Special Focus: Aviation Electronic Combat

SPECIAL FOCUS: AVIATION ELECTRONIC COMBAT

ARMY AVIATION

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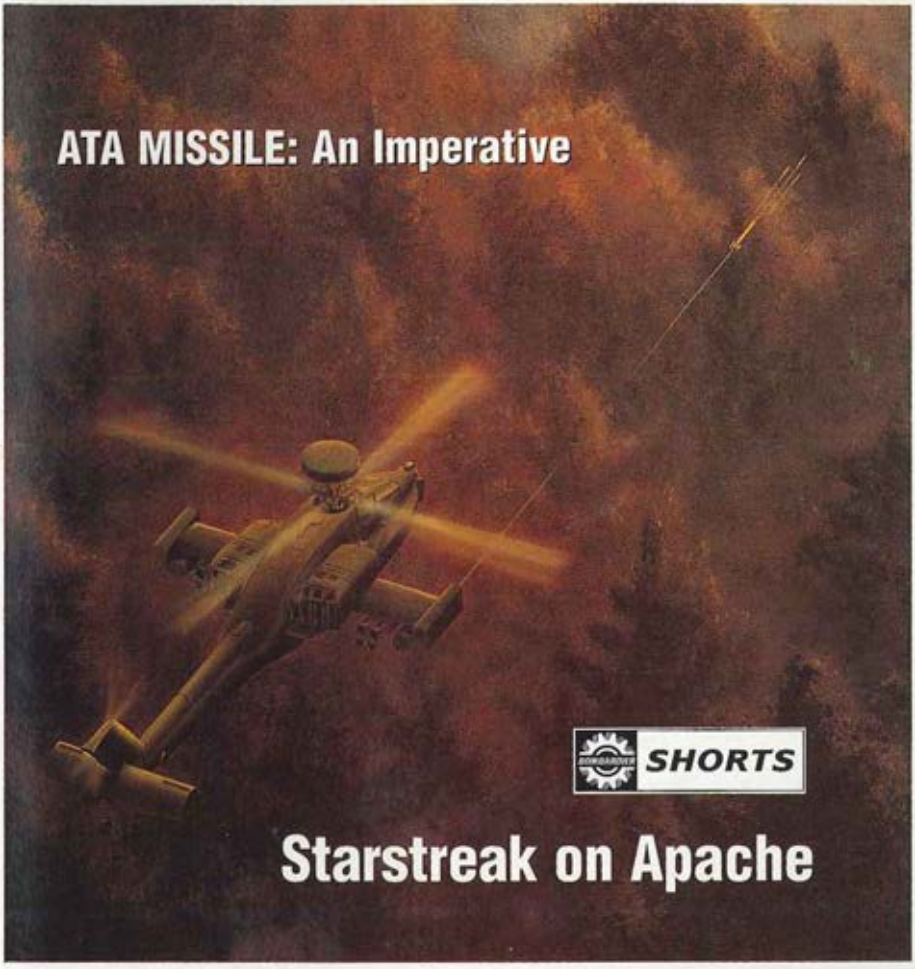

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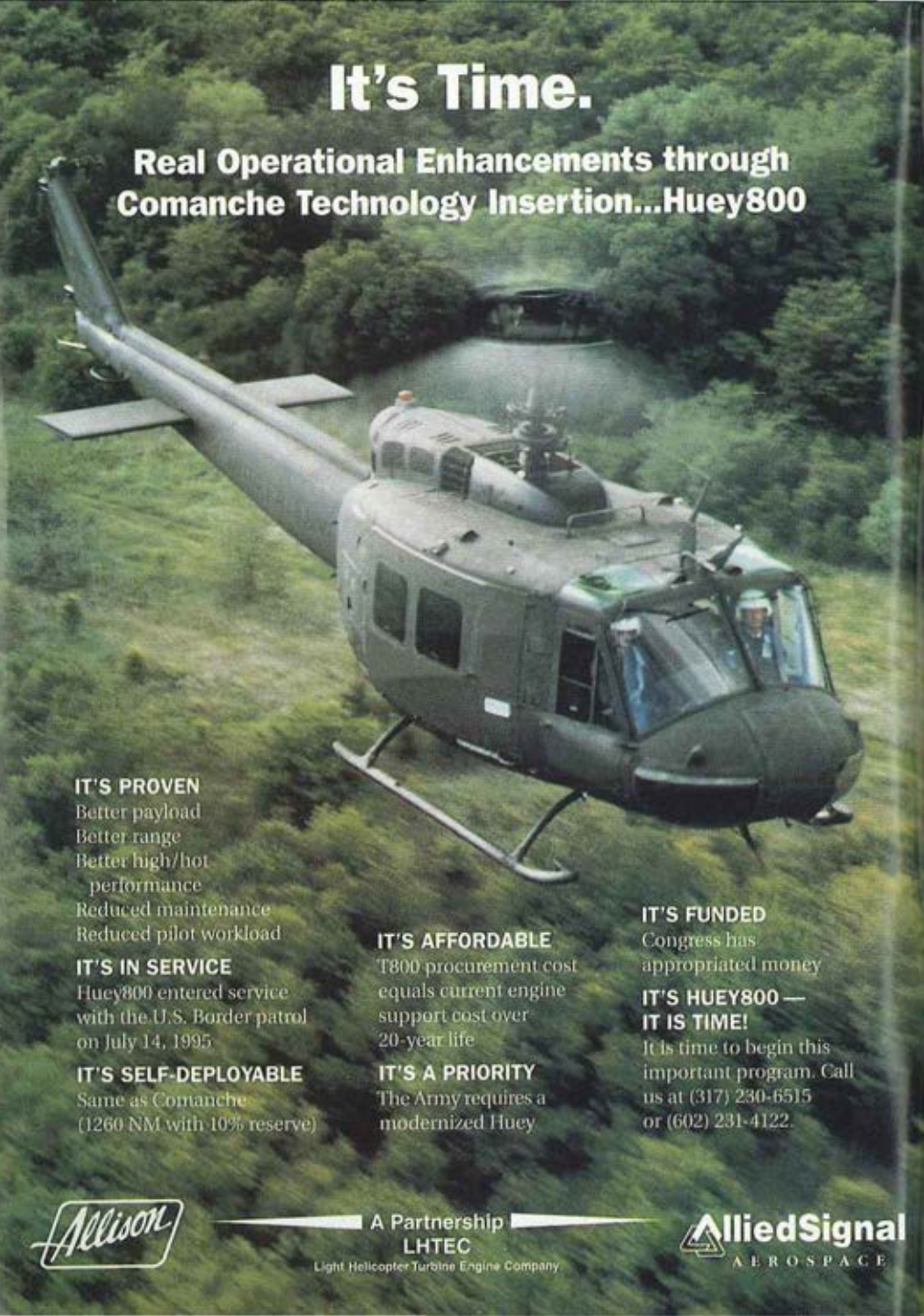

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FORTHCOMING ISSUES
November 1995 — Rotary and Fixed Wing Updates.

December 1995 — Comanche First Flight and Vietnam: 20 Years Later.

Briefings

President Clinton has nominated the following Aviation Colonels for promotion to Brigadier General. They are: **COL(P) Charles M. Burke**, currently Assistant Chief of Staff, G-3, III Corps, Ft. Hood, TX, and **COL(P) Anthony R. Jones**, currently Chief, Operations and Contingency Plans, Office of the Deputy Chief of Staff for Operations and Plans, Washington, D.C.

The **Dustoff Association** will be holding its 17th Annual Reunion at the Holiday Inn Northwest in San Antonio, TX on 23-25 February 1996. For more information, contact The Dustoff Association, P.O. Box 8091, Wainwright Station, San Antonio, TX 78208, or call "Doc" Kralich at (210) 558-7764.

AlliedSignal Aerospace has been selected by **McDonnell Douglas Helicopter Systems** to provide Multi-Purpose Displays (MPDs) for its AH-64D Longbow Apache in a contract valued at more than $300M. The MPDs are state-of-the-art, color, active-matrix liquid crystal displays which will replace the cathode-ray tube monochromatic displays currently in the AH-64D. AlliedSignal Government Electronics of Teterboro, NJ will provide the hardware, software, and technical support. Deliveries will start in the spring of 1996.

Raytheon Aircraft has been awarded a $52.8M contract option from the U.S. Army Aviation and Troop Command, St. Louis, MO for 14 C-12R airplanes. A militarized version of the Beech King Air B200C, the C-12Rs are used as utility aircraft for personnel and cargo transport. This option exercise results in a total of 29 C-12 aircraft for the U.S. Army Reserve.

Selection of the RTM322 engine for the British Army WAH-64D Longbow Apache is expected to result in business worth more than $150M for joint powerplant manufacturers **Rolls-Royce** and **Turbomeca**. The contract calls for 135 2,100 shaft-horsepower engines for the aircraft. The majority of the work will take place at the Rolls-Royce Military Aero Engines headquarters in Bristol, England, and Turbomeca's facilities in France.

Sabreline Corp. has won a contract to overhaul and upgrade the Rotary Wing Head Servo Assembly for the UH-60 Black Hawk. Valued at $3.4M, options could add an additional $1.3M in revenue. Work will be performed at Sabreliner's Independence, KS Engine Accessory Overhaul Center.

The **TRW/Israel Aircraft Industries'** prototype of the E-Hunter Unmanned Aerial Vehicle (UAV), a new derivative of the U.S. Government Joint Tactical UAV (JT-UAV), made its first flight 25 July 1995 at a test site in Israel. The E-Hunter was developed as a cost effective/low risk approach to add long endurance capability to the Hunter Joint Tactical UAV. The E-Hunter will be able to loiter on station more than 25 hours at altitude of 25,000 feet.

VOLUME 44 ARMY AVIATION NUMBER 10

FEATURE ARTICLES

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AAAA DIRECTORY: THE 1995 DAC PACK

DEPARTMENTS

FRONT COVER

Paid Advertisement: Shorts Brothers (USA), Inc. Shorts Starstreak, a leap ahead in missile technology, combining laser-beam accuracy with a lethal, 3-warhead, hyper-velocity punch, will be tested as an air-to-air weapon on Apache by the U.S. Army next spring. Caption provided by Advertiser.

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THE DEFICIENCY ANALYSIS BRANCH (DAB)

The most viable resolution to field deficiencies is open dialogue with units in the field and the Combat Training Centers (CTC). Especially in Army Aviation, expensive mistakes and idle training need to be avoided at all costs.

"...expensive mistakes and idle training need to be avoided at all costs."

Since the Aviation Warfighting Center is committed to identifying deficiencies throughout Army Aviation and tracking them to resolution, we have created the Deficiency Analysis Branch (DAB) under the Directorate of Training, Doctrine, and Simulation (DOTDS). This branch will analyze Army Aviation lessons learned and training deficiencies. It will be our central clearing house that will collect, assess, track and respond to deficiencies.

The DAB will be a test bed for the next six months, determining if it can make a positive impact on the Army Aviation Community.

My questions to commanders and the field are:

- Are we where we should be?
- Is training conducted effectively?
- Is evolving aviation doctrine about right in these ever-changing times?
- Are our organizations structured to support training and established doctrine?
- How can we do it better, and what is the future?

Some recent deficiency observations from Aviation CTC controllers include: "Aviation LNO procedures are lacking; assembly area force protection is poor; we have difficulty clearing fires into the ground maneuver zone; and some of our units have a lack of overall knowledge and expertise in Aviation Task Force Operations." However, identifying the deficiencies is only the first step.

These are some of the specific tasks the branch will perform with the observations:

- Reduce data to meaningful documentation.
- Validate training/doctrine deficiency.
- Determine who to notify of non-train-


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U.S. to Host World Helicopter Championship

The good news is that for the first time, the United States has been chosen to host the World Helicopter Championships. The challenge is that The Helicopter Club of America (HCA), needs everyone's support to make this event the best yet.

Past President of the AAAA and current HCA President, BG James Hesson, Ret., has announced that Salem, OR will be the site of the 9th World Helicopter Championships on 15-18 August 1996 at McNary Field.

Between now and then, HCA needs to identify more competitors, gain more new members, and receive more individual and corporate monetary contributions.

Previous World Helicopter Championships have been held in Russia, Poland, France, Germany, and England. The United States Team has been the World Champions in three of the eight championships held to date.

The competition is comprised of four events conducted over several days. Each competitive country team is comprised of a maximum of seven crews (pilot and copilot), five of which must be declared as the country "team". Anyone entered in the competition can compete for individual honors.

The four team and individual scored events are: Event One: Timed Arrival with Load Drop Off; Event Two: Precision Flying; Event Three: Navigation; Event Four: Slalom and Skill.

The United States Team will be selected during a U.S. National Competition to be held in McMinnville, OR, 3-5 May 1996.

To learn more about these events, volunteer, secure entry forms, and contribute financially, contact BG James M. Hesson, P.O Box 227, Vienna, VA 22183; (703) 255-3272; FAX (703) 255 2567; or the Helicopter club of America E-Mail on America Online at: **hcahesson@aol.com**

ing/doctrine deficiency.

- Coordinate with internal and external systems managers and training agencies to insure tracking and disposition of deficiencies.
- Follow-up on suspense and ensure action/resolution or verification.
- Compose response to the source/originator to complete action.
- Gather feedback from CTCs.

The outcome will be training solutions to performance deficiencies, recommendations for non-training solutions to performance deficiencies, and improved overall training efficiency and effectiveness.

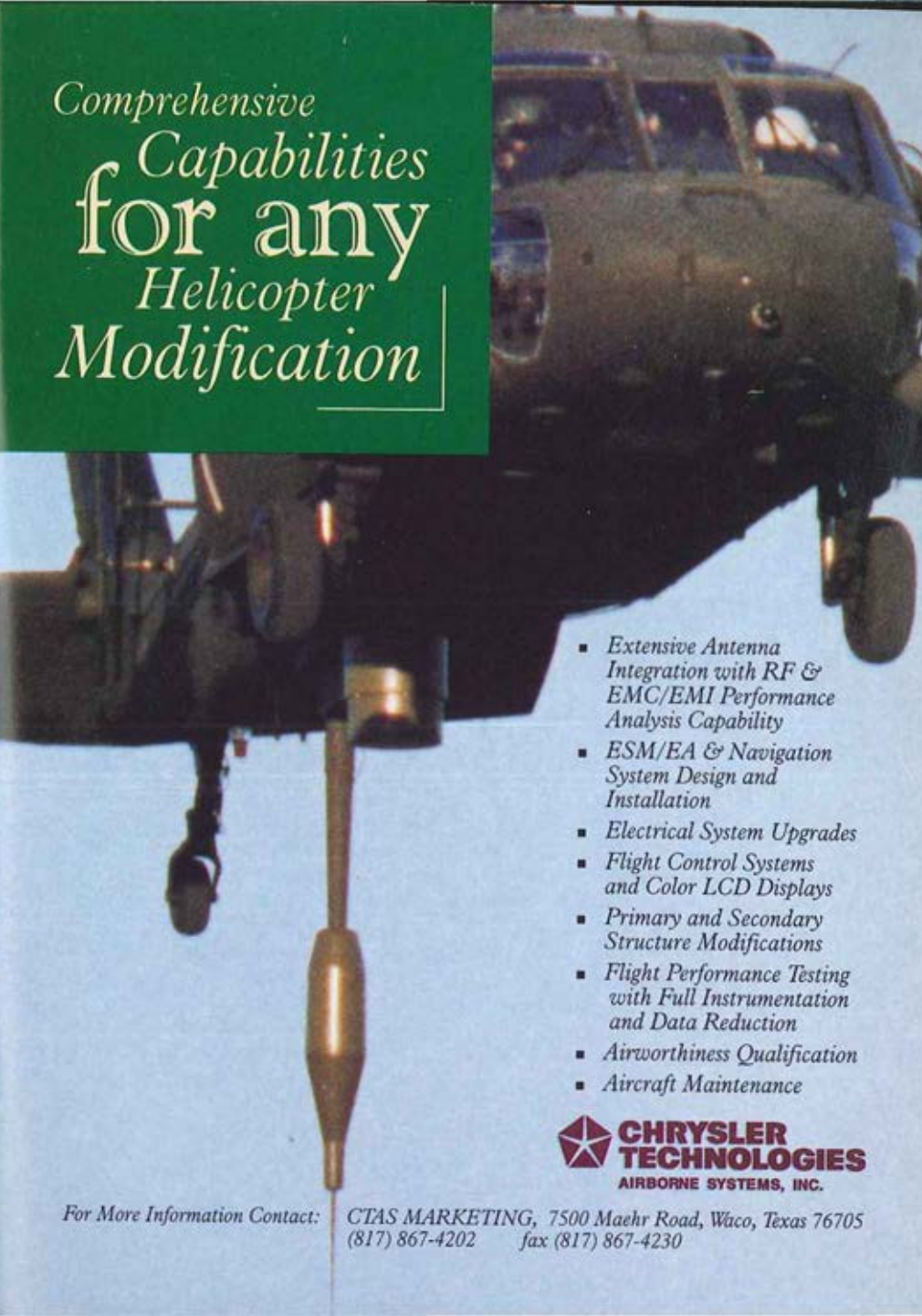
Additionally, the DAB will track and catalog deficiencies, from the field, CTCs, professional literature, e.g., *CALL, Smoke Signals,* and professional bulletins for action and resolution. Deficiencies will be categorized by their domain: doctrine, training, organization, leader development, material and soldiers.

Our intent for the Deficiency Analysis Branch is to convert problems to solutions, questions to answers, and weaknesses to strengths. By design, this initiative will enable commanders throughout the Force to learn from one another's experiences.

Once again, I solicit the input from the field brigade commanders and the Combat Training Centers to develop the Deficiency Analysis Branch into a viable resource for Army Aviation. We are committed to remaining Above the Best!

★ ★

MG Adams is the Aviation Branch Chief and CG, U.S. Army Aviation Center and Ft. Rucker, AL, and Commandant, U.S. Army Aviation Logistics School, Ft. Eustis, VA.



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BY COL ROY P. OLER
and MARY MOVIC

ASSURING AVIATORS' SURVIVABILITY ON THE DIGITAL BATTLEFIELD

"The Army of the 1990's and the 21st Century will capitalize on the potential of technology to improve capabilities in critical areas such as information management, lethality, battlefield mobility, and protection of the individual soldier."

The above statement lies at the heart of AEC's philosophy and ability to excel in assuring Army Aviation's survivability on the digitized battlefield. Through the advancement of state-of-the-art technology, PM AEC supports the Army modernization goals to protect the force, win the battlefield information war, project and sustain the force, and dominate the maneuver battle.

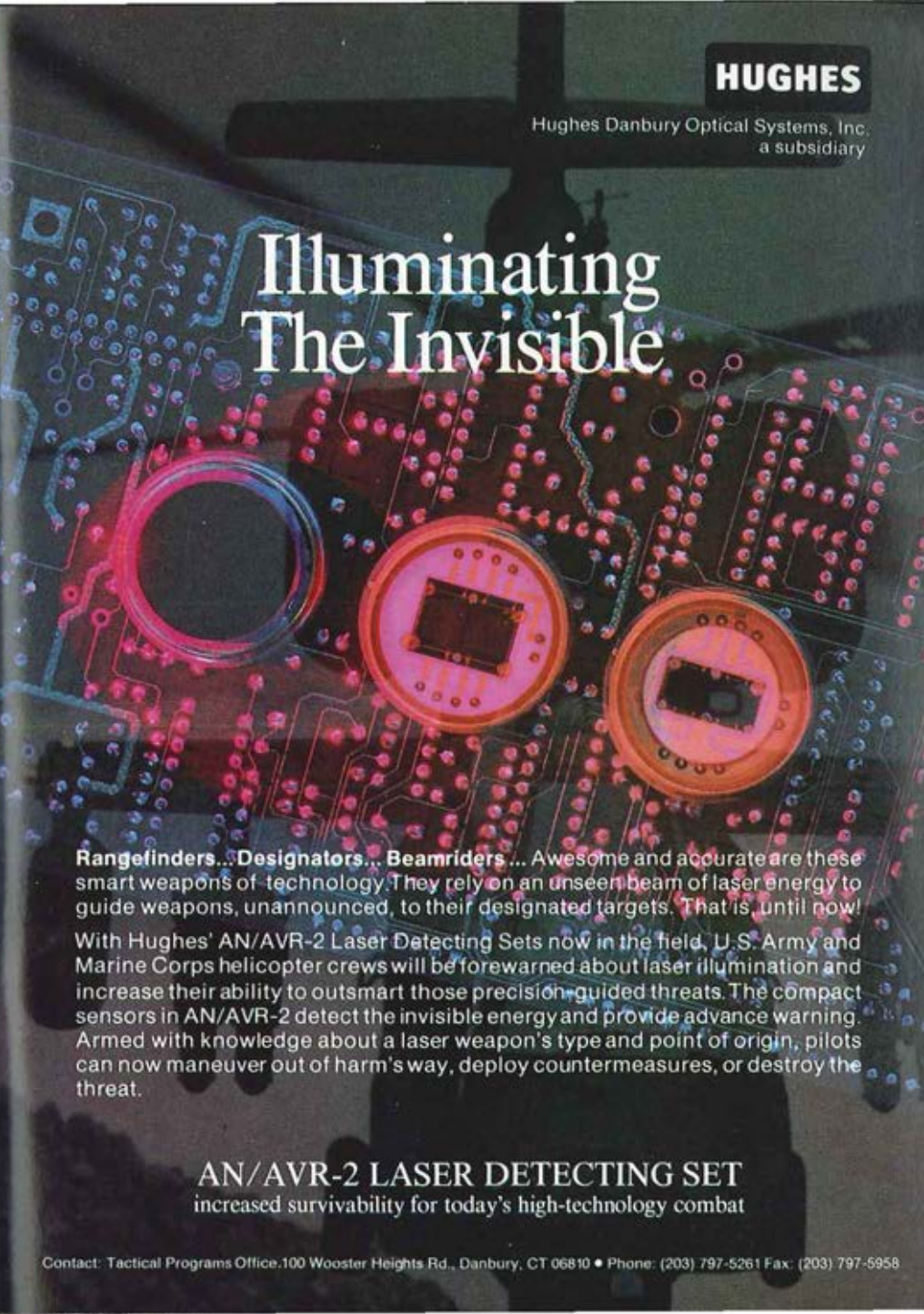
The roles and missions of the Aviation Electronic Combat PMO.

The Project Manager for Aviation Electronic Combat (PM AEC) is responsible for management of several critical areas of Army focus: Avionics, Aviation Digitization, and Aircraft Survivability Equipment (ASE). Avionics and Aviation Digitization support the Army goal to digitize the battlefield while ASE increases combat effectiveness by providing active and passive protection against anti-aircraft systems.

PM AEC is an active proponent in the implementation of acquisition reform. Initiatives such as streamlining, tailoring the acquisition process, Integrated Product Teams (IPTs), etc. are aggressively pursued to provide our soldiers leading edge technology quicker and at a lower overall cost to the Government. Additionally, PM AEC acts as a tri-service focal point to assure commonality and efficiency through the pursuit of numerous multi-service and joint programs.

Avionics and Aviation Digitization. Digitization is the application of information technologies to acquire, exchange, and employ timely digital information throughout the battlespace. Aviation's primary thrusts in avionics are towards projects which enhance situational awareness, command and control, and operational tempo. Special emphasis is placed on transferring threat and target information from sensor platforms to the deciders and shooters as close to real time as possible. Without the critical position/navigation, communication, and mission planning Avionics projects, aviation's aircraft cannot be fielded in a mission capable status.

Avionics is comprised of a multitude of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critical programs and initiatives. PM AEC has recently reorganized to provide more intensive management of these efforts. The Avionics Product Manager is LTC Robert Buckstad, who is responsible for the following programs:

• *Global Positioning System (GPS):* The GPS provides Army Aviation with extremely accurate and secure navigation capability and assists in situational awareness and the prevention of fratricide. GPS is installed in several configurations based on mission profile, operational requirements, and avionics architecture of the aircraft.

• *High Frequency Nap-of-the-Earth Communications (HF NOE COMM):* The HF NOE COMM satisfies critical operational deficiencies for long range and "over-the-hill" connectivity for Army aircraft. The system features Automatic Link Establishment to replace difficult manual searches for workable frequencies.

• *Have Quick II (HQ II):* The HQ II is critical for voice and digital information cross flow in both secure and electronic-counter-countermeasure modes. The HQ II is the standard for joint service and NATO communications.

• *Improved Data Modem (IDM):* The IDM is the joint service standard for the exchange of digital information across all aviation communications capabilities for all Army, joint, and combined command, control, communications, and computerization improvement (C4I) functions.

• *Systems Architecture:* The objectives of Systems Architecture are to assure inter-operability--the achievement of joint and combined arms information exchange and use--and intra-operability--the achievement of efficient and effective computer, communications, and electronics digital integration to reduce soldier/crew workload and improve systems operations.

The Deputy for Aviation Digitization is Mr. Randy Buchner, who is responsible for the following programs:

• *Army Airborne Command and Control System (A2C2S):* The A2C2S functions as a highly mobile command post. When mounted in the UH-60 helicopter with auxiliary equipment, it provides tactical voice, data, and imagery digitized battlefield communications both in secure and nonsecure modes for corps, division, and brigade commanders.

• *Aviation Mission Planning System (AMPS):* AMPS is a mission planning/battle synchronization tool that will automate aviation mission planning tasks. It will be the basic building block for Army's digitization of the tactical operations centers.

• *Aviation Tactical Operations Center (AVTOC):* AVTOC is a critical component of the command and control mission area. It will interface with the Maneuver Control System (MCS), have long range nap-of-the-earth communications, provide a communications interface to the Combat Net Radio, Area Common User System, Army Digitized Data Systems, division and/or corps command nets, have UHF Have Quick II network capability, have quick erect antennas for all Combat Net Radios, and provide the capability to automate aviation mission planning.

• *Simulation:* Constructive, virtual, and live simulations provide the necessary tools for development of advanced aviation weapon systems and cost effective training vehicles for sustaining perishable combat skills of the aviation warfighter.

• *Task Force XXI:* Aviation's participation in Task Force XXI will enhance situational awareness, command and

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control, operational tempo, and mission planning.

Aircraft Survivability Equipment. Aviation/aircraft survivability and combat effectiveness are critical to the mission of the U.S. Army. Aircraft Survivability Equipment (ASE) provides active and passive protection against anti-aircraft systems. The ASE program enables the Army tactical aircraft fleet to accomplish its mission on the modern battlefield by enhancing aircraft and aircrew survivability in a hostile threat environment that includes infrared, radar, and optically/laser directed weapons.

ASE equipment increases combat effectiveness and potential for mission accomplishment by reducing or eliminating the ability of threat air defense systems to detect, hit, damage, or destroy Army aircraft. ASE includes systems to counter monopulse, millimeter wave, frequency agile, pulse doppler, and continuous wave radars; passive infrared missile seekers; and laser directed weapons systems.

ASE has joint service applications that are coordinated through the Joint Technical Coordinating Group for Aircraft Survivability (JTCG/AS), as well as NATO applications coordinated through OSD. ASE also provides the technical base development for Comanche and Special Operations Aircraft.

ASE priority programs include the following:

- *Advanced Threat Infrared Countermeasure/CommonMissileWarning System (ATIRCM/CMWS):* The ATIRCM/CMWS is an airborne countermeasure self-protection system capable of detecting and defeating infrared threats. This is a tri-service program with the Army designated as the lead.
- *Advanced Threat Radar Jammer (ATRJ):* The ATRJ is a lightweight common module radar jammer protecting against pulse, pulse doppler and continuous wave radar emitters.
- *Infrared (IR) Expendables:* IR Expendables are an advanced infrared expendable multi-spectral device. It replaces and/or enhances the Army M-206 IR decoy and will be used in the ATIRCM/CMWS dispenser.
- *ASE Integration:* ASE Integration defines the software and hardware interaction/interoperability/electro-magnetic interference areas between ASE and other on-board electronics systems.
- *AN/AVR-2A Laser Detecting Set (LDS):* the AN/AVR-2A LDS is a passive laser warning system which receives, processes and displays threat information.
- *AN/APR-39A(V)2 Radar Signal Detecting Set (RSDS):* The AN/APR-39A(V)2 RSDS is a lightweight radar warning receiver which monitors the radio frequency environment for potential threats to the aircraft. This is a joint Army/Navy/Marine Corps program.
- *ASE Training Devices (ASET IV):* The ASET IV consists of ground based mobile threat emitters which simulate threat infrared and radar frequency defense systems.

Continued excellence in the intensive management of Avionics and ASE programs by PM AEC is critical to achieving the Army's modernization goals. Aviators from all services entrust their lives to the successful performance of this equipment in the defense of our country. We owe them no less than the best.

★ ★

COL Oler is the Project Manager, Aviation Electronic Combat PMO, St. Louis, MO.

Ms. Movic is an Operations Research Analyst, Business Management Division, AEC PMO, St. Louis, MO.

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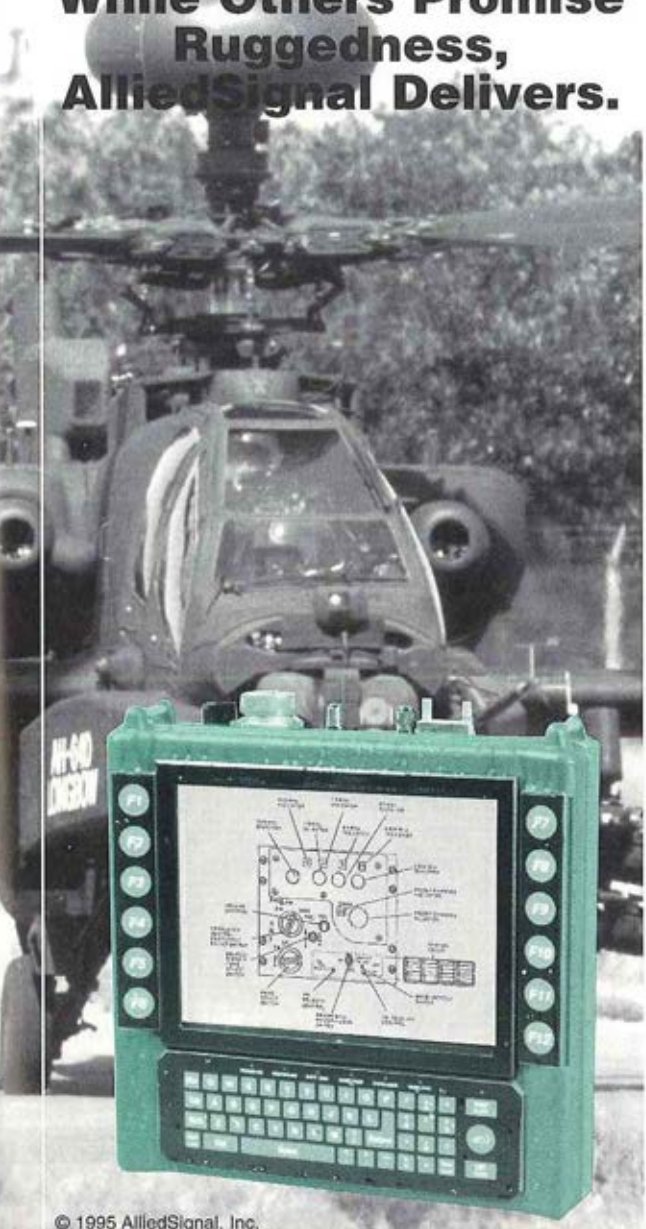

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ATIRCM/CMWS PROGRAM OVERVIEW

The ATIRCM/CMWS program marks the beginning of a new era in Aircraft Survivability Equipment for the U.S. Army. It is a fully integrated infrared countermeasure system with application to the fleet of modern U.S. Army rotary wing aircraft.

ATIRCM has grown to become a multiservice infra-red countermeasures program.

In addition, the CMWS portion of the system provides missile warning capability for the fleet of U.S. Air Force, U.S. Navy and U.S. Marine Corps Tactical Fighter aircraft with potential application to U.S. Air Force transport and bomber aircraft. The drive for this capability for all three services comes from threat weapon systems, especially man-portable surface-to-air-missiles (SAMs), becoming more easily obtainable. In the near future, more foreign threat weapon systems technology will be seen than in the past 25 years.

The Advanced Threat Infrared Countermeasures/Common Missile Warning System (ATIRCM/ CMWS) is the program within the Project Manager-Aviation Electronic Combat (PM AEC) to develop a replacement for the AN/ALQ-144A, AN/ALQ-156 or AN/AAR-47 (developed by the Navy), and the M-130. This replacement will be a modular, reconfigurable system able to detect and defeat current, near future, and projected infrared (IR) threat missiles on a wide variety of aircraft platforms.

The ATIRCM/CMWS is the core system of the Suite of Integrated Infrared Countermeasures (SIIRCM). The ATIRCM/CMWS is designed to meet operational requirements for a modular IRCM system capable of self-protection IR jamming countermeasures and providing sensor input for situation awareness.

System Description. The ATIRCM system consists of four major subsystems:

- An Advanced Threat Missile Detector (ATMD);
- An Electronic Control Unit (ECU) (i.e., System Processor);
- An Advanced Threat Infrared Jammer (ATIRJ), and;
- An Improved Countermeasure Dispenser (ICMD).

The ATIRCM will be installed on Army

aircraft to provide protection against current, near future and future IR guided missiles. The lead platform for ATIRCM will be the MH-60K, with follow-on platforms being the AH-64C/D, EH-60/UH-60A/L/Q, MH-47E and CH-47D. The ATIRCM program completed contractor and Government testing in Demonstration and Validation (DEM/VAL) and the combined ATIRCM/CMWS program will enter Engineering and Manufacturing Development (EMD).

The CMWS Subsystem is a joint Army, Air Force, Navy, and Marine Corps program. The CMWS consists of Item 1 and a subset of (or a portion of) Item 2 of the ATIRCM subsystems identified above. The CMWS program is managed as a component system of ATIRCM within PM AEC. The objective of the program is to provide a missile warning capability with a common system for use on Air Force and Navy/Marine tactical aircraft (TACAIR) and Army rotorcraft.

Initial installation/integration is planned for the following service lead platforms: AV-8B and F-16. The follow-on platforms include: OH-58D, ALQ-131, ALQ-184, A-10, F-15, and F/A-18. In addition bomber and transport aircraft may also make use of the CMWS to enhance their survivability.

The goal of the ATIRCM/CMWS program is to establish a common system design with fit, function, and interfaces that are interchangeable across all platforms (aircraft and pods). Electro-optic technologies will be used to meet the operational requirements for missile warning to detect/declare the current missile threats, with particular emphasis

on IR Surface-to-Air Missile (SAM) threats.

For U.S. Army applications the ATIRCM/CMWS will improve existing IR countermeasures by combining the functions of the missile detector, IR Jammer, and decoy dispenser to permit more effective countermeasures against a greater number of IR threats. The ATIRCM/CMWS will be built using a modular concept to allow tailoring of the system configuration to each aircraft.

The CMWS subsystem will detect incoming missiles and, in conjunction with the tracker on the ATIRJ, will declare missiles as valid threats, if they are determined to be coming at the host aircraft. Once declaration is made the ECU will provide an appropriate command to either the ATIRJ and/or the ICMD. The ATIRJ employs a gimbal-mounted Xenon flashlamp to generate jam waveforms for Band I and II missiles and an externally mounted laser to generate Band IV waveforms. The use of a laser, which provides Jam to Signature ratios that are several orders of magnitude greater than the AN/ALQ-144A, allows the system to employ generic jam codes so that specific jam codes are not required for each threat missile. This is most critical due to the wide variety of Band IV SAMs expected over the next few years.

The ICMD is being developed based on a modified AN/ALE-47 and M-130 combination which has the capability to identify individual munition load-outs. This ability will be most critical with the advent of several advanced infrared decoys. This capability to identify the individual munitions will also be a multi-service capability since the key component is the standard AN/ALE-47 sequencer switch. When the CMWS is installed on USAF and USN/USMC TACAIR it will provide an appropriate command to the existing Countermeasures Dispenser System (CMDS). The CMWS, when internally installed on TACAIR, will also provide audio and/or visual warning to the aircrew to permit initiation of appropriate defensive maneuvers in conjunction with manual or automatic countermeasures dispensing. This modularity will also permit product improvement to each subsystem independently of the other, thus allowing for system growth to defeat new types of threats.

The U.S. Army ATIRCM program has expanded within the last year to become a multi-service IR countermeasure program, with the benefits of such a program. The U.S. Army will buy about 1,000 full up ATIRCM systems for the fleet of rotary wing aircraft. The USAF, USN and USMC will buy about 2,000 CMWS for application to Tactical fighters, with additional quantities possible for application to transports and bombers.

This will reduce the overall cost of missile warning to all services, and provide the USAF, USN and USMC with missile warning capability that has growth to accommodate their potential plans for directed IR countermeasures on their transport aircraft. In addition to lowered production costs all services will have common spares and repair parts with lowered costs of ownership for all services.

★ ★

Mr. Stanton is the Assistant Joint Project Manager for Advanced Threat Infrared Countermeasures/Common Missile Warning System (ATIRCM/CMWS), PM AEC, St. Louis, MO.

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AVIATION

Range Extension Fuel Systems

BY MAJ CORY W. MAHANNA
and JAMES GAGLIARDUCCI

WINNING THE INFORMATION WAR

The general location of the SCUD launchers is known but the mission requires pin-point targeting to assure destruction of the SCUDs. The Army Airborne Command and Control System (A^2C^2S) sends an Unmanned Aerial Vehicle (UAV) into the area to get an up-to-the-minute picture of the position and defensive posture of the SCUD site.

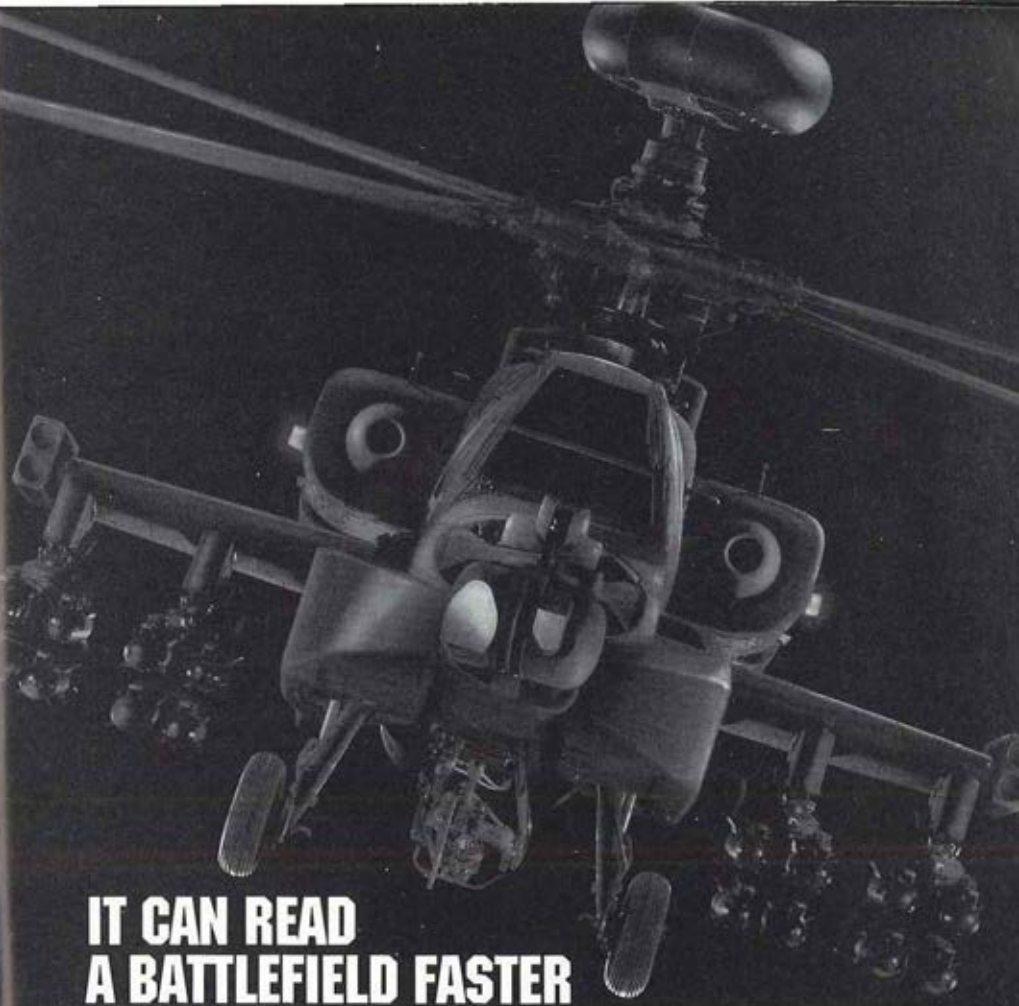
"Imagine outnumbering the enemy with computer technology instead of massive force or firepower."

Based on this knowledge, a Longbow Apache is sent to the site and uses smart munitions on the launchers while its camera records the attack. The A^2C^2S receives a real-time digital snap shot of the Apache imagery during the attack and runs a battle damage assessment that indicates two of the launchers were not destroyed. Because the Aviation commander knows this during the engagement, he directs the Longbow Apache back for another run before the SCUDs can escape. The mission is complete; the threat is destroyed.

Imagine outnumbering the enemy with computer technology instead of massive force or firepower. Imagine the ability to know his every move, to penetrate his decision cycle, to kill his most advanced weapons before he has a chance to strategically place them. Imagine the technology to do this.

Imagine no more. The digitization of the battlefield is rapidly becoming a reality with the ability to pass in near real time, intelligence, targeting, and other digital information between various airborne and ground platforms. This capability will give U.S. and Allied forces the capability to attack with lightning speed. It gives them overwhelming superiority, unparalleled lethality, and a tempo of battle that will quickly defeat the enemy and minimize the risk to friendly forces.

Timely delivery of up-to-date data between attack forces can mean the difference between a stunning success or a missed opportunity during combat. Digital communications between Army Aviation, ground, and joint forces provides the commander a timely and accurate picture of the battlefield. The ability to handover digital target information, secondary imagery, and



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Longbow Apache, with its fire control radar and digital avionics, will be the premiere system within the Army's Force XXI, controlling *the Battlespace* through real-time information and efficient battle management.

The multi-role Longbow Apache will maintain overwhelming dominance and provide a significant deterrent to aggression.

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Performance Above and Beyond

access intelligence data across the battlefield of tomorrow can increase lethality and survivability of maneuver units by orders of magnitude.

Critical Links. Providing an accurate picture of the enemy situation requires rapid analysis and dissemination of all possible sources of intelligence information. Establishing communication linkages between aviation assets and intelligence processing nodes on the battlefield provides the commander real time information and the situational awareness picture.

With this in mind, and through the efforts of Team Battle Focus, Intelligence and Aviation communities have identified five critical communication links necessary to leverage the capabilities of heliborne sensors and improve intelligence support to aviation operations.

- *All Source Analysis System (ASAS)/Ground Station Module (GSM)/Common Ground Station (CGS) to Army Airborne Command and Control System (A^2C^2S)/Aviation Tactical Operations Center (AVTOC)* — A JSTARS Ground Station Module (GSM) will routinely deploy in support of each Brigade AVTOC. Each AVTOC will also have an intelligence station with ASAS software.

By linking these two systems to the A^2C^2S and into the local area network of the AVTOC, the best intelligence picture available will be continuously provided to aviation commanders and their staff. They will also be able to pull other intelligence products such as imagery, weather, and Intelligence Preparation of the Battlefield (IPB) products as necessary for mission planning and execution. This linkage will be used to provide intelligence updates for the commander's common picture of the battlefield.

- *Aviation Sensors to the Joint Surveillance Target Attack Radar System (JSTARS) GSM/CGS* — Aviation sensors such as the Kiowa Warrior, Longbow Apache, and Comanche can significantly enhance the situational awareness of all commanders. By linking these systems to the GSM/CGS, near real time reports, moving target indications, and imagery can be downlinked and disseminated to both aviation and ground commanders. This capability supports both maneuver and targeting decisions and potentially near real time battle damage assessments. This connection allows the Longbow Fire Control Radar (FCR) messages, video imagery from airborne cameras and FLIRs, and Comanche-era data to be passed between aviation assets and to battlefield commanders.
- *Broadcast Intelligence to the A^2C^2S/AVTOC* — Broadcast intelligence systems provide a wide variety of intelligence and information useful for aviation mission planning and execution. In the vast majority of cases, this information will come through intelligence channels such as ASAS and the GSM/CGS. During some deep operations, command and control and attack helicopters may be out of communication with the ground AVTOC. In these cases, a direct link between national sensors and these helicopters provides a continuous update of target activity and enemy air defenses. This will augment the intelligence connection with ASAS/GSM/CGS, and support deep operations when Line-of-Sight (LOS) communications with the GSM/CGS are not feasible.
- *JSTARS with the A^2C^2S and Inflight Aircraft* — Army officers on board the J-STARS aircraft analyze ground activity in support of Army operations. In most cases, analysis of JSTARS information is decentralized at the GSM/CGS therefore

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focusing on each commanders' priorities. However, in some cases, direct reception of MTI, imagery, and messages from JSTARS may be a more efficient way to support deep operations. This linkage will be used to investigate how JSTARS can support high priority deep strikes by Army Aviation attack assets, and provide target updates to attack aircraft beyond line-of-sight of the GSM system.

- *Coordinated Unmanned Aerial Vehicle (UAV)/Aviation Operations* — UAVs will routinely be used to identify and track high-payoff targets prior to and during attack. UAVs can provide near real time updates of target and air defense activity to attack helicopters en route to support self protection and attack decision making. This link will support unique reconnaissance missions utilizing the specialized abilities of UAVs and support development of doctrine for use of UAVs with Army Aviation assets.

These links form the backbone of the Army's current thrust to link Aviation and Intelligence assets under the guidance of Team Battle Focus. Team Battle Focus is a planning and directing body whose purpose is to coordinate the development of each member's plan for battlefield digitization. Each Battlefield Functional Area is represented to ensure that a synergism exists between command and control, intelligence, maneuver, targeting and combat support on the digitized battlefield of the future. To prove the importance of these linkages, under the guidance of Team Battle Focus, the U.S. Army is conducting trials of digital battlefield hardware and software by using advanced technology demonstrations and advanced warfighting experiments.

The Tools. Team members pulled together five key systems to operate during this experiment:

- *Army Airborne Command and Control System Interim Design* — The interim A^2C^2S system design is a portable computer terminal capable of simultaneously receiving, processing, and presenting intelligence reports for Tactical Receive Applications (TRAP), Tactical Data Information Exchange System Broadcast (TADIXS-B), and Tactical Information Broadcast Service (TIBS), fused with tertiary imagery. The system includes imbedded decryption, message processing, tactical data processing, interface processing, and correlation.
- *Improved Data Modem (IDM)* — The IDM is an interference resistant modem that passes targeting or situation awareness information to and from airborne or ground platforms (in both digital and analog formats). The IDM contains two modems (which support four links) and one Generic Interface Processor used for processing message protocols between radios. The IDM does for digital communication what the Internet has done for computer networking of dissimilar systems. IDM systems were installed on the A^2C^2S, the Enhanced GSM system, the JSTARS Exploitation Workstation, and the Longbow aircraft.
- *JSTARS Exploitation (JSX) Workstation* — The JSX Workstation consisted of an IDM, an ARC-164 HAVEQUICK II radio, and a KY-58 encryption device installed on the JSTARS aircraft. The system allowed onboard IDM message traffic, and access to real time JSTARS radar data. The system configuration permitted the operator to receive target request messages from IDM, interface with the JSTARS radar database, and provide SPOT Reports, airborne situation reports, and free-text message traffic with the A^2C^2S and the E-GSM.
- *Enhanced Ground Station Module (E-GSM)* — The E-GSM is the Motorola

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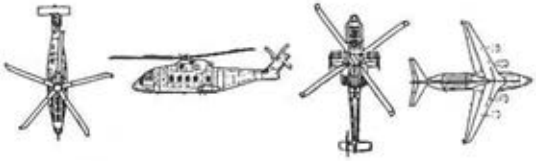

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surrogate for the future Common Ground Station (CGS). The system is based on the L-GSM, but has an IDM integrated onboard. The E-GSM can receive raw radar data directly from the JSTARS aircraft, and rebroadcast to the airborne command and control system.

- *Longbow* — The Longbow Apache aircraft has a high resolution millimeter wave radar system, an advanced Moving Target Indicator (MTI) system, and an integrated IDM. The integrated system can receive message traffic or information requests directly from the A^2C^2S aircraft, the JSTARS system, or other Comanche-era aircraft systems.

Digitization Experiments. There are a number of planned experiments to demonstrate the critical links and the power of digitization. Pursuant to proving four of the five linkages, members of Team Battle Focus decided to take advantage of the JSTARS flights scheduled in support of the Light GSM (LGSM) FDT&E at Ft. Huachuca, AZ in September 1994. Over a period of five weeks, PM Aviation Electronic Combat and TSM JSTARS successfully accomplished several digital linkages between various Aviation assets and ground elements.

To achieve this, the Army Research Development and Engineering Center (ARDEC) led a team consisting of the Naval Research Lab (NRL), Motorola, Grumman Melbourne Systems, and the Aviation Electronic Combat Project Manager's office in a rapid developmental and integration effort. This effort culminated with a series of tests in which the feasibility of the critical links was verified. Portions of the links were tested using various asset and communication protocols being developed within the digitization community. Demonstrated were:

- The GSM to A^2C^2S link, which sent live JSTARS MTI reports, processed by the GSM, to the A^2C^2S via a SINCGARS/IDM link.
- Aviation Sensors to JSTARS GSM/CGS was demonstrated with a Longbow-equipped Apache transmitting Fire Control Radar (FCR) targets, present position, Shot At, and free text messages to the A^2C^2S. The A^2C^2S in turn retransmitted this data to ground commander via a SINCGARS/IDM link to the GSM.
- Broadcast Intelligence to A^2C^2S and AVTOC was demonstrated by the reception of TIBS. TRAP and TRADIX-B via a Commander's Tactical Terminal (CTT) mounted in the GSM and displayed in the AVTOC via a remote workstation. The same broadcasts were directly received by the A^2C^2S via the Multi-Mission Advanced Tactical Terminal (MATT).
- JSTARS to the A^2C^2S and Inflight Aircraft was demonstrated when relevant JSTARS MTI data was transmitted as spot reports, situational reports, and free text messages to the A^2C^2S via a HAVEQUICK II/IDM link. JSTARS information was also sent to the Longbow Apache via a similar link as Secure free text and voice communication.

Paydirt! The results of the September 1994 experiment were an unparalleled success. Never before had independently developed systems shown the ability to link-up and pass tactical data. The four systems — A^2C^2S, JSTARS, Longbow Apache and E-GSM — digitally passed free text messages, intelligence data from national assets, Global Positioning System location updates, targeting information, and situation reports in a robust manner. The connectivity between the A^2C^2S, JSTARS, and the GSM was evaluated and **(INFO WAR — continued on page 29)**

BY LtCol PETER McGREW, USMC, RET.

THE MULTI-SERVICE BULLETIN BOARD SYSTEM

"Untutored courage [is] useless in the face of educated bullets."
— GENERAL GEORGE S. PATTON, JR.

An efficient new tool to update your electronic combat and system information.

The "educated bullets" of today and tomorrow for the U.S. Army in any combat situation will reside in its numerous target sensing systems. Their ability to be effective against the rapidly-changing threat environment relies on the capability to electronically receive updated programming data. To enhance this capability, the Army Reprogramming Analysis Team has joined forces with the USAF here at the Air Warfare Center (AWC) to participate in the Multi-Service Electronic Combat Data Distribution System, i.e. the Bulletin Board System (BBS).

This secure BBS is envisioned as an extremely important part of the Army's information warfare policy to support rapid electronic data exchange and transfer between remote subscribers. As part of the collocation of the Army ARAT-TA function at the USAF AWC, Eglin AFB, the U.S. Army is economically utilizing the same host computer that the USAF uses for its worldwide secure BBS.

The classified BBS is a fallout from the USAF/USA experiences in DESERT SHIELD/STORM, when both services experienced problems in talking to deploying and deployed units about threats, updated software for Operational Flight Programs (OFP), and Mission Data Sets (MDS).

The USAF successfully established point-to-point (one customer at a time) BBS in September 1990, but this proved insufficient to meet the copious demands for information from the units.

The Army endured the same frustrating problems as the USAF. It primarily relied upon a contact team to be placed in theater and to physically remove "threat data" boards, reprogram them, and then replace them with a more optimum threat data set. Consequently, the foundation for the present BBS was laid in December 1992 using experiences from a limited BBS used by the USAF bomber units out of Offut AFB.

The BBS is a simple system to use and understand. It consists of a host computer which is located in the AWC and is operated by the 68 Technical Support Squadron. The Army now has a computer specialist in place as part of the ARAT-

TA team who functions as the systems operator for all Army users. The word "Army" here reflects more than the Army user; more appropriately, it should be the users of Army-lead Army Target Sensing System (ATSS).

Operating on Pentium 100mhz machines, the BBS uses "The Major BBS" software, version 6.2, by Galacticomm Inc. To access the BBS, the user needs a PC (386 or greater is preferable), a STU-III, and a communications package. The user may use any communications program to "pull" or "extract" data from the system.

The services have standardized around a commercially available, off-the-shelf communications software package — Procomm Plus 2.01. It is widely used and available in DOS or Windows versions. As an example of its efficiency, the largest OFP on the USAF side of the BBS (506KB for the AN/ALQ-135) can and has been downloaded in many worldwide locations in 11 minutes. This medium of rapidly-encrypted communication we now share provides the Army ATSS users with another means of securing information it needs in an expeditious manner.

". . . the largest OFP on the USAF side of the BBS . . . can and has been downloaded in many worldwide locations in 11 minutes."

At present, the USAF component of the Multi-Service BBS is composed of 65 libraries; some are command system libraries, some are for radar warning receivers, some are for jammers, and some are for support equipment and logistics. From this well established structure, the ARAT-TA undertook some slight modifications.

The Army component has 34 classified libraries, and is still growing. Libraries are broken down by electronic combat systems, their associated MDS, and relevant informational libraries on threats such as AAA, SAMs, SSMs, SUBSSMs, etc. Other libraries include radars, EO-IR, platforms, EW information, MASINT, and our favorite "hot spots", which brings you up-to-the-minute threat information on possible areas of deployment. The data (up to secret) that the ARAT-TA loads to the BBS is fed to us from all sources (e.g., CIA, DIA, NSA, ONI, etc.) through the extensive and comprehensive USAF communications channels. The traffic is constantly monitored by the ARAT-TA ELINT analyst (MOS 98J) who passes it on to the ARAT engineers for assessment, synopsizing, and subsequent upload to the BBS for dissemination.

The user can be any approved individual with the appropriate clearance and the need to know. Once aboard the BBS, personnel complete a short registry and then easily use the e-mail, forum, and library assets. Specific libraries and files have been segregated between the ARAT-TA and selected organizations for special purposes, e.g. CECOM and MICOM. These are used to pass numerical data on threats before final coding into the respective ATSS' MDS, and are not open to the general user.

In the USAF part of the BBS, there are over 1,000 users; these users generate over 1,000 calls/inquiries per month and during exercises generate over 600 calls/inquiries per week. Because we share and support their assets, our Army users have access to the DSN, commercial, toll-free, and FTS telephone

numbers and lines (there are 16, but 24 are planned for November 1995) the USAF has established. As a planned improvement to this system, the USAF is planning to implement the Defense Message System sometime in late 1997 for the unclassified traffic, and by the year 2000 for the classified.

As commanders can now see the battlefield in near real time, the BBS is being used as a flexible conduit to implement at considerable savings, the requirement of AR-525-15 that requires all ATSS be reprogrammable in order to improve the efficiency with which force can be applied in full dimensional operations.

The original concept of the BBS was to link up with the Aviation EW officers after they had been trained and were up to speed with the ATSS aviation electronic combat equipment and their capabilities. The success of the BBS within the USAF led the ARAT-TA to expand the "target user" list and enlarge the function of the BBS from just passing MDS parametrics. We now put synopsized information of all types at the user's fingertips to improve mission planning and, hopefully, survivability. Ease of operation and cost effectiveness have enabled the BBS to be an excellent tool for linking major commands that require electronic combat, signature or system information to enhance their mission.

The ARAT system operator (SYSOP) is located at Eglin AFB and can provide information on how to jump aboard and "surf" the classified information highway. You can contact us at DSN 872-8899/8919 for an introduction package. Make our day and yours — give us a call!

★ ★

LTC McGrew, USMC, Ret. is an engineer for SRI International, ARAT-TA, Eglin AFB, FL.

INFO WAR
(Continued from Page 26)

all program goals were met. The Aviation and Intelligence communities investigated the interoperability and inter-connectivity of their respective systems. The systems illustrated the power digital communication can provide the commander in the battlefield. Swift transmission of accurate target strength, position, and movements allow the maneuver commander to control the flow of battle and direct resources to crucial locations.

Roadmap for Tomorrow. The Joint Surveillance Target Attack Radar System/Ground Station Module/Aviation Airborne Command and Control System Connectivity Experiment is but the first stepping stone for complete, seamless digitization of the battlefield. Additional experiments are currently planned to complete the validation of critical linkages defined by Team Battle Focus.

The Team Battle Focus originally consisted of members of the Aviation and Intelligence communities, but has since been expanded to include representatives from the Air Defense Artillery, Fire Support, and the Armor communities. Even now. the web of linkages between Army digitization systems is being expanded to assure tomorrow's soldiers and their commanders have the tools they will need to fight and win.

★ ★

MAJ Mahanna is the Assitant Project Manager, A^2C^2S, AEC PMO, St. Louis, MO.

Mr. Gagliarducci is a Support Contractor, AEC PMO, St. Lous, MO.

BY CW3 J.M. HARDWICK, JR.

AVIATION MISSION PLANNING SYSTEM

It seems that it was only just yesterday that we found ourselves in full field regalia trudging up to the tactical operations center tent to be briefed for the next mission. This would start the long and laborious mission planning process. "Don't forget the graphics, frequencies, and call signs." This statement, alone, quietly said to ourselves, would mean hours of fatigue and frustration.

"Imagine, no more midnight runs to operations to get the FRAGOs, graphics, etc. . ."

We would soon be hovering over a flashlight-lit paper map with protractor in hand extracting the necessary grid locations. Experiencing neck strain from having to hold the flashlight between your head and shoulder you would thumb through the two-inch thick Communications Electronics Operating Instructions to determine the communications plan.

You would think during the current technology explosion that arrival at the aircraft would mark the end of the agony. Think again. Now the planning process involves "fat-fingering" all of the same information into your aircraft processors. Depending upon your individual typing skills, or experience with adding machines, this final step in the planning process can take up to thirty minutes. On the ground in a cockpit in the summer with a possible tail wind is not the most desirable place to be. The effects of carbon monoxide poisoning are cumulative, you know.

The arrival of Data Transfer System (DTS) cartridge-equipped aircraft onto the digital battlefield defined the need for more advanced mission planning technology. The Interim Aviation Mission Planning System, referred to as Interim AMPS, is the 21st Century answer to that need.

There have been 72 Interim AMPS distributed to date. Distribution to Kiowa Warrior and Longbow units was made on an experimental basis in an effort to get equipment out to the field which could be used to load the aircraft cartridges.

The brilliance of this concept, however, is in the by-product of this distribution. Communications and Electronics Command (CECOM) Command and Control Systems Integration Directorate (C2SID) printed a 1-800 hot line on the last page of every Interim AMPS user manual.

This has served as a direct connection between the authors of the software and the guys in the field at the keyboards.

Software version 3.0 is currently being distributed with the Interim AMPS. Functionality includes all of the tasks normally performed in the mission planning process, such as, OPORD generation, enemy/friendly situation generation/display, communications planning, aircraft mission planning, etc. This process centers around the map and is where the AMPS comes into its own. You quickly realize how much time can be saved from your first exposure to the digital map. Any Defense Mapping Agency Arc Digitized Raster Graphic map product can be used in the AMPS. All of the graphics normally displayed on a tactical map can be created, in both graphical and tabular form. Information can then be transmitted from one AMPS to another via internal modem and conventional phone line. Imagine, no more midnight runs to operations to get the FRAGO, graphics, frequencies, call signs, etc. Ah, technology! Here at last!

Currently missions can be planned for both the AH-64D Longbow and OH-58D with efforts ongoing daily to accommodate the rest of the Army Aviation fleet. All mission aircraft related defaults such as communications setup, laser codes, loading configuration data used in performance calculations, etc., which had to be entered manually can be loaded onto the aircraft cartridges. Because of the requirement to load its on board data cartridge, the AH-64A+ is next in line for AMPS software functionality.

The 9-pin dot matrix printer currently issued with the Interim AMPS is one of the few weak links in an otherwise strong chain. The printer is slow and the products are lacking in fidelity. Conventions are being created to also enable the use of 24-pin dot matrix and laser printers. This software change is just around the corner. At a minimum, the 9-pin dot matrix product is as good as most pencil-written products normally found on most aviators' knee boards. Currently, the printed products are the Time Distance Heading Card (Referred to by some as a Doppler Card), a Waypoint List Card, an Orientation Drawing (which is a graphical representation of the mission overlay related graphics.), and a Communications Card.

Envision the automation of the entire planning process. Weight and Balance, Performance Planning Cards, Risk Assessments, Flight Plans, etc. Virtually everything today for which you use a stubby pencil and knee board paper will be provided to you at the end of the planning process along with your loaded aircraft cartridge. The Operational Requirements Document (ORD) compliant AMPS, referred to as the Objective AMPS, will accomplish this mission. The Objective AMPS is the capabilities of the Interim AMPS grown to maturity. Necessary interfaces to existing automated systems/databases such as the Revised Battlefield Electronic CEOI System (RBECS) or the Maneuver Control System (MCS) will be established where needed. These interfaces will serve to continually update the AMPS database thus saving precious time. The objective system will come with a color jet printer which can be used to print all of the knee board products as well as the map excerpt of the actual mission complete with all graphics. Avionics/Electronics/Weaponization (A/W/E) modules are being designed for every aircraft to address specific aircraft mission planning needs.

The Objective AMPS will have a high fidelity mission rehearsal capability. Plans are for satellite images to be directly imported into the software to give the

(AMPS — continued on page 57)

BY CPT DAVID J. RUDE

SYNCHRONIZING JOINT OPERATIONS AT NIGHT

The AAAA Communicative Arts Award Winning Article From AVOAC 95-2.

SITUATION: Day eight of hostilities — The Forward Edge of the Battle Area (FEBA) is relatively stable across the peninsula. Allied air superiority and the rapid mobilization of combat forces stalled the enemy's surprise attack on the western front. Updated intelligence reports indicate that the enemy is preparing to conduct small scale, covert operations in our rear area of operations within the next 48 hours.

Photo intelligence sources have identified an enemy base located on an island two nautical miles off the western coastline. Through an underwater cave entrance, the enemy has been accessing the base with Yugo SSM submarines and amphibious crafts, including PT-76 and Type 63 light amphibious tanks, launched from ships further out in the Yellow Sea. Supplemented with SA-7B and SA-14 surface to air missiles, one ZPU-4 battery provides anti-aircraft protection for the base.

The enemy's most probable course of action is to utilize the island as an underground harbor and Special Forces Operational Base (SFOB) to launch inland strikes against allied air bases in a concerted effort to sabotage our jet fighter fleet. Enemy successes in this capacity would disrupt rear operations and critically degrade our ability to maintain air superiority.

Mission Analysis. Speed, surprise, and audacity were absolutely critical to counter the threat. To support the close fight in the main battle area, friendly field artillery assets were positioned much further to the north, well out of range to the enemy SFOB. Furthermore, naval and marine units, already committed in the Sea of Japan, were not immediately available to decisively attack the target on such a short notice.

The desired results, destruction of the SFOB, could most quickly be attained through a synchronized, thunderous joint raid by U.S. Army attack helicopters and U.S. Air Force (USAF) jet fighters under the cloak of darkness. Planning commenced immediately. To facilitate continuous surveillance of the island, our

headquarters established an Observation Post (OP) on the mainland due east of the SFOB.

Mission and Equipment Requirements. Thorough intelligence preparation of the battlefield and detailed mission analysis emphasized the necessity to establish an aviation Joint Task Force (JTF). The following ideal rotary and fixed wing assets and their relative mission profiles were considered:

- One team of two aeroscout helicopters with laser designating capability, such as the OH-58D or AH-64A in the scout role. This team's role was to pinpoint the enemy SFOB at night and conduct target handover with attack helicopters and the USAF Airborne Forward Air Controller (AFAC).
- One team of four night-capable attack helicopters, such as AH-1F Modernized C-NITE Cobras, OH-58D Kiowa Warriors, or AH-64 Apaches.

Note: The latter two aircraft types were not available in theater at the time of the exercise. The AH-1F C-NITE Cobra was adequately suited for this mission. C-NITE, a modification of the M65 TOW system, adds a Forward-Looking Infrared (FLIR) sensor to the existing direct view optics of the M65 to provide the Cobra with the ability to detect and identify targets at night and under obscured battlefield conditions. Through C-NITE's thermal imaging telescopic sight unit, the gunner can track the thermal beacon on the TOW 2 family of missiles. The C-NITE can also be used to accurately direct turret and rocket fire[1].

- Two OA-10 Thunderbolts in the AFAC role, integrating the Pave Penny pod to receive the "laser spot", or laser designated reference point on a target, from the aeroscout. The AFAC, with close coordination with the attack helicopter Air Battle Captain (ABC), then directs the fires of fighter jets onto the target.
- Two Close Air Support (CAS) F/A-16 fighters equipped with the Low Altitude Navigation and Targeting Infrared for Night (LANTIRN) system to attack the hardened target with laser-guided munitions.
- Two CH-47D Chinook medium-lift helicopters to insert and extract a Forward Arming and Refueling Point (FARP).
- One UH-60L PAVE HAWK helicopter to perform combat search and rescue (CSAR) operations in the land and sea environment.

Task Organization. The following units with respective assets formed the JTF, which executed the actual mission at Koon-ni Range, vicinity Osan Airbase, in the Republic of Korea on 28 December 1993.

HHC/4-501 ATKHB, 17AB: 1 UH-60A, III/V Platoon
A/4-501 ATKHB, 17AB: 4 AH-1F (C-NITE), 2 OH-58A+
A/2-501 AVN, 17AB: 2 CH-47D
C/2-2 AVN, 2ID: 1 OH-58D
25th TFS, 7th USAF: 2 OA-10
36th TFS, 7th USAF*: 2 A/P-16
36th ARS, 7th USAF: 1 UH-60L
TACP, 17th AB: 1 HMMWV

**This unit participated in the mission planning phase but was unable to fly the mission due to unforecast commitments. The role of the A/F-16 was played by the second OA-10 during the live-fire raid.*

Concept of the Operation. The mission was planned and executed in six phases. A principal objective of the raid, secondary to destruction of the target, was to execute phases II-VI in one aircrew duty day. This concept, attacking swiftly by fire and returning to support the close fight, presented the JTF with a bold challenge. The distance between the

Tactical Assembly Area (TAA) and the target was an extensive 260 kilometers. The following is a synopsis of each phase:

I. Pre-mission Preparation. Phase I focused on the tactical decision-making process, from mission analysis through the development of the Operations Order. The 17th Aviation Brigade Tactical Air Control Party (TACP) augmented the JTP mission planning cell to synchronize USAF assets into the aviation scheme of maneuver.

The train-up period was intense, yet rewarding. Air crews from Company A (Attack), 4th Battalion, 501st Aviation Regiment received water survival and rescue training on behalf of the 36th Aerial Rescue Squadron (ARS), Osan Air Base.

Mission air crews flew Night Vision Goggle (NVG) multi-helicopter training missions overwater prior to the mission to build experience and enhance confidence prior to executing the live-fire raid. Refuelers and armament soldiers of the III/V platoon received instruction on the CH-47D medium lift helicopter's internal and external load operations, courtesy of 2nd Battalion, 501st Aviation Regiment. To finesse the synchronization matrix and minimize inherent risks associated with the operation, the JTF conducted many detailed rehearsals of critical operations.

II. FARP Insertion. The synchronization matrix commenced with two CH-47Ds departing the 2-501st TAA for a 43 minute flight (119 km) to the JTP TAA. The III/V platoon, FARE equipment for a six-point FARP, and six 500 gallon fuel blivets were tactically cross-loaded on the medium lift helicopters.

Additionally, the attack helicopter battalion's organic UH-60 picked up 20mm and 2.75 inch rockets at the ammunition supply point for delivery to the Forward Assembly Area (FAA). After a one hour, sixteen minute flight (212 km) to the FAA, the FARP was inserted. Moreover, it was operational in just 18 minutes after insertion.

Note: Aviation Restructuring Initiative (ARI) removes the three UH-60s from the attack helicopter battalion. Peacetime safety constraints dictated that attack aircraft could not be loaded until arrival at the FAA. Normally, aircraft remain loaded in the TAA.

III. Deployment of Combat Assets. The attack helicopter company, augmented with an OH-58D from the Target Acquisition Reconnaissance Platoon, Company C, 2-2 Aviation Regiment, 2nd Infantry Division, departed the TAA to arrive at the FAA in just 20 minutes after the FARP insertion. Meanwhile, the TACP collocated with the OP along the shore.

While airborne, the ABC received an intelligence update from the OP to confirm the planned time on target. Copilots and FARP soldiers refueled and uploaded the aircraft while the ABC conducted a final mission briefing with pilots-in-command.

IV. Raid on the Objective. The ABC, accompanied by the OH-58D, departed the FAA to develop the situation while the attack aircraft held momentarily at the FAA until their planned takeoff time. The ABC's critical en route tasks included establishing contact with the AFAC, CAS, airborne CSAR helicopter, TACP, and OP.

As both aeroscout aircraft occupied over watch positions from the mainland (vicinity of the OP), the OP conducted battle handover with the ABC. The synchronization of the raid commenced with the OH-58D lasing the target. The Cobra flight crossed the final land checkpoint, 6.2 km from the target, and

assumed an echelon left formation on an overwater attack heading of 015 degrees. The AFAC received the laser spot from the OH-58D and coordinated with the A/F-16s for a CAS strike.

At 3,000 meters from the target, 300 feet above the water, the four Cobras initiated the raid with a deadly stream of rocket fires to suppress enemy air defenses. CAS immediately responded with a thunderous bombing strike overhead to destroy the hardened target as the Cobras continued the inbound rocket run.

Covering their own egress, the Cobras utilized C-NITE to direct 20mm flexible gun engagements onto the target while conducting a sequenced right break at 1,000 meters from the target.

The ABC and OH-58D assessed battle damage and coordinated two CAS immediate reattacks prior to returning to the FAA. Additionally, the ABC dispatched a rear seat aeroscout observer along the shoreline to simulate a downed pilot, and then subsequently coordinated with the CSAR helicopter for extraction.

V. Redeployment and preparation for Future Combat Operations. The aeroscout and attack helicopters cycled through the FARP and returned safely to the JTF TAA. Likewise, the AFAC, CAS and CSAR aircraft returned to their base.

VI. FARP Extraction. As the attack aircraft cleared the FARP airspace, the CH-47s arrived for the night extraction. The Chinooks consumed all remaining fuel from the blivets so that everything, including the blivets, could be loaded internally. After dropping their loads at the JTF TAA, one CH-47 flight returned to its parent unit TAA to terminate the operation.

Implications for Future Joint Operations at Night. This successful, yet highly complex exercise established a solid foundation upon which to plan and execute similar night operations in the future. The laser link between Army Aviation and the USAF simplified target detection, identification, and handover at night.

All inherent risks associated with this particular mission, specifically NVG multi-helicopter overwater flight and gunnery, laser operations, NVG rearming, refueling and sling load operations, and combat search and rescue drills were reduced through parallel planning, intensive preparation, concise briefbacks, and step-by-step rehearsals.

A critical factor which determined the success or failure of this deep operation was the timely emplacement of the FARP. Refueling and armament soldiers trained up for this event, and much of the mission's success was attributed to their motivation and precise execution under fire in a harsh, cold environment.

Final Thoughts. Although this special operations raid was extremely well-suited for the AH-1F C-NITE Cobra, it could similarly accommodate the AH-6 "Little Bird", AH-64 Apache, or OH-58D Kiowa Warrior and their capabilities in the future.

STRIKE DEEP!

[1] Headquarters, Department of the Army, *Technical Manual 55-1520-236-10, Operators Manual, Army Model AH-1S Helicopter.* (Washington D.C.: Government Printing Office, 11 Jan 80, with change document 22, 5 Oct 90), page 4-8.1, paragraph 4-6k.

★ ★

CPT Rude was attending the Aviation Officers Advanced Course 95-2, U.S. Army Aviation Center (USAAVNC), Ft. Rucker, AL, when this article was written.

UH-60 SCHEDULED MAINTENANCE: THE PMS-2 INSPECTION

"Sir! Commander, Command Sergeant Major, you too, First Sergeant... don't turn that page. You need to read this — we need your help!"

The UH-60 Preventive Maintenance Services (PMS) 2 inspection requires a great deal of planning and coordination. Right now, the average time to complete the inspection is 116 days. Can you believe that? Imagine taking your car to the garage for a 15,000 mile service and not driving it again for almost four months. That's hard to imagine. If it were true, there would be a lot more "grumpy old men" walking around post and some serious high level pressure to resolve the problem.

Are you part of the problem?

You control the maintenance officer's most important assets: his personnel. If you are not informed about, or in daily contact with, the battalion maintenance personnel, then *you are part of the problem.* You decide when those assets are going to the field, when they have to train, when they are going on police call, when they have duty, and when they have time off. Every decision you make about personnel directly affects the maintenance man-hours available and the maintenance officer's ability to schedule maintenance.

A significant problem faced by the maintenance officer is keeping the maintenance team together until they have completed the PMS-2 inspection: about ten working days. Again, imagine your car in the garage. The 15,000 miles service is half completed when the shop foreman pulls your mechanic off the job to do an errand for the boss. The foreman replaces the mechanic with another. The new mechanic tries to complete the inspection, but he doesn't know what the other mechanic has or hasn't inspected. He doesn't know where the parts are that the other mechanic disassembled from your car.

One can see the potential problems with that situation. Lost parts delay the reassembly. The possibility that a critical inspection wasn't accomplished compromises safety. One would certainly not acquiesce to this inefficient and dangerous approach to maintenance. A

reasonable person would look for another garage to have his car serviced. We do not have that option. We are the only garage in town. We have to work together and work efficiently and safely.

We need your help, sir, sergeant major, first sergeant. Get involved with your maintenance personnel. Question how each tasking will impact your maintenance programs. Weigh the options and make informed decisions. We need you to think about maintenance all the time. As you will see, maintenance planning must start well in advance of the actual inspection to be effective.

PLANNING SEQUENCE

Putting an aircraft through PMS-2 inspection is a complex process requiring a great deal of coordination and prior planning between sections, shops, personnel, and sometimes, other units. Unit missions and OPTEMPO will also influence the timeline and decision-making process of maintenance planners. *Coordination* is the key element to success. Ideas that have worked well for other units are provided in the following:

45 Days/20 Flight Hours Prior to PMS-2. A review of the aircraft records should be accomplished approximately 45 days or 20 flight hours prior to the scheduled inspection date. The review should be accomplished by the assigned technical inspector, the flight platoon sergeant, the production control sergeant, the shop platoon sergeant, and the aircraft crewchief. The review should include, but is not limited to:

- **Request** the aircraft TBO components and those repair parts which are identified in the PMS-2 manual for replacement. Also request those repair parts requiring replacement because a component must be disassembled for inspection.
- **Identify** calendar inspections which may come due during the PMS-2 inspection. *Complete* them prior to the inspection.
- **Validate** the aircraft deferred work orders. Additionally, the shop platoon sergeant should confirm that the required repair parts, common hardware, and consumable supplies are on hand or on requisition. Items which have not been received should have their requisition priority upgraded at this time.
- **Inspect** the aircraft to identify any other discrepancies which will require maintenance action during the PMS-2 inspection. Appropriate work orders or parts requests should be submitted at this time.
- **Coordinate** any maintenance beyond the capabilities of the unit with the supporting AVIM.

7 Days/3 Flight Hours Prior to PMS-2. During the week preceding the actual start of the PMS-2 inspection, the PMS-2 team leader, crewchief, technical inspector, flight platoon sergeant, and maintenance test pilot should accomplish the following actions:

- Initiate the PMS-2 Inspection book and begin the visual inspections.
- Prepare the aircraft for and complete the engine cleaning and high speed shaft balance.
- Take hot oil samples as necessary.
- Wash the aircraft.
- Perform a complete maintenance test flight on the aircraft, to include navigation radio checks. *Do not* refuel the aircraft.
- Defuel the main fuel tanks, inspect and calibrate the fuel system in accordance with the PMS-2 manual, then fuel the main tanks to capacity.
- Inspect the aircraft for fluid leaks from the various systems and gearboxes.
- Complete electrical system and AFCS/SAS system checks with the

appropriate test set (about a two day process).

At this point, prior to inducting (downing) the aircraft in the PMS-2 inspection, *troubleshoot and resolve all electrical and AFCS/SAS discrepancies.* It is essential to have the maintenance test pilot and experienced unit personnel involved in the troubleshooting procedures. Discrepancies which cannot be identified and resolved now will delay the aircraft during the post PMS-2 Power-On Checks. This usually results in the addition of 30 to 60 days NMCS/NMCM time to the PMS-2 inspection because the defective component was not identified, replaced, or requisitioned before the inspection.

A significant amount of down time can be eliminated from the inspection process if the actions described above are accomplished during the week preceding the start of the PMS-2 inspection, and the aircraft is inducted into PMS-2 inspection in a flyable condition.

PMS-2 INSPECTION

- *Do not allow controlled substitution of parts from the aircraft during the inspection!* Allow the maintainers ten days to complete the inspection; however, we do understand mission need or a special situation may not support that policy.
- Identify and remove those components requiring shop disassembly and inspection during the first week of the PMS-2.
- Complete the PMS-2 inspection before beginning to repair or reassemble.
- Return those components to the maintenance section as soon as possible. Reinstall them on the aircraft as they become available.
- Arrange to have Repair Exchange (RX) items on hand for quick turnaround during the PMS-2 inspection.
- Ensure the shops personnel have early access to the aircraft to accomplish their portions of the PMS-2 inspection.
- Identify all critical component failures/shortages to the maintenance officer as soon as possible. Verify NSN, quantity, and SMR Code of all NMCS parts to ensure the correct item has been requisitioned. Cross level for part with available units.
- It occasionally makes practical sense to store several parts together in one location in the Tech Supply area. The tail fork, axle, lock washer, tire, tube, cap valve, valve core, wheel landing, seal, cone and roller, bolts, nuts, and washers are such items. When assembled and stored together, it only takes five minutes time, a jack, and one snap ring to change the tail wheel and fork assembly of an aircraft. One might even convince the AVIM to maintain the tail wheel and fork assembly as a quick-change assembly and support it as RX.
- Involve the AVIM in the inspection. Their work load permitting, request one or two mechanics to participate as PMS-2 team members. Have the respective first sergeants coordinate this action to insure the AVIM personnel are available to work the PMS-2 teams schedule. This provides the AVIM mechanic the opportunity to learn and gain experience on the aircraft. Additionally, it promotes cooperation and esprit between units.
- Ensure the AVIM shops have repair parts available for aircraft critical components such as the signal data converter, central display unit, and pilot display unit.

In conclusion, two important tasks can be gathered from the ideas presented. First, coordination is the key to a successful PMS-2 inspection program. Second, it is absolutely essential to be proactive in maintenance planning, both at the AVUM and AVIM level.

PMS-2 TIMELINE

45 Days/20 Flt Hrs	7 Days/3 Flt Hrs	WEEK 1	WEEK 2	WEEK 3
		(Days 1 - 5)	(Days 6 - 10)	(Days 11 - 14)
Request	Do a complete MTF	Disassemble Acft	Repair Acft	Pre-Flt Inspection
Identify	Insp fuel system, re-fuel	Components to shops	Components to maint	Power-On Checks
Validate	Correct elect/AFCS/SAS	Shops work on the Acft	Reassemble Acft	MTF
Inspect	Review requisitions	**Complete inspections**	Final TI	Return to Flt Company
Coordinate	Acft into PMS-2 **FLYABLE**			

WEEK 1 DAY 1

Remove:

MR Blades

TR Paddles

Stabilator

MR Spindles

Engines

Fold Pylon

Figure 1

The managers and supervisors in the battalion and brigade can raise their maintenance awareness by becoming more involved in the maintenance planning process. Learn to recognize potential problems, head them off, or seek other solutions. Get down to the flight line, the hangar, the shops, and the motor pool. Talk to the maintainers. More often than not they know the inefficiencies. They will tell you what works, what doesn't, and what help they need.

The maintainers must also keep the chain of command informed. Tell the commander what impact his decision will have on his maintenance program, especially if it will be a negative impact. Present the problem; but, also recommend a solution.

The successful leaders and maintainers that I have known in the Army are those people with the rare ability to recognize problems, visualize a positive solution, communicate that solution, and remain flexible, whatever the outcome.

Maintainers, one truth remains constant: they can't ride it, drive it, or fly it if it's broken. They always come back and ask for your help. Be ready to explain the problems, present the solutions, and remain flexible.

A few simple words of inspiration that I read on a hangar wall somewhere a long time ago are still true today:

DO IT.
DO IT RIGHT.
DO IT RIGHT NOW.

★ ★

CW4 Stevens, Ret. is a Technical Analyst, Dynamics Research Corporation, St. Louis, MO.

■ FEATURE

BY CPT PAUL K. REIST
and 1LT DAVE ROGERS

AH-64D LONGBOW APACHE: A USER'S PERSPECTIVE

A great deal has been written by contractors and developers telling us about the capabilities of the AH-64D Longbow Apache. With the completion of the AH-64D Initial Operational Test and Evaluation (IOTE) in April, the capabilities of the system can be confirmed by those who count most: the crews who will fight with it.

"...the capabilities of the system can be confirmed by those who count most: the crews who will fight with it."

As a part of the first attack helicopter unit in the Army to train with the AH-64D, we had the opportunity to fly over 1,000 hours on the six AH-64D Longbow Apache prototypes during more than eight months of rigorous training, gunnery, and force-on-force testing. This article is written for the user, by the user, to provide an overview of our experiences during the operational testing of the AH-64D and describe the unique opportunities and challenges many of you will face as the Longbow and other information age technologies make their way to the field.

System Description. The AH-64D helicopter is a remanufactured AH-64A, whose major improvements are the following:

- MANPRINT Crewstation: Each crewstation includes two Multi-Function Displays (MFDs), an Up-Front Display (UFD) for avionics control, a keyboard unit for data entry, and appropriate switches and controls. In addition, the pilot station has a data transfer system for loading and unloading of mission data from the Data Transfer Cartridge (DTC). Most of the radio control heads and switches found in the AH-64A have been removed and control functions are now performed through the MFDs.
- Improved Navigation: An inertial navigation system with an embedded GPS (EGI) provides significant improvements in the navigation capability of the system and significantly reduces crew workload.
- Improved Data Modem: The Improved Data Modem (IDM) is a tri-service device that provides the AH-64D an excellent data transfer capability and the ability to communicate digitally with other members of the combined arms team.
- Longbow system: Each AH-64D can be equipped with the Longbow system which

includes an integrated Millimeter Wave Fire Control Radar (FCR), a Radar Frequency Interferometer (RFI) and the Longbow Radar Frequency (RF) Hellfire missile. The FCR allows the crew to detect, classify, prioritize, and engage targets with any of the aircraft's weapons. When used in conjunction with the RF Hellfire missile, crews have a true fire-and-forget capability. In addition, the RFI detects and identifies operating radar systems and displays targeting information on the same screen as the FCR target data.

AH-64D Longbow Apache Operational Test. The 2d Battalion, 229th Attack Helicopter Regiment served as the test unit for the AH-64D Initial Operational Test and Evaluation (IOTE) which was conducted at China Lake Naval Weapons Station and Fort Hunter Liggett, CA from 5 January to 1 April 1995. The purpose of the test was to evaluate the operational effectiveness of the AH-64D Longbow Apache against that of the AH-64A. To accomplish this, the battalion reorganized itself according to the Aviation Restructuring Initiative (ARI) to produce two AH-64 pure attack helicopter companies. A Company served as the Longbow test company while B Company served as the AH-64A equipped baseline company.

Test Overview. Beginning in July of 1994, unit personnel began training at the McDonnell Douglas facility in Mesa, Arizona. This training included the AH-64D Aircraft Qualification Course (AQC) for pilots and MOS specific training for maintenance personnel. Following the completion of this individual training, we spent approximately five weeks at Fort Hunter Liggett, CA where we conducted our initial collective training and validation of the tactics, techniques, and procedures (TTP) to be used during the operational test. Prior to the start of the operational test, both companies were evaluated by the Combat Aviation Training Brigade (CATB) to determine their level of training and both received high marks.

We conducted Phase 1 of the operational test at China Lake Naval Weapons Station from 31 January to 9 February 1995. This phase consisted of crew qualification and eight record gunnery events designed to demonstrate the effectiveness of the Longbow system to detect, classify, prioritize, and engage targets through battlefield obscurants. Targets included stationary and moving tanks and air defense systems. During each trial, an AH-64D and an AH-64A attempted to engage targets within the same target array under varying conditions of battlefield obscuration. A total of nineteen RF missiles, eighteen SAL missiles, and over 15,000 rounds of 30mm were fired throughout the qualifications and trials.

Following the gunnery, we returned to Fort Hunter Liggett to complete Phase 2 of the operational test which was the force-on-force testing. During this phase, we conducted missions against a reinforced battalion task force equipped with corps level ADA assets. Each record trial was conducted by both A company and B company to produce 15 paired trials. For each trial, both companies received operations orders from the battalion and then conducted their mission planning and briefing independently. We conducted twelve of the fifteen trials at night under black-out conditions with the remaining three trials conducted during the day.

Test Results. The results of the operational test were overwhelming. The AH-64D is clearly more lethal and more survivable than the AH-64A against a

modern and well trained threat force. The results proved without question that the fielding of information age technologies will produce a more lethal and survivable force that can operate at higher operational tempos. The outstanding performance is a result of three critical tactical advantages provided by the AH-64D — a common view of the battlefield, digital communications, and reduced target acquisition and engagement times.

Common view of the battlefield: This is the cornerstone of Force XXI. From the premission planning all the way through the mission debrief, crews in the AH-64D all have a common view of the battlefield that was previously difficult if not impossible to achieve. The Aviation Mission Planning System is the first and most critical link in providing accurate and complete mission data. With the AMPS, each crew begins a mission with *exactly* the same pertinent mission data loaded on a Data Transfer Cartridge (DTC).

Once the mission is underway, any changes to the mission (location of threat and friendly forces, changes to control measures, battle damage assessments, no-fire and priority fire zones, etc.) can be digitally sent to all members of the company. The result is a level of situational awareness that provides every member of the company a clear and current understanding of the battlefield. The effects of this were most evident during mission debriefs. Each member of the Longbow test unit could accurately describe the size and actions of friendly and enemy elements throughout the battle. In contrast, crews in the baseline company had much more difficulty assessing what occurred, especially once contact with the enemy was made.

Digital communications: Equally important to digitally transferring data to other aircraft is the ability to communicate digitally with other members of the combined arms team. For the first time, the attack helicopter company has a digital interface with field artillery and other critical battlefield systems that allow us to place steel on target quicker and more accurately than ever before. The full tactical advantage that this capability provides will only be realized once the entire force is provided the equipment and training required to make it work.

Reduced target acquisition and engagement times: The Longbow system allows crews to engage targets within the target engagement timelines of the most lethal threat air defense systems. Operating against such systems as the 2S6, SA-8, and SA-11, we were able to successfully engage threat forces with minimal losses. Compared to the baseline company operating against the same threat, the AH-64D showed a sevenfold increase in survivability. With the FCR and RF Hellfire missile, the AH-64D equipped company can engage targets quicker and more accurately than ever before and survive.

Lessons Learned. The following provides an overview of the lessons we learned during over eight months of training and testing with the AH-64D. In some cases we learned completely new ways of doing things that were not possible before, in others we simply applied new capabilities to tried and true methods to make them better. Regardless, the most important lesson learned is that we have yet to realize the full potential that the system provides. While our experiences are unique in many ways, the lessons learned should benefit those who will have the opportunity to be a part of the first units equipped.

Training. *Train as a team*: The

effectiveness of any information age technology is dependent not only on how well information is collected, but more importantly how well information is exchanged. As a result, the emphasis on collective proficiency is greater than ever before. The effectiveness of the AH-64D equipped attack helicopter unit will be closely tied to how well the entire organization can manage and exchange the information available to them — from the cockpit to the TOC. Establishing consistent crew and team relationships as early as AQC (for those who will train as a unit) can provide outstanding results.

Maintain perishable skills: One of the greatest challenges for any attack helicopter company is maintaining highly perishable skills such as NVS proficiency. The tasks associated with sending and receiving information will prove to be equally important and equally perishable. Regular sustainment training with the MFDs and AMPS is critical to maintaining the highest level of proficiency and thus maximizing the capabilities of the system.

Maximize use of simulation: Use of training devices such as the proposed Longbow Crew Trainer that replicate the functions of each crewstation will be invaluable. Not only will such training devices allow crews to maintain proficiency, they will allow units to maximize limited flight hours.

Mission Planning and Briefing. *Be proficient with the Aviation Mission Planning Station*: As already noted, the AMPS is a critical link in exploiting the capabilities of the system. Although many have passed the AMPS off as too cumbersome and ineffective, it is all too often due to a lack of training. To be effective, every crewmember should understand and be proficient with its operation. Equally important, battalion and brigade staffs must be proficient with it as well. When used to its fullest, it will reduce the confusion and inaccuracies inherent in traditional planning cells and provide commanders an excellent tool to plan, brief, and rehearse a mission.

Use the AMPS to brief missions: We conducted mission briefs using the AMPS and an overhead projector. With the AMPS screen projected on a white dry erase board, crews can view the mission graphics exactly as they will be displayed in the cockpit and see critical information such as line of sight analysis of friendly and threat weapon systems. With the dry erase board, we were able to "what if" each mission and display proposed priority fire zones and other information that is currently not available through the AMPS. This quickly became known as the "John Madden mission brief" and proved equally effective for debriefs.

Task Organization. *Lead-wingman teams*: With the proposed fielding of three Longbow systems to each attack helicopter company, commanders must determine how best to employ the AH-64D with FCR alongside the AH-64D without FCR. To maximize the capabilities and limitations of both configurations, we habitually fought with three lead-wingman teams. The lead aircraft was normally an FCR equipped aircraft while the wingman was a non FCR equipped aircraft. While the lead-wingman concept is not new, the capabilities of the AH-64D allow teams to truly operate independently. It proved to be flexible, facilitated effective command and control, and provided excellent security.

Commander must manage information: The commander must place himself in a position to best manage the information available to him. While we habitually fought from an FCR equipped aircraft,

the workload associated with battle management often precluded me from effectively utilizing the FCR, thus taking a valuable asset out of the battle. In hindsight, fighting from a non-FCR equipped aircraft may have proved more effective. The bottom line is that the commander must retain the ability to manage the battle and effectively employ all of the assets at his disposal.

Enroute Procedures. *Overlap radar and optical scans for security*: We assigned each team a sector to maintain security enroute. This allowed one aircraft to search using the FCR while the non FCR equipped aircraft could concentrate on the same sector using the FLIR to detect lights, missile launches, or other signs of enemy activity that would not be detected by the FCR. This proved equally important during all phases of the mission.

Remember limitations of FLIR: While the FCR is an excellent tool to acquire and engage targets through virtually any battlefield condition, the FLIR remains the primary tool for terrain and obstacle avoidance during all phases of the mission. Thus, the capabilities and limitations of the TADS and PNVS remain consistent with those found on the AH-64A.

Battle Management. *Be in a position to manage the battle:* The commander's primary task is to manage the information available to him. Although digital communication is a significant improvement over traditional voice communications, remember that it is still dependent on line of sight between sender and receiver until a system not dependent on line of sight is fielded. With this in mind, commanders must place themselves in a position where communication with all elements is possible. The AMPS is an excellent tool to assist in analyzing terrain for this purpose.

Establish effective SOPs to maximize information flow: With the amount and speed with which information can be passed digitally, the potential to be quickly overwhelmed is significant. While proficiency and understanding of the system will help, everyone in the organization must understand what information is critical and when it is critical. This will be especially true when battalion, brigade, and other levels of command have the capability to influence the battle by sending and receiving information digitally. A clear mission statement and commander's intent will be more critical than ever in allowing commanders the flexibility to respond to changes on the battlefield.

AH-64D in the Close Battle. Understand and use No-Fire Zones: The greatest challenge in conducting attacks in close proximity to friendly troops has and will continue to be the possibility of fratricide. However, the situational awareness provided by the AH-64D and the ability to define no-fire zones clearly reduces the risk. While we reduced to zero the incidence of fratricide during the operational test, the baseline company continued to have difficulty distinguishing friendly and threat forces. In addition to the no-fire zone, units must learn to use every system at their disposal to prevent engaging friendly forces to include the FCR, visual identification with the TADS, and continuous liaison with ground forces throughout the mission.

AH-64D in the Deep Battle. *Mass sensor and weapons effects*: The enhancements to the navigation systems of the AH-64D significantly reduce the workload normally associated with navigation on deep attacks. More importantly, the ability to know the exact location of other elements in the company

allows teams to disperse beyond visual contact with each other and engage the enemy from different directions. The result is an even greater shock effect on the enemy as he responds to fires from throughout the battlefield.

Use Priority Fire Zones to control teams: For the first time, commanders have a tool to clearly define target distribution regardless of the target array. When enemy location is uncertain and the unit is conducting a movement to contact, priority fire zones can be used to control both fires and movement of friendly elements.

Look to the Future — Force XXI. With the development and proposed fielding of the AH-64D, army aviation takes a major step in realizing General Sullivan's vision of our Army in the 21st century. That army will be organized around information and the ability to share and utilize it in a timely and effective manner. As demonstrated during the IOTE, this technology is tested, proven, and here today. More importantly, it will soon be in your hands. Armed with the AH-64D Longbow Apache, army aviation will play an integral role in Force XXI as both a primary sensor and user of information to destroy any force. This role will bring with it many unique challenges.

Digitization and Information Management. One of the most critical challenges you will face is the ability to manage the vast quantity of information that is available to you throughout any given mission. This applies not only at the company level but to battalion, brigade, and higher. Proficiency at all levels and a thorough understanding of how each available system works is critical to meeting this challenge. The ability to communicate digitally is more than simply a new way to utilize traditional radios. Digital communications is a weapon that will enhance the survivability and lethality of the AH-64D equipped unit and make it one of the most effective systems on the battlefield.

Leadership, Vision, Innovation. Those of you who will be the first to field the AH-64D must understand the importance of the task you will undertake. You will be the first to fight, train, and maintain with this system. While our experiences may provide a start point, we have yet to fully understand and utilize all of the capabilities of this aircraft. To do so will require leaders who are bold, innovative and possess a vision of how we will fight well into the next century. You must first clearly understand how we fight the AH-64A and then build upon that foundation. Recall the lessons we have learned through the years but do not be constrained by the "way we have always done things." You must understand the new capabilities and responsibilities that information age technology brings to the battlefield and realize your most valuable asset on the battlefield may well be the information you can send and receive. Most importantly, you and every member of your organization must develop a thorough understanding of and confidence in the capabilities and limitations of the system. By doing so, you will not only realize the awesome potential of this system, but you will also be able to educate those who have not yet looked ahead to see how tomorrow's battle will be fought. How well we utilize the capabilities of the AH-64D Longbow Apache and the technology of Force XXI to fight that battle is in your hands.

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CPT Reist was Commander, A Company, 2d Battalion, 229th Attack Helicopter Regiment when this article was written.

1LT Rogers was the Attack Platoon Leader, A Company, 2/229th ATKHR when this article was written.

1995 DAC PACK

The professional-personal roster of Dept. of the Army Civilian members of AAAA that returned their questionnaires by August 17, 1995.

ROSTER CODE

Last Name, First Name, MI
(Date of Joining AAAA)
(Nickname)
Address
Duty Phone

Residence Phone
Name of Spouse
Job Description
Current GS (GM/WG) Grade
AAAA Offices Held

Abdelaziz, Alexandra M. (M89) (Sandy) US Army CECOM, AMSEL-RD-ST-WL-MI, Fort Monmouth, NJ 07703-5000. Dy: (908) 427-3830. Res: (908) 542-0354. S: Fuad. Job: Electronics Engineer. GS: 12.

Akers, Mary M., (M90) Colonial Virginia Treas., P.O. Box 4400, Fort Eustis, VA 23604. Dy: (804) 878-5405. Res: (804) 838-4063. Job: Secy, USAALS, DAST. GS: 6. Treasurer, Colonial Virginia Chapter.

Albright, David L., (M87) 2967 Westminster Drive, Florissant, MO 63033. Dy: (314) 263-1648. Res: (314) 838-4515. S: Bridget. Job: Elec Engr, ATCOM. GS: 14.

Alejandro, Leonard R., (M95) 603rd ASB, CMR 454, Box 2245, APO AE 09250. S: Debbie. Job: Equipment Spec Aircraft, ATCOM. GS: 12.

Alexander, Nancy A., (M81) P.O. Box 18561, Corpus Christi, TX 78480-8561. Dy: (512) 949-7762. Res: (512) 939-4284. Job: AISE Equip. Spec.. Past Chapter Officer.

Allen, Lynn J., (M85) 14442 Gravelle Lane, Florissant, MO 63034. Dy: (314) 263-7205. Res: (314) 921-0610. S: Rosemary. Job: Deputy Director-Materiel Management, ATCOM. GS: 15.

Alvarez, Samuel,Jr., (M87) (Sam) 4726 Sea Island, Corpus Christi, TX 78413. Dy: (512) 939-3048. Res: (512) 854-6228. S: Divina. Job: Force Modernization Spec, CCAD. GS: 12.

Arconati, Vincent F., (M91) 9871 Ione Lane, St. Louis, MO 63123-6448. Dy: (314) 263-3565. Job: Program Integrator-Longbow PM, PEO Aviation. GS: 13.

Armstrong, Richard N., (M84) (Dick) 3363 Augusta Street, Enterprise, AL 36330. Dy: (334) 255-3303. Res: (334) 347-3600. S: Margaret. Job: ARL-HRED. GS: 14.

Arnold, M. Lee, (M88) (Lee) 3665 Pyrenees, Florissant, MO 63033. Dy: (314) 263-9940. Res: (314) 921-3793. Job: Aerospace Engr, ATCOM, SOCOM. GS: 13.

Atchisson, Ivan H., (M85) (Swede) 6225 Erskine, Corpus Christi, TX 78412. Dy: (512) 939-2651. Res: (512) 991-6967. S: Gloria. Job: Aircrft Eng Mech, CCAD.

Aten, Charles W., (M90) (Charlie) 5146 Cheltenham, Florissant, MO 63033. Dy: (314) 263-3736. S: Marilyn. Job: Auditor, ATCOM. GS: 12.

Austin, R. Doris, (M85) 2105 Bonroyal Drive, Des Peres, MO 63131. Dy: (314) 263-2788. Res: (314) 821-3299. Job: Supvr Ind Spec, ATCOM. GS: 13.

Bailey, Marsha G., (M88) 1976 Basston Drive, St. Louis, MO 63146. Dy: (314) 263-6010. Res: (314) 576-4854. Job: Inventory Mgmt Spec, ATCOM. GS: 12.

Baker, George W., (M94) 112 Weeks Drive, Apt. 3, Enterprise, AL 36330-1363. Dy: (334) 255-3000. S: Margo. Job: Air Safety Specialist. GS: 12.

Banish, Margaret A., (M90) ATCOM/AMSAT-B-P, 4300 Goodfellow Boulevard, St. Louis, MO 63120-1798. Dy: (314) 263-1165. Res: (314) 521-3907. S: Carl. GS: 11.

Barbie, John H., (M94) 937 Red Oak Circle, Newport News, VA 23608. Dy: (804) 878-2900. Res: (804) 874-1447. S: Vicki. Job: Supervisory Contract Specialist, AATD (ATCOM). GS: 13.

Barefoot, Mary E., (M84) RR 1, Box 181, New Brockton, AL 36351-9771. Dy: (334) 255-3804. S: T. Winston. Job: USAAVNC, Fort Rucker, DPTMSEC. GS: 13.

Barnaskas, Richard A., (M80) Monmouth Chap VP Gov Afrs, 45 Stockton Drive, Marlboro, NJ 07746. Dy: (908) 427-2666. Res: (908) 536-3181. Job: Electronics Sys Div, C2 & Sys Intgn Dir, CECOM, Ft. Monmouth. GS: 14. Other:, Monmouth Chapter.

Barnes, Clarence M., (M93) (Chuck) 29th ASG (200th TAMMC), CMR 429, Box 1212, APO AE 09054. S: Giovanna. Job: Chief, Aviation Troop Division, 200th TAMMC. GS: 13.

Barnes, Susan E., (M86) (Susan) Lindbergh Chap. VP Progs., 51 Normandy Drive, Lake St. Louis, MO 63367. Dy: (314) 263-5311. Res: (314) 561-6507. S: Jim. Job: ATCOM. GS: 6. Vp, Programs, Lindbergh Chapter.

Barron, Rickie L., (M89) (Rick) 106 Briarcliff Road, Ozark, AL 36360. Dy: (334) 255-8352. Res: (334) 774-9658. Job: Flt Instr, DPTMSEC, also USAR, 33rd Avn Gp, Fort Rucker, AL. GS: 13. 1993 Dac Of Year.

Barton II, James D., (M93) (Jim) 916 Southwind Court, Collinsville, IL 62234-1542. Dy: (314) 263-7814. Res: (618) 346-0658. S: Rose. Job: Logistics Mgmt Specialist, Saudi Arabia Programs Mgmt Office. GS: 12.

Bazzetta, Jerry M., (M84) 5026 Darfield Court, St. Louis, MO 63128. Dy: (314) 263-0364. Res: (314) 892-7377. S: Nancy. Job: Visionics Manager, EE. GS: 14.

Belki, Michael R., (M93) Route 4, Box 223, Lampasas, TX 76550. Dy: (817) 287-2685. Res: (512) 556-8895. Job: Supervisor, Logistics Management Spc., USACATB. GS: 12. Life Member.

Benavides, Javier, (M94) 4637 Cobblestone Lane, Corpus Christi, TX 78411-4921. Dy: (512) 939-2903. Res: (512) 854-2530. Job: Equip Spec, Analytical Investigation Br, CCAD. GS: 12.

Bender, Gary L., (M91) 3747 Paula Lane, Lancaster, CA 93535. Dy: (805) 277-4986. Res: (805) 946-3906. Job: Chief, Flight Test Div. A, Airworthiness Qualification Test Dir.. GS: 14.

Benham, John R., (M93) 106 Nansemond Turn, Yorktown, VA 23693-2730. Dy: (804) 878-5001. Res: (804) 766-3185. S: Bonni. Job: Chief, Avn. Support Facility (AATO). GS: 13.

Bennett, Christine A, (M94) (Chris) 2206 Trowbridge Court, Belleville, IL 62221. Dy: (314) 263-1402. Res: (314) 233-3999. S: Stanley. Job: Secretary. GS: 6.

Bernatonis, Donald M., (M82) P.O. Box 394, Minersville, PA 17954-0394. Dy: (908) 427-3873. Res: (717) 544-5493. Job: CECOM, Fort Monmouth. GS: 12. Life Member.

Bessette, Robert A., (M93) (Bob) 25 Wallace Road, Hampton, VA 23664. Dy: (804) 878-3995. Res: (804) 851-1463. S: Debby. Job: Safety Specialist, Transportation Branch Safety Office. GS: 11.

Biddlecombe, Kathy L., (M88) ATCOM, AMSAT-I-MEU, 4300 Goodfellow Blvd., St. Louis, MO 63120. Dy: (314) 263-3050. S: Christopher. Job: Chief, Utility/Cargo Branch, Maint. Eng. Division. GS: 14.

Birocco, Gene A., (M93) ATCOM, Bldg. 401, AMSAT-R-TV, Fort Eustis, VA 23604-5577. Dy: (804) 878-3008. Job: Supv. Aerospace Eng.. GS: 15.

Boedeker, Kathleen M., (M82) 11906 Beaverton, Bridgeton, MO 63044. Dy: (314) 263-7410. Res: (314) 739-9146. S: Robert. Job: Logistic Management Specialist, PEO-Aviation. GS: 14.

Boon, Garfield W., (M86) 14925 Afshari's Circle, Florissant, MO 63034. Dy: (314) 263-1031. S: Connie. Job: Chief, Kiowa

Warrior/Fixed Wing Division, Contract Opns Directorate. GS: 14.

Borman, Steven J., (M88) 1910 Clark Street, Spring Lake, NC 28390. Dy: (910) 396-4064. Job: Fort Bragg, NC. GS: 13. Life Member.

Bowersox, Wilbur, (M82) (Bud) 15917 Chowning Court, Chesterfield, MO 63017. Dy: (314) 263-3221. Res: (314) 394-9301. S: Ulli. Job: Director, Apache & Ground Support, ATCOM. GS: 15.

Boxx, James P., (M82) (Jim) 1065 Southcrest Drive, Arnold, MO 63010. Dy: (314) 263-3219. Res: (314) 296-8708. S: Joan. Job: Cost Analyst, ATCOM. GS: 13.

Brady, Pamela L., (M82) 1053 E. Highway M, Wright City, MO 63390. Dy: (314) 263-0877. Res: (314) 673-2133. Job: Logistics Mgt Sp, Apache PMO. GS: 13.

Branca, James E., (M95) (Jim) 7462 Sir Lords, Hazelwood, MO 63042. Dy: (314) 263-1066. Res: (314) 831-5249. S: Kay. GS: 15.

Brassel, Patrick O., (M83) 346 Meadow Brook Drive, Ballwin, MO 63011. Dy: (314) 263-7464. Res: (314) 256-7722. S: Charlotte. Job: ATCOM AMSAT-R-WA. GS: 13.

Brittingham, Alvin L., (M93) (Al) 448 Nicewood Drive, Newport News, VA 23602-5335. Dy: (804) 878-4791. Res: (804) 872-7428. S: Judy. Job: Instructor, Rotary Wing, USAALS, DAST, UHD Fort Eustis. GS: 9.

Brown, Eva C.H., (M91) Route 3, Box 302B, Robstown, TX 78380. Dy: (512) 939-2404. Res: (512) 241-1911. Job: Acft Records Clerk, CCAD. GS: 5.

Brown, Kirt E., (M94) HQ USAMC-Europe, Unit 29331, Box 175, APO AE 09266. S: Kathy. Job: MDHS, Apache Area Fielding Rep, USAREUR. GS: 12.

Brown, LaWanna J., (M94) 711 Slippery Rock Drive, Edwardsville, IL 62025. Dy: (314) 263-2901. Res: (618) 659-1409. S: Alan. Job: Proof Reader, DynCorp.

Buhrkuhl, Robert L., (M87) (Bob) 9370 White Avenue, Brentwood, MO 63144. Dy: (314) 331-4066. Res: (314) 962-9926. S: Bonnie. Job: Business Manager, Systems Integration & Management Activity. GS: 15.

Burg, Matthew H., (M94) (Matt) 26 Drew Avenue, Highland Falls, NY 10928-2030. Dy: (914) 938-7561. Job: OCOUP Health & Safety Specialist. GS: 9.

Burke, John J., (M66) 9 Chapman Avenue, Neptune, NJ 07753. Dy: (908) 427-2023. Res: (908) 922-3442. S: Rita. Job: Avionics Project Ldr, CH-47D & UH-1, CECOM RD&E Center, C2SID. GS: 12.

Burwell, James M., (M61) (Jim) 2 Shingle Oaks Drive, Glen Carbon, IL 62034. Dy: (314) 263-1144. Res: (618) 288-3646. S: Gudrun. Job: Electronics Engineer, PM Aviation Electronic Combat (AEC), PEO Avn.. GS: 14. Charter Life Member.

Caines, Joseph A., (M89) (Joe) Corpus Christi VP Memb., 5802 Everhart Rd, Apt 23H, Corpus Christi, TX 78413. Dy: (512) 939-2397. Res: (512) 993-4088. Job: Ext. 2397, CCAD, Electrical Repairer, W/C 5WL1O. Vp, Membership Enrollment, Corpus Christi Chapter.

Caldwell, Edwin G., (M94) (Ned) 4610 Victoria Boulevard, Hampton, VA 23669. Dy: (804) 764-2135. Res: (804) 722-3848. S: Frances. Job: Dir, VA OSA Flt Det. GS: 14.

Calve, Jack W., (M88) (The Voi) 3021 Dale Avenue, Granite City, IL 62040. Dy: (314) 263-9992. Res: (618) 451-7650. Job: Public Affairs Spec, ATCOM. GS: 9. Past Chapter Officer.

Canipe, Gaynell H., (M93) 1735 Florida Avenue, Woodbridge, VA 22191. Dy: (703) 806-7121. Res: (703) 491-7040. S: Clem. Job: Civ Personnel Coord, QSAC. GS: 11.

Cannon, William J., (M94) (Bill) 117 W. Silver Oak Drive, Enterprise, AL 36330. Dy: (334) 255-3119. Res: (334) 347-8565. S: Linda. Job: Training Specialist, Avn. Training Brigade. GS: 13.

Cantrell, Thomas R., (M93) Rt. 3, Box 112, Robstown, TX 78380. Dy: (512) 939-3172. Res: (512) 387-8309. Job: Aircraft Mechanic, CCAD.

Carney, Shirley R., (M81) (Shirl) 911 Sugar Lake Court, St. Peters, MO 63376. Dy: (314) 263-5364. Res: (314) 926-3331. Job: Provisioning Specialist, ATCOM. GS: 9.

Carpenter, Cynthia S., (M92) (Cyndi) 83 S. Cooks Bridge Road, Jackson, NJ 08527. Dy: (908) 427-4340. Res: (908) 928-8269. S: Howard. GS: 9.

Carver, Marie L., (M93) (Mimi) 5190 Butler Bend Drive, St. Louis, MO 63128. Dy: (314) 263-2031. Res: (314) 892-6585. S: Daniel. Job: Supv. Staffing Specialist, ATCOM. GS: 13.

Castillo, Rodolfo, (M92) (Rudy) 5902 Woodmere Drive, Corpus Christi, TX 78414. Dy: (512) 939-2069. Res: (512) 991-1459. S: Irene. Job: T700 Engine Assy BR #2, CCAD.

Chapman, Alvyn G., (M95) (Al) 201 Arron Drive, Enterprise, AL 36330. Dy: (334) 255-8171. Res: (334) 393-5087. S: Melinda. Job: Flight Test Pilot, USATTC. GS: 13.

Chapman, Carolyn L., (M79) (Carolyn) 11834 Larry Road, Fairfax, VA 22030-5746. Dy: (703) 697-0487. Res: (703) 273-6026. S: Mal. Job: Log Mgmt Spec, HQDA, ODCSLOG, Wash DC. GS: 13. Sch Board. 83 Dac Of The Year.

Chapman, John R., (M86) 9037 Sugar Tree Trail, Huntsville, AL 35802. Dy: (205) 876-3108. Res: (205) 883-4715. S: Brenda. Job: Deputy Director, IMMC, US Army Missile Command. GS: 15.

Chauvette, Martha W., (M84) (Marty) 849 Blossom Street, Corpus Christi, TX 78418. Dy: (512) 939-3244. S: Richard. Job: Supervisory Inventory Mgmt Spec, CCAD. GS: 11.

Cioffi, Charles, (M82) (Chuck) 9130 Wembley Woods Drive, St. Louis, MO 63126. Dy: (314) 263-1672. Res: (314) 842-0447. S: Roberta. Job: Branch Chief/Dir Engr/LOH A/C, ATCOM. GS: 14.

Clapp, Charles M., (M94) (Chuck) P.O. Box 4393, Fort Polk, LA 71459-1393. Dy: (318) 531-0395. Res: (318) 535-0416. S: Sue. Job: Installation Avn. Safety Officer. GS: 11.

Clark, David J., (M92) 911 N. Daleville Avenue, Unit D, Daleville, AL 36322. Dy: (334) 598-9533. S: Yolanda. Job: Flight Instructor, E Co, 1/212th, Fort Rucker. GS: 13.

Cline, John H., (M88) (John) NASA Langley Research Ctr, M/S 266, Hampton, VA 23681-0001. Dy: (804) 864-3966. Res: (804) 851-4551. S: Pam. Job: Research Engrg Technology Transfer, Army Vehicle Structures Div. GS: 13.

Cobb, Bernard A., (M84) (Benny) 843 Bentley Green Circle, Winter Springs, FL 32708. Dy: (407) 381-8696. Res: (407) 359-1929. S: Pat. Job: Logistics Mgr, STRICOM. GS: 12. Past Chapter Officer.

Cole, Donald B., (M94) (Don) 1250 Sandpiper Drive, Corpus Christi, TX 78412. Dy: (512) 939-3771. Res: (512) 994-1240. S: Nancy. Job: Civ Exec Asst, CCAD. GS: 15.

Colten, Norman E., (M88) 44 Stonehenge Drive, Ocean, NJ 07712. Dy: (908) 427-3872. S: Bernice. Job: Electronic Engr, C2SID, RDEC, CECOM. GS: 13.

Contreras, Lois, (M88) Corpus Christi Chap. Secy, 4445 Cedar Pass, #120-D, Corpus Christi, TX 78413-4354. Dy: (512) 939-3600. Res: (512) 850-7867. Job: Protocol Officer, CCAD, Commander's Staff. GS: 7. Secretary, Corpus Christi Chapter.

Cooper, John R., (M95) 2021 Highridge Drive, Apt. 4-O, Huntsville, AL 35802. Dy: (205) 876-2608. Res: (205) 883-7724. Job: Inventory Mang. Spec, USTA-TMDE. GS: 9.

Coyne, Raymond J., (M87) (Ray) 126 Phelps Avenue, Bergenfield, NJ 07621. Dy: (201) 823-6200. Res: (201) 385-5542. S: Dolores. Job: ACQSIM MTMCEA, Bayonne, NJ. GS: 15.

Crews, Samuel T., (M86) (Sam) 6904 Washington, St. Louis, MO 63130. Dy: (314) 263-2486. Res: (314) 862-3824. S: Ann. Job: Dyn & Anal Branch Chief, ATCOM. GS: 15.

Davis, Thomas G., (M70) (Tom) 2600 Old South Court, Jonesboro, GA 30236. Dy: (404) 362-7382. Res: (404) 471-3435. S: Rebecca. Job: HQ 2nd US Army, Ft. Gillem, GA, Avn Safety Manager. GS: 12.

Davis, Warren J., (M88) (Grizzly) 6272 Debbie Circle, Hayes, VA 23072-2508. Dy: (804) 878-5812. Res: (804) 693-6222. S: Patricia Job: Trng Spec-Structural/Pneudraulics Div, DATT, USAALS. GS: 10. Life Member.

DeGroodt, Colleen M., (M92) 931 Tunesbrook Drive, Toms River, NJ 08753. Dy: (908) 532-3568. S: Pat. Job: Electronics Engr, HQ CECOM. GS: 14.

Descoteau, Donn C., (M92) 4608 Kramer Drive, St. Louis, MO 63123-5840. Dy: (314) 263-5836. Res: (314) 752-1439. GS: 9.

Dettmer, Jerry F., (M77) 2011 Wakefield Lake Road, Glencoe, MO 63038. Dy: (314) 263-5526. S: Mary Lou. Job: Deputy Proj Mgr, AEC. GS: 15.

DeWitt, Joseph H., (M91) 2701 McClay Valley Blvd., St. Peters, MO 63376. Dy: (314) 263-2081. Res: (314) 928-7374. S: Son. Job: Cobra Product Manager, Logistics Manager. GS: 12.

Dick, Calvin F., (M92) 210 Allen Road, Delta, PA 17314-9608. Dy: (703) 607-7772. S: Lorraine. Job: Supply Mgmt Rep, NGB. GS: 12.

Dobbins, Debra A., (M88) 4705 Penrose Street, St. Louis, MO 63115. Dy: (314) 263-0701. Res: (314) 381-1144. Job: Contract Spec, ATCOM. GS: 11.

DuBois, Merton S., (M77) (Sherm) 309 Green Grove Road, Wayside, NJ 07712. Dy: (908) 532-6339. Res: (908) 922-9657. S: Jean. Job: Deputy Director, C2SID, CECOM, Fort Monmouth, NJ. GS: 15. Past Chapter Officer.

Durbin, Judith L., (M89) (Judy) 13 Park Place, St. Peters, MO 63376. Dy: (314) 263-1046. Res: (314) 939-2339. Job: Protocol Officer, ATCOM/PEO Aviation. GS: 11.

Dyson, Robert F., (M94) Route 3, Box 321, Ozark, AL 36360. Dy: (334) 255-3401. Res: (334) 774-9448. S: Reta. GS: 13.

Earley, Faye E., (M87) 14001 Twin Cedars Terrace, Chester, VA 23831-8008. Dy: (804) 734-1758. Job: Protocol Off, CASCOM, Ft. Lee. GS: 9.

Eason III, E. Allen, (M67) (Al) 169 Middlebury Lane, Newnan, GA 30265-1918. Dy: (404) 629-8676. Res: (404) 502-9060. S: JoAnn. Job: DAC, USA Reserve Command. Life Member.

Eberle, Norman D., (M95) (Norm) 7814 Grizzley Drive, Corpus Christi, TX 78414. Dy: (512) 939-3172. Res: (512) 991-5042. S: Linda. Job: Elect Eng. CCAD.

Ecker, Constance H, (M95) (Connie) 710 S. Quida Street, Enterprise, AL 36330. Dy: (334) 255-2864. Res: (334) 347-6568. Job: Writer, Aircrew Training Manuals, Avn Trng Bde, Fort Rucker, AL. GS: 11.

Eisenhart, Agnes J., (M90) (A.J.) 5601 Seminary Road, Apt. 602-N, Falls Church, VA 22041. Dy: (703) 607-7737. Res: (703) 931-8739. Job: Safety & Occupational Health Manager. GS: 12.

Elmore, Harvey L., (M93) 2502 Bacon Ranch Road, Apt. 2002, Killeen, TX 76542. Dy: (817) 288-1881. Res: (817) 699-1474. S: Jane. Job: Deputy Dir, Avn Test Directorate, TEXCOM. GS: 14.

Eschenbach, Allie N., (M90) (Allie) Colonial Virginia Secy., 224 Robertson Street, Williamsburg, VA 23185. Dy: (804) 878-6303. Res: (804) 253-0611. S: Tom. Job: Writer-TV & Motion Pictures, USAALS, DOTD, DTD. GS: 12. Secretary, Colonial Virginia Chapter. St Michael Award.

Eveker, Clare A., (M92) 4892 Vermilion Drive, St. Louis, MO 63128. Dy: (314) 263-2271. Res: (314) 892-0496. S: John. Job: Supv. Contracting Officer, ATCOM. GS: 13.

Fary, Stephen W., (M90) 1739 Belman Blvd., Wall Township, NJ 07719. Dy: (908) 427-2568. Res: (908) 681-0142. Job: Aircraft Installation Branch, CECOM, C2SID. GS: 12.

Feder, Earl, (M82) 16 Meyer Road, Edison, NJ 08817. Dy: (908) 427-3907. Res: (201) 985-5582. S: Elaine. Job: C2SID, Fort Monmouth. GS: 14.

Feltmeyer, Rochelle S., (M86) (Shelley) 2219 Benton, Granite City, IL 62040. Dy: (314) 263-1046. Res: (618) 451-7415. S: Larry. Job: Protocol Specialist, ATCOM. GS: 9.

Ference, Sue A., (M88) 2 Graystone Court, St. Charles, MO 63303. Dy: (314) 263-9923. Res: (314) 723-6606. S: Edward. Job: Electronics Engineer, ATCOM. GS: 13.

Figner, James A., (M88) 1793 Hovsons Boulevard, Toms River, NJ 08753. Dy: (908) 427-3589. Job: Computer Specialist, SED. GS: 12.

Finafrock, John W., (M76) Tennessee Valley VP Prog., 118 Summitridge Road, Madison, AL 35758. Dy: (205) 876-6659. Res: (205) 722-9001. Job: Command Ombudsman, MICOM. GS: 15. Life Member. Vp, Programs, Tennessee Valley Chapter. Past Chapter Officer.

Firment, John A., (M81) 70 Cherokee Road, Cherokee Village, AR 72529. Res: (606) 223-5928. S: Gretchen. Job: LSA/Technical Writer.

Flothmeier, William S., (M93) (Bill) 8185 Cheshire Street, Ventura, CA 93004. Dy: (805) 989-1972. Res: (805) 647-3895. S: Beverly. Job: Engineer, Naval Air Warfare Center, Weapons Division, Point Mugu, CA. GS: 13.

Flowers, Howell L., (M95) 102 Northside Drive, Enterprise, AL 36330. Dy: (334) 255-9903. S: Margaret. Job: Deputy Director, DPTMSEC, USAAVNC. GS: 14.

Foreman, Laverne R., (M82) (Vern) 164 N. 74th Street, Apt. 2024, Mesa, AZ 85207. Dy: (602) 891-3579. Res: (602) 981-2974. S: Doris. Job: Apache/Longbow Team Leader, DPRO-MDHC Def Contract Mgmt Cmd, DLA. GS: 13. Past Chapter Officer.

Frazier, Mary E., (M88) (Mary) 810 Roseanne, Corpus Christi, TX 78418. Dy: (512) 939-2228. Res: (512) 937-5794. Job: Acft Records Clerk, CCAD, D/AFRM PDN, PSA & QCDIV. GS: 5. Life Member.

Frederick, Mary M., (M94) 9262 Saddlebrook Way, Douglasville, GA 30135. Dy: (404) 752-3133. Res: (404) 489-6969. S: James. Job: Secretary, Eastern Region HQs, OSAC. GS: 6.

Fullen, Lester M., (M91) (Les) 3140 South Horizon Place, Oviedo, FL 32765-6931. Dy: (407) 380-8120. S: Bonnie. Job: Training Specialist, STRICOM. GS: 12.

Gainer, Charles A., (M81) (Chuck) P.O. Box 1503, Enterprise, AL 36330. Dy: (334) 255-2834. Res: (334) 347-8438. Job: Chf, ARI Rotary Wing Research Unit, Inst. DCSPER. GS: 15.

Garcia, Niseforo,Jr, (M80) (Forty) 7169 Brookledge Lane, Corpus Christi, TX 78414. Dy: (512) 939-3172. Res: (512) 991-3236. S: Vickie. Job: Chief, Flight and Ground Check Branch, CCAD. GS: 10.

Garcia, Vickie K., (M84) 7169 Brookedge Lane, Corpus Christi, TX 78414. Dy: (512) 939-2131. Res: (512) 991-3236. S: Niseforo. Job: Management Analyst, CCAD. GS: 11.

Garmon, Janet J., (M83) (Jan) Lindbergh Chapter VP Memb. 1525 Tremont Drive, Florissant, MO 63033-3024. Dy: (314) 263-0393. Res: (314) 921-6251. S: Gary. Job: AMSAV-R-S Prog Analyst, AVRDEC BMO, ATCOM. GS: 11. Vp, Membership Enrollment, Lindbergh Chapter.

Garrison, Jule E., (M95) (G-Man) P.O. Box 931, Daleville, AL 36322-9310. Dy: (334) 255-8361. Res: (334) 598-1990. S: Alice. Job: Aircraft Dispatcher, HHC 1-223rd. GS: 7.

Gaughan, Wm. G., Jr, (M71) (Bill) 60 Gooseneck Point Road, Oceanport, NJ 07757. Dy: (201) 724-4580. Res: (908) 222-0148. S: Janna. Job: Acft. Flt. Instructor. GS: 13.

Gentry, C. Patrick, (M68) (Pat) 4818 Stagecoach Trail, Temple, TX 76502. Dy: (817) 288-2058. Res: (817) 778-6643. S: Nancy. Job: Civilian Personnel Director, III Corps, Fort Hood, TX. GS: 14.

Gibson, Constance S, (M80) (Connie) 764 Lakemont Drive, Hampton, GA 30228. Dy: (404) 629-8650. Res: (404) 471-7549. S: William. Job: Safety & Occupational Health Director, USARC. GS: 14.

Gifford, Holly E., (M95) 2805 Thunder Bay Court, Corpus Christi, TX 78414-4004. Dy: (512) 939-2452. Res: (512) 994-8450. Job: CCAD. GS: 12.

Gill, William M., (M84) (Bill) 21 Rutland Place, Eatontown, NJ 07724. Dy: (908) 427-2174. Res: (908) 542-0574. S: Sandra. Job: Electronic Engineer, CECOM. GS: 14.

Gillis, Jane L., (M94) Route 6, Box 753, Enterprise, AL 36330. Dy: (334) 255-2400. Res: (205) 373-7772. S: Matt. Job: Dir of Logistics, USAAVNC, Fort Rucker, AL. GS: 15.

Goldin, Marvin D., (M92) 2 North Bath Avenue, Unit A-4, Long Branch, NJ 07740-6433. Dy: (908) 427-4896. Res: (908) 571-3041. Job: Electronic Engineer, C2SID. GS: 12.

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Gordon, Treylis C., (M88) (Troy) 108 Vintage Lane, Enterprise, AL 36330-1050. Dy: (334) 255-8386. Res: (334) 393-3463. S: Linda. Job: Hcptr Flt Instr, D/1-223 Avn. GS: 12.

Grady, Robert L., (M92) 1434 Coqhuila Street, Corpus Christi, TX 78417. Dy: (512) 939-2011. Res: (512) 853-3538. S: Nita. Job: Electronics Mech, CCAD.

Grasso, Lyse, (M94) 7604 Savannah Street, No. 203, Falls Church, VA 22043. Dy: (703) 607-7136. Res: (703) 641-3290. Job: Information Management Officer, NGB-ARP. GS: 11.

Gray, Wallace M., (M83) 845 McDonald, Corpus Christi, TX 78418.

Griffin, Edgar R., (M87) (Ed) 62A Academy Street, Farmingdale, NJ 07727. Dy: (908) 544-3586. Res: (908) 938-7509. S: Betty. Job: ILS Mgr, CECOM, LMD. GS: 12.

Griffiths, John J., (M93) (Griff) 8355 Racquet Drive, St. Louis, MO 63121. Dy: (314) 263-5137. Res: (314) 381-7095. S: Carolyn. Job: New Equipment Training Manager, ATCOM. GS: 14. Life Member.

Groom, Gary L., (M90) 336 Springwood Court, Canton, GA 30115-8287. Dy: (404) 691-2500. Res: (770) 345-6294. S: Heidi. Job: Standardization Officer, GA OSAC Flt. Det.. GS: 13.

Grossman, Daniel C., (M88) 9701 Duluth Drive, St. Louis, MO 63137. Dy: (314) 263-5542. Res: (314) 869-7797. S: Gail. GS: 14.

Gugelmeyer, Michael C., (M95) 366 Douglas, Apt. 1, Mascoutah, IL 62258-2820. Dy: (314) 263-0567. Res: (618) 566-7795. Job: Quality Assurance Specialist, ATCOM. GS: 11.

Guilmette, Richard R., (M85) (Rich) 306 E. Silver Oak Drive, Enterprise, 36330. Dy: (334) 255-4246. Res: (334) 393-2716. S: Rita Marie. Job: Helicopter Instructor Pilot, C Co, 1/212 ATB. GS: 12.

Guy, Patrick, (M87) (Pat) 1108 St. Charles Avenue, St. Charles, MO 63301. Dy: (314) 263-2813. S: Mildred. Job: Budget Officer, ATCOM. GS: 14.

Guzman, Jose J., (M78) (Joe) AAAA Scholarship Fdn. Bd., 725 Belmeade, Corpus Christi, TX 78412. Dy: (512) 939-3251. Res: (512) 992-1722. S: Ellie. Job: Director Engine Production, CCAD. GS: 14. Sch Board. Past Chapter Officer.

Hair, Wayne E., (M94) (Wayne) 2405 Meadow Lane, Copperas Cove, TX 76522. Dy: (817) 288-9110. Res: (817) 547-5215. S: Virginia. Job: Public Affairs Officer, HQ Texcom, Fort Hood. GS: 11.

Halpern, Susan S., (M83) 12132 Fahrpark Lane, St. Louis, MO 63146. Dy: (314) 263-1305. Res: (314) 432-2382. S: John. Job: Kiowa Warrior PMO, SFAE-AV-ASH-P. GS: 12.

Ham, John R., (M92) HHC 11th Avn., CECOM LAR, CMR 416, Box 1007, APO AE 09140. S: Siggi. Job: Equip Spec (Electronics). GS: 13.

Hamblin, Don L., (M85) (Don) 2 Amber Jack Court, Ballwin, MO 63021. Dy: (314) 263-5133. Res: (314) 227-0149. S: Paula.

Job: Apache ILS Manager, ATCOM. GS: 13.

Hammell, Martin B., (M95) 221 Summerwood Lane, Stockbridge, GA 30281. Dy: (404) 669-6047. Res: (404) 389-9866. S: Wendy. Job: Air Traffic Specialist, HQ FORSCOM. GS: 12.

Handing, Roy A., (M83) 2250 Liberty Drive, Florissant, MO 63031-2522. Dy: (314) 263-7463. Res: (314) 838-8929. Job: ATCOM, AVRDEC, AMSAT-R-WA. GS: 12.

Haney, H. Vance, (M94) Route 3, Box 371B, Ozark, AL 36360. Dy: (334) 255-1059. Res: (334) 795-3554. S: Nancy. Job: Chief, Internal Review Branch, IRAC Office. GS: 12.

Hannell, Tony M., (M73) (J Edgar) ASF-Aurora, 43W776 US Hwy 30, Sugar Grove, IL 60554. Dy: (708) 466-0061. Res: (708) 697-8804. S: Gay. Job: Aviation Facilities Supervisor, 86th ARCOM, USAR. GS: 14. Past Chapter Officer.

Harbarger, Scott A., (M95) (Scooter) AASF #1, Bldg. 19-101, Attn: ALSE, Annville, PA 17003. Dy: (717) 861-8959. Res: (717) 561-0117. S: Judy. Job: Aviation Life Support Equipment Technician. GS: 8.

Harness, James R., (M83) 1418 Deporres Lane, St. Charles, MO 63304. Job: ATCOM, ATCOM-R-EBC (FSP). GS: 12.

Harper, Willie D., (M75) (Dale) 1284 Old Maplehurst Road, Jacksonville, NC 28540. Dy: (919) 451-6618. Res: (919) 347-5701. S: Joyce. Job: Engrg Tech, NAESU Det New River. GS: 11. Charter Life Member.

Hartin, Howard M., (M92) (Mike) 2234 Chippewa Trail, Maitland, FL 32751. Dy: (407) 380-4990. Res: (407) 645-3105. S: Karen. Job: Project Dir, PM TRADE. GS: 13.

Hawkins, Edwin D., (M87) (Ed) 644 Ridgewoods Manor Dr., Glencoe, MO 63038-2302. Dy: (314) 263-5426. S: Judy. Job: Chief, Projects Branch, ATCOM, Maintenance Directorate. GS: 14.

Haworth, Loran A., (M74) 5302 Avenida Almendros, San Jose, CA 95123. Dy: (415) 604-6944. Res: (408) 629-9647. S: Susan. Job: USAAFDD Test Pilot. GS: 14. Past Chapter Officer.

Haynes, Donna C., (M88) A Co, 127th ASB (WJEQAO), Unit 20198, Box 418, APO AE 09165. S: Andy. Job: Hanau. GS: 5. Past Chapter Officer.

Headley, David R., (M95) (Doc) 1103 S Quincy Street, Apt. 201, Arlington, VA 22204. Dy: (703) 607-7722. Res: (703) 521-7436. Job: ARNGRC-Arlington, VA, Avn Sys Div. GS: 12.

Hecht, Gregory G., (M91) (Hector) 12611 Silver Lake Road, Highland, IL 62249-3425. Dy: (314) 263-3361. Res: (618) 654-9581. Job: Aircraft Equipment Specialist. GS: 11.

Henderson, Scott E., (M87) (Scotty) 3 W. Garden Walk Drive, St. Peters, MO 63376. Dy: (314) 263-9767. Res: (314) 397-1459. S: Christine. Job: Comanche RAH-66 PM, ILS Division, SFAE-AV-RAH-L. GS: 12.

Henson, Patricia L., (M88) 200 Springfield, Granite City, IL 62040. Dy: (314) 263-1033. Job: Contract Spec, ATCOM. GS: 13.

Hingle, Edward C., (M88) 2702 Danforth Drive, St. Louis, MO 63129. Dy: (314) 263-3265. S: Sharon. Job: Contract Price Analyst, ATCOM. GS: 13.

Hoffman, Roger P., (M80) 6601 Fox View Drive, Edwardsville, IL 62025. Dy: (314) 263-1821. Res: (618) 692-6361. S: Sharron. Job: Chf, Methodology Br, Dir. Maint., ATCOM. GS: 14. Past Chapter Officer.

Hoskins, Barbara L., (M95) 7630 Southern Oak Drive, Springfield, VA 22153. Dy: (703) 614-3993. Job: OASARDA. GS: 15.

Hudson, James M., (M90) (Mike) 106 Tyborne Court, Columbia, SC 29210-4235. Dy: (803) 822-5820. Res: (803) 798-4780. S: Rose. Job: ASF Supvr, Avn Spt Fac (123), also USAR. GS: 13.

Hudson, Joseph D.Sr, (M66) (Joe) 702 Boulevard De Cannes, Edwardsville, IL 62025-5305. Dy: (314) 263-5520. Res: (618) 692-6093. Job: Chief Of Logis, AEC PM, PEO for Aviation. GS: 15.

Hughes, Timothy J., (M85) (Tim) 5804 Bristlecone Court, St. Louis, MO 63129-2916. Dy: (314) 263-1881. Res: (314) 487-9396. S: Beverly. Job: Chf, Dev Proj Div, Dir For Engr, ATCOM. GS: 15.

Hunt, April K., (M92) 10622 Aylesford Drive, Ferguson, MO 63136. Dy: (314) 263-7473. Res: (314) 388-3204. Job: Secretary, PEO, AV, Kiowa Warrior PM. GS: 5.

Huntington, Jimmy O., (M94) 8 Cottage Lane, Lee Hall, VA 23803. Dy: (804) 878-3259. Res: (804) 887-3519. S: Jutta. Job: Equipment Specialist (Aircraft). GS: 11.

Irvine, Gerald W., (M81) (Jerry) P.O. Box 4206, Fort Eustis, VA 23604. Dy: (804) 878-3272. Res: (804) 877-5772. Job: Public Affairs Officer, Avn Research, Dev & Eng Ctr, Ft.Eustis, VA. GS: 12.

Irwin, Raymond A., (M88) (Ray) 1 Lloyd Place, Oakhurst, NJ 07755. Dy: (201) 544-4589. Res: (201) 229-4633. S: Kristina. Job: Dep Dir Survivability Branch, NVES, CECOM, Ft. Monmouth. GS: 14.

Isaak, Gene A., (M87) 506 Avenue E, Hartford, AL 36344. S: Nancy. Job: Log Mgmt Spec, USAAVNC, DCD, LSSD. GS: 12.

Jarman, Alton R.,Jr, (M85) (Ray) 619 Cheadle Loop Road, Seaford, VA 23696. Dy: (804) 878-1174. Res: (804) 898-5274. S: Judy. Job: Trng Specialist-Avn Logis, USAALS, Ft. Eustis. GS: 11.

Jellison, Richard N., (M86) (Jelly) 313 Laguna, Taft, TX 78390. Dy: (512) 939-2651. Res: (512) 528-5274. Job: Corpus Christi Army Depot. GS: 11.

Johnson, Douglas C., (M74) (Doug) 4 Seward Drive, Ocean, NJ 07712-3725. Dy: (908) 427-3284. Res: (908) 922-0568. S: Patricia. Job: Proj Engr, USA CECOM, Fort Monmouth. GS: 14. Life Member.

Johnson, Edward T., (M88) (Ted) 106 Rollingswood Road, Chesapeake, VA 23325-2110. Dy: (804) 878-6263. Res: (804) 424-4700. S: Evelyn. Job: USAALS. GS: 11.

Johnson, Larry E., (M92) NAVAIRWARCENWPNDIV, Code 454320E,Bdg36,Rm1314, Point Mugu, CA 93042-5001. Dy: (805) 989-3426. Res: (805) 485-6969. Job: Electronics Warfare Integration Engineer. GS: 13. 1991 ASE Award.

Johnson, Sammy R., (M80) 5322 Bromley, Corpus Christi, TX 78413. Dy: (512) 939-3622. Res: (512) 992-2900. S: G. Faye. Job: Chief, Navigation and Communication Division, CCAD.

Johnston, Larry D., (M79) (Larry) 394 Pebble Acres Drive, St. Louis, MO 63141. Dy: (314) 263-1702. Res: (314) 434-0771. S: Betty. Job: Deputy PM Utility Helicopters. GS: 15.

Jones, Donald H., (M89) (Don) STRICOM, 12350 Research Parkway, Orlando, FL 32826-3276. Dy: (407) 380-8079. Res: (407) 366-7751. S: Brenda. Job: Deputy Prod Mgr for Air Combat Trng Systems, PM TRADE, STRICOM. GS: 14.

Jones, Harold Jr., (M94) 1814 Darville Drive, Hampton, VA 23663-1915. Dy: (804) 878-6657. Res: (804) 850-4680. Job: Training Specialist. GS: 11.

Jones, Henry E., (M94) (Tex) Box 23, North, VA 23128. S: Lori. Job: Research Scientist. GS: 13.

Kaiser, Darrel P., (M80) 84 Schley Avenue, Savannah, GA 31419-3328. Dy: (912) 353-2505. Res: (912) 927-9662. S: Betty. Job: LAD, 24th ID, Hunter AAF, Savannah, GA, USA Missile Cmd, Huntsville. GS: 12.

Kalucki, Andrew S., (M92) 3 Tulip Lane, Holmdel, NJ 07733. Dy: (908) 427-3876. Res: (908) 946-0775. S: Mary Ann. Job: Electronic Engineer, CECOM RDEC Fort Monmouth. GS: 13.

Karg, Ronald K., (M85) (Ron) 3 Coventry Square, Holmdel, NJ 07733. Dy: (908) 427-3891. Res: (908) 946-4593. S: Jeannette. Job: Electron Engr, CECOM, C2SID. GS: 14.

Karvinen, Clifford P., (M88) 5320 Sugar Loaf Road, Collinsville, IL 62234-6824. Dy: (314) 263-1418. Res: (618) 346-0123. S: Joan. Job: Chief, Tech Mgt, PM Cargo Helicopters, ATCOM. GS: 14.

Keim, John R., Jr, (M80) (Randy) Delaware Valley, Treas., 4674 Malden Drive, Wilmington, DE 19803. Dy: (610) 591-8622. Res: (302) 764-7885. S: Linda. Job: Aero Engr, Comanche Program Integrator, DPRO Boeing Helicopters. GS: 12. Treasurer, Delaware Valley Chapter.

Keister, Arlie D., (M90) 7903 Lyle Lane, Dittmer, MO 63023. Dy: (314) 263-5598. Res: (314) 274-3683. S: Vicki. Job: Electronic Engr, PM AEC. GS: 14.

Kemph, Faulton E., (M90) (Gene) PSC 303, Box 50, APO AP 96204-0050. S: Brenda. Job: Engr, Pulau Electronics Corp, Korea. GS: 11.

Kennedy, Joanne M., (M86) 15502 Jost Circle, Florissant, MO 63034-3457. Dy: (314) 263-2799. Res: (314) 838-4445. S: Robert. Job: Supv Contr Spec, ATCOM. GS: 14.

Kerby, Paul D., (M83) 5715 Hidden Stone Drive, St. Louis, MO 63129. Dy: (314) 693-2725. Res: (314) 487-9872. S: Darlene. Job: Chief, Bus Mgmt Div, Weapon Sys Mgmt Dir. GS: 15.

Kershaw, Fred E., (M83) 5160 Hoxey Road, Alhambra, IL 62001. Dy: (314) 263-1683. Res: (618) 488-7909. S: Sonja. Job: Chief, UH-1 Engrg, ATCOM. GS: 14.

Kiefer, Joyce M., (M91) Lindbergh Chap VP Civ Afr, 2080 Mountain Ridge Drive, Pacific, MO 63069. Dy: (314) 263-2744. Res: (314) 271-6333. S: Ken. Job: Employee Relations Specialist, ATCOM CPO, M-ER. GS: 11. Vp, Civilian Affairs, Lindbergh Chapter.

Kimball, Helen M., (M82) 144 Northrop Drive, Brick, NJ 08724. Dy: (908) 427-3842. Res: (908) 840-2170. Job: Management Assistant, C2SID. GS: 7.

Kirsch, Franklin K., (M88) (Frank) P.O. Box 361, O'Fallon, MO 63366-0361. Dy: (314) 263-1422. Res: (314) 327-8672. Job: Aerospace Engr, RAH-66 PMO. GS: 14. Life Member.

Kitchens, John W., (M89) (John) Branch

Historian, ATTN: ATZQ-MH, Fort Rucker, AL 36362-5000. Dy: (334) 255-9151. Res: (334) 265-4865. S: Lynne. Job: Aviation Branch Historian. GS: 13.

Klein, Manfred W., (M85) (Fred) 2205 Scarlet O'Hara Cir., Huntsville, AL 35803. Dy: (205) 876-5246. Res: (205) 883-0673. S: Diane. Job: Sys Engrg & Prod Dir, USAMICOM. GS: 14.

Knoch, James W., (M88) 7916 Lyle Lane, Dittmer, MO 63023-1513. Dy: (314) 263-1419. Res: (314) 274-9892. S: Joyce. Job: Aerospace Engr, ATCOM TEMO. GS: 14.

Kravchuk, Debbie A., (M89) 7272 Abbey Lane, Winter Park, FL 32792. Dy: (407) 380-8541. Res: (407) 671-0824. Job: Systems Engineer, STRICOM. GS: 13.

Krsul, Mary L., (M83) 10750 Running Brook, St. Louis, MO 63137. Dy: (314) 263-1336. Job: Maintenance Program Specialist, ATCOM. GS: 12.

Kruvand, Daniel H., (M83) (Dan) 771 Radcliffe, University City, MO 63130. Dy: (314) 263-2532. Res: (314) 862-4972. S: Cookie. Job: Dir. of Maintenance, ATCOM. GS: 15.

Kurowsky, Ronald V., (M85) (Ron) Monmouth Chapter Pres., 1131 Mohegan Road, Manasquan, NJ 08736. Dy: (908) 427-3550. Res: (908) 223-5804. S: Carol. Job: Chief, Avionics Div, CECOM SED. GS: 14. NEB. Sch Board. President, Monmouth Chapter. Past Chapter Officer.

Lall, Bhisham J., (M92) (Bish) 1257 Danvers Drive, St. Louis, MO 63146. Dy: (314) 263-5426. Res: (314) 878-0288. S: Sneh. Job: General Engineer, ATCOM. GS: 12.

Lamb, Jean M., (M89) 14800 Empire Street, Dale City, VA 22193-2623. Dy: (703) 274-9759. Res: (703) 670-8791. Job: CALS Project Officer, HQ AMC, ATTN: AMCCA-I. GS: 14.

Lapaugh, Stephen J., (M85) (Steve) 346 Greenmeadow Drive, Newport News, VA 23608-3524. Dy: (804) 878-3370. Res: (804) 877-5684. S: Paula. Job: Avn Applied Tech Directorate, ATCOM. GS: 14.

Lavella, Anthony E., (M85) (Tony) 332 Halcyon Drive, St. Louis, MO 63122. Dy: (314) 263-7656. Res: (314) 822-0089. Job: Electronics Engr, USA ATCOM. GS: 14.

Lawrence, Peter A., (M94) (Pete) P.O. Box 4, Fort Monmouth, NJ 07703. Dy: (908) 532-3718. Job: Logistics Mgt Specialist, CECOM. GS: 9.

Leavis, Gerard J., (M89) (Jerry) PSC 04, Box 48, APO AA 34004. Dy: (507) 287-6800. Res: (507) 236-4756. S: Mary. Job: Assistant Deputy Chief of Staff for Logistics, U.S. Army South. GS: 15. Silver St. Michael.

Ledwig, Edw. A., Jr, (M80) (Ed) 7438 Spitfire Drive, Corpus Christi, TX 78412. Dy: (512) 939-3353. Job: ATCOM. GS: 11.

Lewis, Richard W., (M57) (Dick) 306 Hudson Circle, Ozark, AL 36360-3123. Dy: (334) 255-1256. Res: (334) 774-2075. S: Barbara. Job: Trng Instructor ATB, USAAVNC, Ft. Rucker. GS: 11. Charter Member. Life Member. Past Chapter Officer.

Lindberg, Arthur W, (M76) (Wayne) 840 Woodbriar Lane, St. Charles, MO 63303. Dy: (314) 263-1637. Res: (314) 441-8357. S: Bernice. Job: Chief, Mission Equip Div, Direct for Engrng, ATCOM. GS: 15.

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Lorenz, Robert C., (M87) 103 Fletcher Drive, Collinsville, IL 62234. Dy: (314) 263-1301. Res: (618) 344-5656. S: Pat. Job: Chief, Logistics Mgmt Div, Project Mgr, Kiowa Warrior, PEO. GS: 14. Past Chapter Officer.

Losse, Kathleen A., (M88) (Kathy) 38 W. Sunny Side Drive, St. Peters, MO 63376-1851. Dy: (314) 263-1240. Res: (314) 272-0272. Job: Travel Pay Supervisor, ATCOM, Defense Finance & Accounting Svces.. GS: 9.

Lovell, O. Carlos, (M89) (Carlos) P.O. Box 18083, Corpus Christi, TX 78480. Dy: (512) 939-3431. Res: (512) 949-8704. S: Tena. Job: Attorney Advisor, Army, CCAD. GS: 13.

Lundgren, Robert E., (M91) 7122 Premont, No. J-203, Corpus Christi, TX 78414. Dy: (512) 939-3074. Res: (512) 993-0043. Job: General Manager, Corpus Christi Army Depot. GS: 11.

Lunsford, Gary E., (M88) P.O. Box 303, Hamel, IL 62046-0303. Dy: (314) 263-5797. Res: (618) 633-2874. Job: A/C Equipment Specialist. GS: 11.

Mack, Denise E., (M91) (Necie) 7023 Theodore Place, St. Louis, MO 63136. Dy: (314) 263-8998. Res: (314) 389-0968. Job: Logistics Mgmt Specialist-ATCOM. GS: 12.

Macrino, John A., (M86) P.O. Box 4111, Ft. Eustis, VA 23604. Dy: (804) 878-2122. Res: (804) 898-9126. S: Dolores. Job: Chf, Systems Integrated Div, AATD. GS: 15.

Maguire, James T., (M86) (Jim) Monmouth Chapter Treas., 121 Augusta Drive, Lincroft, NJ 07738. Dy: (908) 427-3512. Res: (908) 747-1345. S: Patrica. Job: CECOM Software Engineering Directorate, Ft. Monmouth. GS: 13. Treasurer, Monmouth Chapter.

Malekpour, Shahram, (M93) (Shawn) 1400 Ocean Drive, No. 1102B, Corpus Christi, TX 78404. Dy: (512) 939-2767. Res: (512) 884-9056. Job: Materials Engineer, Corpus Christi, TX. GS: 11.

Marcucci, Mary F., (M84) 2180 Millhaven Court, St. Louis, MO 63136. Dy: (314) 263-5990. S: Ty. Job: Inventory Mgmt Spec, ATCOM-AMSAT-I-SAAA. GS: 13.

Martin, Dwight, (M94) 3237 Kennsington Court, Corpus Christi, TX 78414. Dy: (512) 939-2971. Res: (512) 991-9441. S: Mae.

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Martinez, Stephen M., (M82) (Steve) 15326 Schoettler Estates, Chesterfield, MO 63017. Dy: (314) 263-1986. Res: (314) 532-6019. S: Karen. Job: Avn PEO Office. GS: 14.

Mason, James H., (M91) (Fuzzy) 15540 Canyon View Court, Chesterfield, MO 63017-5117. Dy: (314) 263-1947. Res: (314) 536-1711. S: Donna. Job: Logistics Management Specialist, PEO Aviation. GS: 12.

Matsui, Claude I., (M78) 4008 Southend Road, Rockville, MD 20853. Dy: (202) 761-0905. Res: (301) 871-2372. S: Sharon. Job: DA Prog Coord, Army Trng Facilities, HQDA of Engrs, Wash DC. GS: 13. Life Member.

McAllister, Harry D., (M95) 302 Poesta Drive, Portland, TX 78374. Dy: (512) 939-2749. Res: (512) 643-7917. Job: Public Affairs Spec-CCAD. GS: 11.

McCrory, Flucher J., (M86) (Jim) 607 Kent, Dothan, AL 36303. Dy: (334) 255-8001. S: Sue. Job: Technical Director, Aviation Technical Test Center. GS: 15.

McDonald, Monte M., (M92) 92 Southern Golf Court, Fayetteville, GA 30215. Dy: (404) 629-8687. Res: (404) 719-0229. S: Connie. Job: Aircraft Distribution Mgr, USARC. GS: 12.

McFalls, Michael, (M80) (Mike) 8 Equestrian Court N, Glen Carbon, IL 62034. Dy: (314) 263-1419. S: Sharon. Job: Chf, Test and Eval Mgt Otc, ATCOM. GS: 15. Life Member.

Meier, Cheryl L., (M84) 14645 Mill Spring Drive, Chesterfield, MO 63017-5634. Dy: (314) 644-7234. Job: Monsanto Corporation. GS: 15.

Meyer, Carolyn D., (M94) 6838 Everhart, No. 1201, Corpus Christi, TX 78413. Dy: (512) 939-3127. GS: 5.

Miller, Bradley R., (M86) (Brad) 908 Drummond Drive, Ferguson, MO 63135-1522. Dy: (314) 263-1433. Res: (314) 522-6231. S: Susan. Job: Aerosp Engr, ATCOM-AMSAT-R-NBM. GS: 14.

Miller, John A., (M94) 2 Baldwin Avenue, Morganville, NJ 07751-9714. Dy: (908) 427-4912. Res: (908) 591-1121. S: Frances. Job: Mechanical Engr, CECOM. GS: 13.

Miller, Mary D., (M93) (Denise) PSC 3, Box 1743, APO AA 34003. S: John. Job: Logistics Mgt Spec USARSO Avn Br. GS: 12.

Mills, Fred E., II, (M86) (Joe) 200 Mastin Avenue, Seaford, VA 23696. Dy: (804) 878-4714. S: Bonnie. Job: Training Management Specialist, Army Training Support Center. GS: 12.

Milton, Fred E., (M87) P.O. Box 1264, New Boston, TX 75570. Dy: (903) 334-3167. Res: (903) 628-2161. S: Brenda. Job: Deputy Cdr, Defense Distribution Depot Red River, Def Dist Reg West. GS: 14.

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Molina, Ralph, (M93) 2710 Toronto, Corpus Christi, TX 78414. Dy: (512) 939-3433. Res: (512) 985-1383. S: Veronica. Job: Civilian Avionics Mechanic.

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Morrow, Thomas O., (M95) (Tom) 100 Grayson Drive, Enterprise, AL 36330. Dy: (334) 255-4066. Res: (334) 347-4781. S: Karen. Job: Flight Instructor, HHC 1/212st Avn. Regt.. GS: 13.

Morton, Joseph O., (M83) (Joe) 3441 Cascade Drive, Arnold, MO 63010-3931. Dy: (314) 263-7213. Res: (314) 464-3282. S: Linda. Job: ATCOM AMSAT-I-SPW, Ch. War Res Sect.. GS: 13.

Moulder, Christopher, (M88) (Chris) 30 Miraclair Drive, Florissant, MO 63031. Dy: (314) 263-7100. S: Liz. Job: ATCOM, Supv. Supply Systems Analyst, AMSAT-SPW. GS: 13.

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Chris. Job: Contracting Offcr, USAATCOM. GS: 13.

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Ohliger, Robert G., (M86) (Bob) 19 Chamber Lane, Manalapan, NJ 07726. Dy: (908) 427-4686. Res: (908) 780-2195. S: Roberta. Job: General Engr C2SID. GS: 13.

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O'Neill, Jr., Raymond F., (M93) (Ray) PSC 2, Box 721, APO AA 34002. Job: USARSO Air Traffic and Airspace Officer. GS: 12.

Ordway, Jr., Richard C., (M80) (Dick) 13023 Midfield Terrace, St. Louis, MO 63146-6032. Dy: (314) 263-5472. Res: (314) 579-0141. Job: Logistics Division Chief, Apache Attack Helicopter PM. GS: 15.

Ottolini, Diane F., (M81) (Diane) 27 Lagorce Drive, Chesterfield, MO 63017. Dy: (314) 263-2844. Res: (314) 469-1612. Job: Civ Pers Off, ATCOM. GS: 15. Past Chapter Officer.

Oxford, Gordon L., (M94) (Lee) 102 Dee Court, Daleville, AL 36322. Dy: (334) 255-8436. Res: (334) 598-8697. S: Mary Anne. Job: UH-60 Instructor Pilot, C Co, 1-223rd Avn Regt, ATB, Fort Rucker, AL. GS: 13.

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Pijanowski, Mary C., (M89) (Charlie) 105 Grantham Way, Daleville, AL 36322. Dy: (334) 255-2072. Res: (334) 393-2673. S: Ron. Job: Education Specialist. GS: 12.

Platt, Donald L., (M82) (Don) 36 Heather Hill Lane, St. Louis, MO 63132. Dy: (314) 263-3216. Res: (314) 432-0835. S: Michele. Job: Dir of Security Assistance Management, ATCOM. GS: 15. Past Chapter Officer.

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Polson, John D., (M84) (Doug) 200th TAMMC, CMR 429, Box 1276, APO AE 09054. S: Kim. Job: Black Hawk Maintenance Manager. GS: 12.

Portman, Robert L., (M94) (Bob) Route 4, Box 542, Enterprise, AL 36330. Dy: (334) 255-4605. Res: (334) 347-6578. S: Mary. Job: Helicopter NVG Flight Instructor. GS: 12.

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Powell, Richard L., (M88) (Dick) 320 Claymont Drive, Ballwin, MO 63011-2561. Dy: (314) 263-5520. Res: (314) 256-8407. S: Nancy. Job: Acting Chief, Communication & Navigation Branch, Log Div, AEC PMO. GS: 13.

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Reading, Charles J., (M83) 3 Winchester Way, St. Louis, MO 63303-6145. Dy: (314) 263-9770. Res: (314) 939-0302. S: Joan. Job: Chief, Supportability, Comanche Program, Manager's Office. GS: 15.

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Richardson, Robert K., (M87) (Bob) 1001 Highmont Drive, St. Louis, MO 63135. Dy: (314) 263-3892. S: Virginia. Job: Operating Accountant, DFAS. GS: 11.

Richey, James M., (M82) (Mike) Lindbergh Chap VP Res Afr, 23 Pilot Hill Drive, St. Peters, MO 63376. Dy: (314) 263-9730. Res: (314) 447-9380. S: Barbara. Job: Chief, Systems Engineering Division, Comanche PMO, ATCOM. GS: 15. Vp, Usar, Lindbergh Chapter.

Richter, Norma L., (M92) 2914 Seiler Road, Alton, IL 62002. Dy: (314) 263-7588. Res: (618) 259-1937. S: Ralph. Job: Program Analyst, PEO, Avn., PM New Training Helicopter. GS: 12.

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Roby, David R., (M85) (Dave) 2474 Indian Tree Circle, Glencoe, MO 63038. Dy: (314) 263-1968. Res: (314) 458-2474. S: Darlene. Job: Supervisory General Engr., Apache Program Manager. GS: 15.

Rode, Sr., Danny L., (M89) (Dan) 4483 Flat Shoals Road, Apt. 07, Union City, GA 30291-1568. Dy: (404) 629-8675. Res: (404) 306-2965. Job: USARC Avn Off, Prog Analyst, Atlanta, GA. GS: 12.

Rodriguez, Carlos M., (M85) 2114 Meadowpass Drive, Corpus Christi, TX 78414-2605. Dy: (512) 939-3715. Res: (512) 993-2860. Job: Painter, Eng Div Paint Shop, CCAD. GS: 9.

Rodriguez, Daniel Q., (M93) (Danny) 906 East Huntington, Beeville, TX 78102-2815. Dy: (512) 939-3679. Res: (512) 358-4949. S: Janie. Job: Aircraft Engine Mechanic.

Rodriguez, Robert, (M85) (Rod) 8202 Running Creek Court, Springfield, VA 22153. Dy: (703) 696-1801. Res: (703) 455-8330. S: Charlotte. Job: Deputy Director, Washington Ops Directorate, JITC/DISA. GS: 15.

Rodriguez, Jr., Salvador, (M93) (BucVamp) 823 North 275 West, Bountiful, UT 84010. Dy: (807) 582-1565. S: Kyong. Job: Bio Medical Engineering Tech. GS: 9.

Roth, Donald L., (M86) (Don) 818 St. Matthew, Cahokia, IL 62206. Dy: (314) 263-0496. Res: (618) 337-6666. S: Barbara. Job: PM Blackhawk, ILS Division Chief. GS: 14.

Rubery, Daniel J., (M66) (Dan) Lindbergh Chapter Pres., 1119 S. Charlemagne Drive, Lake St. Louis, MO 63367. Dy: (314) 263-1004. Res: (314) 561-2005. S: Fran. Job: DC, ATCOM. SES: 6. NEB. President, Lindbergh Chapter. 90 Dac Of The Year.

Ruggiero, Joseph G., (M88) 516 Port Au Peck Avenue, Oceanport, NJ 07757-1445. Dy: (908) 532-3134. Res: (908) 222-3364. S: Linda. Job: Logistic Mgmt Spec, PEO Aviation. GS: 14.

Russell, Linda W., (M95) Route 2, Box 248, Kinston, AL 36453-9344. Dy: (334) 255-3200. Res: (334) 565-3249. S: Larry. Job: Administrative Support Clerk, DPTMSEC. GS: 5.

Rutland, James S., (M88) 508 S. Ouida Street, Enterprise, AL 36330. Dy: (334) 255-4246. Res: (334) 347-9720. S: Marcia. Job: DAC Flight Instructor-Ft. Rucker, C Co, 1/212th. GS: 12.

Ryan, Trudy, (M89) 2635 Arcadia Street, Deltona, FL 32738. Dy: (407) 380-8322. Res: (407) 323-7103. Job: Trainer Facilities Engr, STRICOM. GS: 12.

Samuell, Brian J., (M85) (Sam) 6813 Holiday Lane, Corpus Christi, TX 78414. Dy: (512) 939-3006. Res: (512) 993-3720. S: Yolanda. Job: Mech Engrng Tech, CCAD SDSCC MR Stop 58. GS: 11.

Sansone, Patricia J., (M87) (Pat) 5002 Flamewood Drive, St. Louis, MO 63129. Dy: (314) 263-2988. Res: (314) 487-5578. S: Fred. Job: Logis Mgt Spec, ATCOM. GS: 13.

Schmitz, Vicki L., (M83) (Vicki) Lindbergh Chapter Secy, 881 Chestnut Oak Drive, St. Charles, MO 63303. Dy: (314) 263-5861. S: Ray. Job: ATCOM AMSAT-I-SBOP, Maintenance Management Specialist. GS: 11. Secretary, Lindbergh Chapter.

Schulz, Rodney J., (M88) (Rod) 4346 Teal Circle, Gloucester, VA 23061. Dy: (804) 878-6850. Res: (804) 694-0928. S: Diana. Job: Dep Asst Commandant, USAALS. GS: 14. 1994 Dac Of Year.

Shackelford, Sandra H., (M87) (Sandy) 3892 Woodsman Lane, Hayes, VA 23072-9640. Dy: (804) 878-2208. Res: (804) 642-3143. S: James. Job: Secy to Cdr, Avn Applied Tech Directorate, Fort Eustis. GS: 7.

Sheth, Chandrakant, (M87) (Chandu) 6 Old Bridge Drive, Howell, NJ 07731. Dy: (908) 427-3588. Res: (908) 367-4022. S: Bina. Job: Super Electronic Engineer, CECOM-RDEC. GS: 14.

Shipley, John L., (M82) Aviation Applied Technology Directorate, Fort Eustis, VA 23604-5577. Dy: (804) 878-2000. Res: (804) 249-2131. S: Betty. Job: Assoc. Dir. for Tech Applications & Special Programs, ARDEC, ATCOM. SES: 4.

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Souder, Gail L., (M93) 16 Argall Place, Newport News, VA 23602. Dy: (804) 878-6850. Res: (804) 875-0343. S: Timothy. Job: US Army Avn Log Schl. GS: 7.

Speidel, Karen S., (M93) 505 Aspen Drive, Clarksville, TN 37042. Dy: (502) 798-1830. Res: (615) 648-9487. Job: Sec 160th SOAR (A). GS: 5.

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Stewart, Edna Roma, (M85) (Roma) 7208 Jenwood Street, St. Louis, MO 63136. Dy: (314) 263-5090. Res: (314) 381-1487. Job: Div Secretary/ATCOM. GS: 5.

Stillman, Richard W., (M94) (Dick) 6966 Seawell Avenue, Gloucester, VA 23061. Dy: (804) 878-1601. Res: (804) 693-5184. S: Betty. GS: 10.

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Tarr, Andrew M., (M81) (Andy) HQ, USAREUR & 7th Army, CMR 420, Box 1164, APO AE 09063. S: Cara. Job: Arms Control Specialist, US Army Europe. GS: 13.

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Thompson, Karen G., (M83) 12087 Trampe Heights, St. Louis, MO 63138. Dy: (314) 263-9136. Res: (314) 355-8068. Job: ALSE PM. GS: 12.

Thompson, Robert D., (M94) (Bob) 503 Summerrain Terrace, Dothan, AL 36303. Dy: (334) 255-5073. Res: (334) 792-9119. S: Sharon. Job: CH-47 (Chinook) Flight Instructor, Dept. of the Army. GS: 13.

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AMPS
(Continued from Page 31)

planner as true a picture as possible of manmade features. The terrain will appear to have trees, rolling hills, buildings, etc., which will make it actually look like the terrain in the real mission area. Mistakes in planning are better captured in the comfort and safety of the planning cell than during the execution.

AMPS located in different planning cells can be connected via conventional telephone line using an internal 9600 bps Hayes compatible modem. The Tactical Communication Interface Module (TCIM) may also be used to transmit various planning files over Combat Net Radio (CNR). Changes occurring during execution of the mission will be transmitted to the aircraft from the AMPS through the TCIM to the on board SINCGARS radio and Improved Data Modem.

The basis of issue for the Objective AMPS will be two per Brigade/Battalion/Squadron, and one per Company/Troop.

The arrival of the AMPS in Tactical Operations Centers serves as a quantum leap in progress and is definitely an integral component in digitizing the battlefield. Gone are the red-eyed days and nights of Jurassic Park mission planning as we are catapulted into Army Aviation of the 21st Century.

★ ★

CW3 Hardwick is the Army Aviation Research and Development Staff Officer, AMPS, DCD, Ft. Rucker, AL.

Solicitation now underway for CY 95 AAAA National Awards:

NOMINATIONS DUE AT THE AAAA NATIONAL OFFICE ON OR BEFORE JAN. 15, 1996

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Up to eight AAAA National Awards for accomplishments made during Calendar Year 1995 will be presented at the 1996 AAAA Annual Convention in Fort Worth, TX. Senior members of the U.S. Army will be invited to present the AAAA's top awards to the 1995 winners.

"Outstanding Aviation Unit Award"

Sponsored by the McDonnell Douglas Helicopter Company, this award is presented annually by the AAAA "to the Active Army Aviation unit that has made an outstanding contribution to or innovation in the employment of Army Aviation over & above the normal mission assigned to the unit during the awards period encompassing the previous calendar year." Any Active Army Aviation unit that has met the foregoing criteria is eligible for consideration.

"ARNG Aviation Unit Award"

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"USAR Aviation Unit Award"

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"The Robert M. Leich Award"

Sponsored by the Northrop Grumman Corporation, this award is named in memory of Brigadier General Robert M. Leich, USAR, the AAAA's first president (1957-59) and its Awards Committee Chairman for 23 years. It is presented periodically to a unit for sustained contributions to Army Aviation, to a unit or an individual for a unique, one-time outstanding performance.

"Army Aviator of the Year Award"

Sponsored by the Sikorsky Division of United Technologies Corporation, this award is presented annually through the AAAA "to the Army Aviator who has made an outstanding individual contribution to Army Aviation during the Awards period encompassing the previous calendar year." Membership in AAAA is not a requirement for consideration. A candidate for this award must be a rated Army Aviator in the Active U.S. Army or Reserve Components, and must have made an outstanding individual achievement.

"Aviation Soldier of the Year Award"

Sponsored by Bell Helicopter Textron, this award is presented annually by AAAA "to the enlisted man serving in an Army Aviation assignment who has made an outstanding individual contribution to Army Aviation during the awards period encompassing the previous calendar year." Membership in AAAA is not a requirement. A candidate for this award must be serving in an Army Aviation assignment in the Active U.S. Army or the Reserve Components, and must have made an outstanding individual achievement.

"James H. McClellan Aviation Safety Award"

Sponsored by GE Aircraft Engines in memory of James H. McClellan, a former Army Aviator who was killed in a civil aviation accident in 1958, this award is presented annually "to an individual who has made an outstanding individual contribution to Army Aviation safety in the previous calendar year." The award is NOT intended to be given for the accumulation of operational hours without accidents by any aviation unit.

"Joseph P. Cribbins DAC of the Year Award"

Sponsored by Boeing Helicopters, this award is named for Mr. Joseph P. Cribbins, the award's first recipient in 1976. It is presented annually by AAAA "to the DAC who has made an outstanding individual contribution to Army Aviation in the awards period encompassing the previous CY." A candidate for this award must be a current Department of the Army Civilian.

Administrative Details

ACCOMPANYING DATA FOR INDIVIDUAL AWARDS: A standardized **"Nomination Form for Submission of All AAAA National Awards"** is the sole form utilized by the Awards Committee in its selection of annual AAAA National Award winners. Copies may be obtained from any Chapter Secretary or by writing to AAAA, 49 Richmondville Avenue, Westport, CT 06880-2000.

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

AAAA President's Message

(Third in a Continuing Series)

MG Richard E. Stephenson, Ret.
President, Army Aviation Association of America

AAAA-AUSA Team!

Recent information and activity involving Army Aviation and AUSA has apparently raised questions among some of our members as to AUSA's intent. I have had several conversations with GEN Jack Merritt, Ret., President of AUSA, as well as an exchange of correspondence regarding these questions. I am convinced that AUSA and Jack Merritt are satisfied that our Army is served very well by having *both* associations. Collaboration and cooperation versus competition appear to me to be the code words for the future. Jack Merritt agrees. Considerable collaboration and cooperation goes on at the local chapter level, every day, with mutual support and satisfaction in so far as is apparent. AAAA should and will provide for collaboration and cooperation with other associations on events, programs, symposiums, and other activities.

Aviation Branch.

The recent Initial Operational Test and Evaluation of the Longbow Apache (see page 40) indicates that the greatest leap in warfighting effectiveness since the turbine engine is upon us. Information Age warfare with the Longbow and Comanche will be unstoppable. Other issues:

- We have had W-5s for sufficient time to assess whether the objectives for the creation of this rank have been realized. Have they?
- Is the "up or out" process dismissing our seasoned/wizened W-4s prematurely?
- Do our operating units and the chain of command know the difference between ARI and downsizing?
- Do our aviation logisticians have the career potential of our aviation operators?
- How do we know when aviators are accepted as bonafide members of the combined arms team?

These and many other basic issues/questions are out there and AAAA should be able to help produce answers. What do you feel are the overarching aviation issues confronting our Army? How can AAAA help? Contact me via the AAAA National office, 49 Richmondville Ave., Westport, CT, 06880-2000; FAX 203-222-9863; or via E-mail at 74023,3400@compuserve.com and let me know. We'll report the results of your input and what AAAA can do to address these issues in future issues of ARMY AVIATION.

In next month's issue, MG Ron Adams, Branch Chief, will brief us on the recent Army Aviation Simulation meeting held in Orlando, FL. Next year will see the First Annual AAAA Army Aviation Simulation Symposium which will bring together Army and industry to focus on the challenges raised by that conference. Let's move out!

Above: COL Russell E. Adams (center), Commander, Combat Aviation Brigade, 24th Infantry Division, presented the Order of St. Michael Bronze Award to CW5 Richard L. Williams (left), CAB Safety Officer, and the Silver Award to COL(P) Anthony R. Jones, former Chief of Staff, 24th Infantry Division, on 2 June 1995.

Below: The AAAA Connecticut Chapter Golf Classic II was held on 11 August 1995 at the Grassy Hill Country Club. Pictured is the First Place Net Team, John Dixon, Al Korzun, Ron Perry, and Ron Dobson along with Chapter President Art O'Leary.

New AAAA Chapter Officers

Aviation Center:
CW2 Errol P. Bodin (VP, Programs).
Colonial Virginia:
COL Robert J. Hoppes (President).
Corpus Christi:
COL John R. Penman (President).
Morning Calm:
MAJ Beth Ann Maddox (Treasurer).
Oregon Trail:
CPT Tony Helbling (Secy).
Taunus:
CW4 Harold F. Lucas (VP, Awards).
USAREUR Region:
COL Roger I. Anglin (President).
Washington D.C.:
COL Arthur W. Ries II (Pres); LTC James C. Vincent (SrVP); CW5 Joseph Wittstrom (VP, Memb); MAJ James G. Lynch (VP, Prog); COL Robert N. Seigle, Ret. (VP, Industry).

New AAAA Industry Members

Cessna Aircraft Company
Wichita, KS

AAAA Aviation Soldiers of the Month

A Chapter Program to Recognize Outstanding Aviation Soldiers on a Monthly Basis.
PFC Jermaine A. Brown
April 1995
(Talon Chapter)

AAAA NEWS

AAAA NCOs of the Quarter

SGT Shane C. Smith
3rd Quarter 1995
(Mid-America Chapter)

Order of St. Michael Awards

Bronze Award
SSG Tommy S. Allen
CW3 Michael D. Armstead
CW3 Kenneth R. Ballard
CPT Allen E. Bird
CW2 Mark A. Chojnacky
CW3 Ralph Day
1SG Patrick G. Flannery
1SG Michael J. Flood
SFC Harold J. Gardner
SFC Byron K. Gloston
1SG Robert G. Gumbs
SSG Richard A. Johnson
CW2 Erasmus M. Julien
LTC Gary E. Morgan
1SG James R. Morgan
CW3 Johnnie R. Myers
CW3 Scott E. Ohnmeiss
CW4 Richard B. Osterlund
1SG Ronald J. Poulin
SGT Wayne D. Reed
CW3 Todd A. Toth
CW4 Kirk A. Waymire
CPT Christopher F. Wolfe

See You In Fort Worth!

AAAA Annual Convention
March 27-30, 1996
Fort Worth, TX

Top Chapters

The 1 October 1995 Membership Enrollment Competition standings have the following chapters ahead with two months left in the CY95 contest ending 31 December. The rankings are based on **CY95 net membership gain.**

Master Chapters (170 or more members)

1. Aviation Center	336
2. Colonial Virginia	34
3. Savannah	8

Senior Chapters (80-169 Members)

1. Old Tucson	12
2. Jack Dibrell	5
3. Pikes Peak	5

AAAA Chapters (25-79 Members)

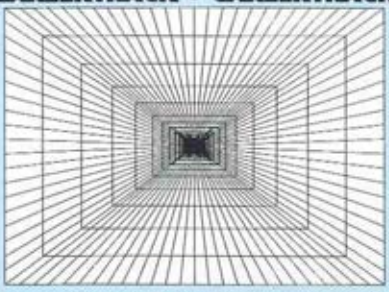
1. Narragansett Bay	23
2. Bavarian	14
3. Rhine Valley	11

Top Guns as of 1 October 1995

The member who sponsors the greatest number of new members during the contest year ending 31 December 1995 wins an all expense-paid trip to the AAAA Annual Convention, as well as a $300 cash award, and receives a plaque.

Ms. Mary Ackers	48
CPT Vernon H. Miles	48
CW3 Dale E. Stroud	39
CW5 David E. Helton, Ret.	33
CW3 Wendall A. Condon	31
CPT David L. Stokes	30
COL Albert L. Patterson	23
CW3 Jerry A. Heck	21
CPT Michelle A. Matthes	21
Mr. Joseph A. Caines	19
CW2 Fred K. Weigel	18
Mr. John H. Bae	13
CPT Mike H. Brinkman	13
1SG Richard L. Dahlin	13
2LT John Francis	12
CW3 Glenn A. Beck	11
1LT William P. D'Albora	11
2LT Prescott R. Farris	11
CW3 James O. Jackson	11
WO1 Dean L. Leasure	11
WO1 Brett A. Roszell	11
CPT Eric J. Stierna	11

CAREERTRACK • CAREERTRACK



CAREERTRACK • CAREERTRACK

Active AAAA members may have a 30-word classified employment ad published in two consecutive issues of **ARMY AVIATION** free of charge.

If you'd like to take advantage of the AAAA CareerTrack employment referral service, but you're not yet a member of AAAA, the solution is simple. Request an AAAA membership application with your CareerTrack application.

For further information, contact:

AAAA, 49 Richmondville Avenue, Westport, CT 06880; Telephone: (203) 226-8184; FAX: (203) 222-9863.

Seeking opportunity in Industrial Safety, Aviation Safety, or Airport Operations/Management. Thirteen years safety management experience. B.S., minor in safety. Certified OSHA CFR1910.120. Prefer N.E. Will relocate.

95-08-01

AAAA GOES ON-LINE!

The AAAA National Office now has E-Mail capability via CompuServe. Our address is:

74023.3400@compuserve.com

AAAA CALENDAR

A list of upcoming AAAA Chapter and National events.

AAAA NEWS

October 1995

✔ **Oct. 30-Nov 1.** AAAA Aviation Electronic Combat (AEC) Symposium, Louisville, KY.

December 1995

✔ **Dec. 9.** AAAA Morning Calm Chapter Christmas Ball, Seoul, Korea. Guest Speaker: LTG Richard F. Timmons, Commanding General, Eighth U.S. Army.

January 1996

✔ **Jan. 9.** AAAA National Executive Board Meeting, O-Club, Fort Rucker, AL.

✔ **Jan. 10.** AAAA Aviation Trainer of the Year Award Presentation, AAAA Air/Sea Rescue Award Presentation, AAAA Aviation Fixed Wing Unit Award Presentation, AAAA Aviation Medicine Award Presentation and AAAA ROTC Award Presentation, Fort Rucker, AL.

✔ **Jan. 26.** AAAA Scholarship Board of Governors Executive Committee Meeting, National Guard Readiness Center, Arlington, VA.

✔ **Jan. 27.** AAAA National Awards Selection Committee Meeting to select 1995 National Award recipients, National Guard Readiness Center, Arlington, VA.

✔ **Jan 31-Feb. 2.** Joseph P. Cribbins Product Support Symposium sponsored by AAAA Lindbergh Chapter & AAAA Logistics Support Unit Awards & AAAA Industry Award Presentations, Stouffer Concourse Hotel, St. Louis, MO.

March 1996

✔ **Mar. 27 - 30.** AAAA Annual Convention, Tarrant County Convention Center, Fort Worth, TX.

April 1996

✔ **Apr. 25 - 27.** AAAA USAREUR Convention, Chiemsee, Germany.

The digital battlefield now includes HF Nap-of-the-Earth communication.

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