of St. Michael Award during the Award Presentations.

During the USAREUR Aviation Ball, BG(P) Walter Yates, Commanding General Berlin Brigade, USAREUR & 7th Army, ceremoniously cuts the cake commemorating the 50th birthday of U.S. Army Aviation.

Aviation Soldiers of the Month

A Chapter Program to recognize Outstanding Aviation Soldiers on a Monthly Basis.

America's First Coast:
SPC Dennis C. O'Neill
February 1992
SPC Eric J. Stroup
March 1992
Minuteman Chapter:
SSG David E. Lavigne
May 1992
Savannah Chapter:
SPC Charles W. Doublin
February 1992
SPC Thomas J. Anderson
March 1992
SPC Robert J. Fry
April 1992
Washington D.C. Chapter:
SPC Danyeal Craig
April 1992
SPC Selvena B. Carter
May 1992

Aviation NCO of the Month

Washington D.C. Chapter:
SGT William D. Middleton
April 1992
SPC(P) Phillip A. Caplinger
May 1992

Aviation Soldiers of the Quarter

Army Aviation Center Chapter:
SPC Steven O. Jackson
April-June 1992
Old Tucson Chapter:
SSG Daniel F. Powers
January-March 1992
SGT Donald Dussetschleger
April-June 1992

Aviation NCO of the Quarter

Army Aviation Center Chapter
SGT Jeffrey A. Arms
April-June 1992

AAAA Honorary Chapter Memberships

Air Assault Chapter:
Mayor Raymond J. Elliot
Mayor Donald W. Trotter
Colonial Virginia:
MG Kenneth R. Wykle

Aces

The following members have been declared Aces in recognition of their signing up five new members each.

CW2 Michael P. Allard
CW2 Ronnie M. Ashcraft
MSG John H. Bae, Ret.
Ms. Susan E. Barnes
CPT Gary S. Beesley
Mr. Joseph A. Caines
Ms. Martha R. Colmenero
LTC Merle W. Converse
Ms. Janet J. Garmon
CW3 Roger K. Garner
Mr. Fernando P. Gomez
Mr. Ernest Guzman
CW4 William R. Halevy
LTC Gary L. Hall
CW4 John R. Kemp
LTC Herman J. Kuhn, Jr.
LTC Peter A. Marchiony, Jr.
Mr. William A. Martin
SGT Carlos O. Ramosrivera
CPT James M. Simmons
WO1 Andrew V. Smith
MAJ Paul M. Stites
CPT Patrick E. Tierney
2LT Thomas S. Turman
MAJ Gregory M. Williamitis
SSG Christopher T. Wolfla

The Minuteman Chapter, one of AAAA's newest chapters officially activated on 11 December 1991. Pictured above are chapter officers, front row (l-r), CW3 John C. Healey SrVP; CW2 Timmy L. Tompkins, Pres; SGT Carlos O Ramosrivera, Secy. Back row (l-r): SGT Kelly R. Cole, VP Enlist. Aff; CW2 Jerry M. Frey, VP Pub; LTC William H Smith, VP Progs; and MAJ Paul M. Stites, VP Memb. No pictured is CW2 Paul A. Albertson, Treasurer.

Below, Assistant Secretary of the Army for Research Development, and Acquisition Stephen K. Conver, was th guest speaker at last winter's Arizona Chapter meeting. Mr Conver discussed Army Aviation modernization issues, an was presented with a western hat by then-Chapte President COL James T. Stewart, Ret.

LTC Patrick C. Stolze (left), Deputy Commander, 6th Cavalry Brigade, Ft. Hood, TX, presents CSM Wesley Campbell, Jr. with a Bronze Order of St. Michael Award. CSM Campbell was the second enlisted soldier to receive the Bronze Award.

Below, America's First Coast Chapter President William R. Halevy (left) accepts a signed photo of a night space shuttle launch as Army Astronauts LTC Charles "Sam" Gemar (center) and LTC William McArthur (right) display gifts awarded them by the chapter. The two astronauts presented a professional briefing for the winter meeting. The theme: "Grunts in Space".

New AAAA Industry Members

BF Goodrich Flightsystems Inc.
Columbus, OH

Elbit Systems, Inc.
Arlington, VA

Haggard & Stocking Associates, Inc.
Beach Grove, IL

Interface Products, Inc.
Oceanside, CA

Jet Electronics & Technology, Inc.
Grand Rapids, MI

Kipper & Company, Ltd.
Whitney Point, NY

The L.R. Merhaut Company
Lexington, SC

Lear Astronics Corp.
Santa Monica, CA

Logistics Services Int'l, Inc.
Jacksonville, FL

Logitek, Inc.
Ronkonkoma, NY

Pan Am Weather Systems, Inc.
Minneapolis, MN

Serv-Air, Inc.
Greenville, TX

Sierra Technologies, Inc.
Buffalo, NY

Smiths Industries
Arlington, VA

Snap-on Tools Corporation
Kenosha, WI

Standard Aero Parts, Inc.
Sylmar, CA

TEAC America, Inc.
Montebello, CA

USAA
San Antonio, TX

U.S. Industrial Tool & Supply Company
Plymouth, MI

The SILVER EAGLES Program was established in 1988 to recognize those AAAA supporters who have been members for at least 30 years.

SILVER EAGLES receive a special 30-year membership pin, a listing in ARMY AVIATION magazine and recognition at the AAAA Convention.

We've come a long way since 1957 — when a small group of aviation officers banded together to form the AAAA. Thank you SILVER EAGLES for your continued support.

In addition to the Silver Eagles listed in last month's magazine, the following AAAA Life Members joined AAAA in 1962.

Aufill, John S., COL
Bailey, Willard G., LTC
Bean, Robert H., LTC
Brister, Delano R., LTC
Conklin, Willard D., LTC

Cook, Elmer M., CW4
Dibble, John Jr., COL
Eckert, William N., LTC
Frazer, Richard L., CPT
Freeman, Bobby H., COL

Hand, Lee M., COL
Hegdahl, James O., COL
Lamonte, Robert S., LTC
Lehner, Charles R. Jr., COL
Mills, Jon R., LTC

Orr, Thomas L., COL
Peters, John W., LTC
Sweeney, Robert F., LTC
Turman, Willard G., CW4
Valaer, John P., CW4
Young, George J., LTC

New AAAA Sustaining Members

American Legion Post No. 29, Russellville
Russellville, KY

Firestone/Mastercare Service Center
Clarksville, TN

Little River Ford Toyota
Hopkinsville, KY

Regional Broadcasting, Inc.
Hopkinsville, KY

Obituaries

MAJ Richard R. Partheymuller, Ret.

MAJ Richard R. Partheymuller, Ret. died on 5 March 1992 in Sabine Pass, TX. At the time of his death, he was an employee of Petroleum Helicopters, Inc. He was a AAAA member since 1969. He is survived by his spouse.

AAAA CALENDAR

A listing of recent AAAA Chapter events and upcoming National dates.

June, 1992

- **June 18.** Monmouth Chapter Professional Luncheon Meeting. Guest Speaker: Gary L. Smith, Director, Special Operations Research, Development, and Acquisition Center.

July, 1992

- **July 10.** Savannah Chapter Business-Social General Membership Meeting. Guest Speaker: COL Burt S. Tackaberry, outgoing Chapter President.
- **July 10.** AAAA Scholarship Board of Governors Executive Committee Meeting, Best Western, Arlington, VA.
- **July 11.** AAAA National Scholarship Selection Committee Meeting to select CY92 scholarship recipients, Best Western, Arlington, VA.

October, 1992

- **Oct. 12.** AAAA National Executive Board Meeting, Sheraton Washington Hotel, Washington, D.C.
- **Oct. 12.** AAAA Scholarship Board of Governors Executive Committee Meeting, Sheraton Washington Hotel, Washington, D.C.
- **Oct. 27-29.** Monmouth Chapter AAAA Biennial Symposium. Theme: "Friends in Army Aviation Electronics". Gibbs Hall (Officer's Club), Ft. Monmouth, NJ.

February, 1993

- **Feb. 3-5.** 19th Annual Joseph P. Cribbins Product Support Symposium, Stouffer Concourse Hotel, St. Louis, MO.

AN/ARC-217

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