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GUEST EDITORIAL: SOF: STRATEGIC POTENTIAL FOR THE FUTURE

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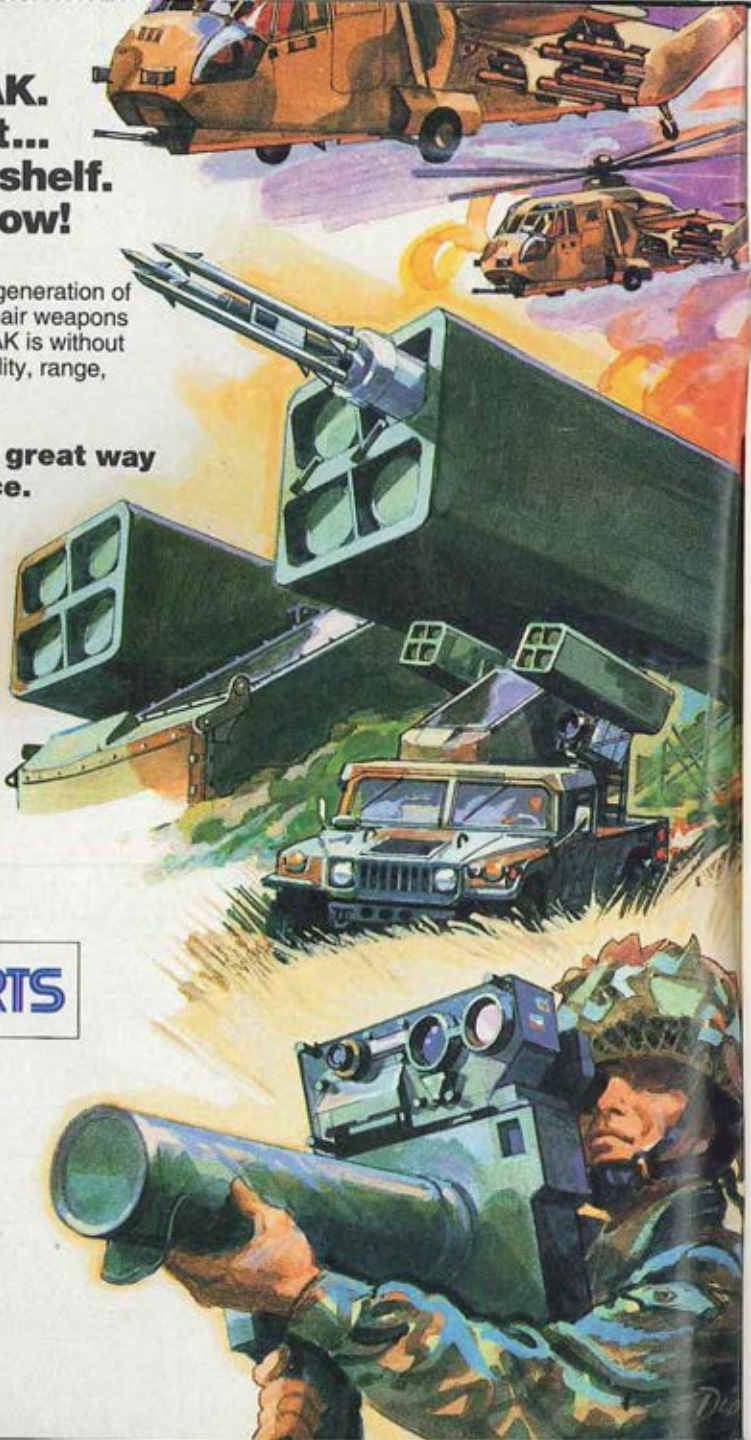

VOLUME 42 **ARMY AVIATION** NUMBER 1

FEATURE ARTICLES

SPECIAL FOCUS: Weapon Systems

DEPARTMENTS

FRONT COVER

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FORTHCOMING ISSUES

February 1993 — Product Support and Maintenance.

March-April 1993 — AAAA Annual Convention Issue.

Briefings

The **McDonnell Douglas Helicopter Company** announced that **Chuck Suyo** has been named Senior Vice President of Programs, responsible for military and commercial helicopters and ordnance programs at the company's Mesa, AZ facility. **Pat McGinnis** assumes the responsibility of overseeing the consolidation of the helicopter company in newly-formed McDonnell Douglas Aerospace as Senior Vice President of Operations.

The fourth annual **Women in Aviation** conference will be held on March 4-6, 1993 in St. Louis, MO. The conference, sponsored by Parks College of St. Louis University, is the world's premier event that focuses on issues relevant to women in aviation. For more information regarding registration, call Hilda Ramage at (618) 337-7500, ext. 203, or write Women in Aviation Conference, Parks College, Cahokia, IL 62206.

Texas Instruments Defense Systems and Electronics Group (DSEG) is a 1992 winner of the nation's highest quality honor, the Malcolm Baldrige National Quality Award. DSEG is a winner in the manufacturing category. TI-DSEG is the first business solely dedicated to defense to win this prestigious award.

All soldiers wishing to become Distinguished Members of the **1st U.S. Cavalry Regiment** are invited to the 160th Birthday of the Regiment, 5 March 1993, at Ft. Polk, LA. Please contact CW2 Carpenter at (318) 531-2882/4425 before 10 February 1993 for details.

Ex-U.S. Constabulary troopers are now forming a national veterans group. If interested, contact B.J. Chambers, 530 Park Avenue, Lancaster, PA 17602. Tel: (717) 397-9704.

French Army Aviators are looking for fellow aviation soldiers with whom to correspond. Please contact LTC Clay Edwards with a brief synopsis of your position and interests: TRADOC AVIATION LNO, Unit 21551, Box A209A, APO AE 09777.

DynCorp has announced that **Paul V. Lombardi** will join the company as Corporate Vice President and President of the company's Government Services Group.

The U.S. Army Edgewood R,D&E Center at Aberdeen Proving Ground, MD, is sponsoring the **Smoke/Obscurants Symposium XVII**, to be held 13-15 April 1993 at the Kossiakoff Conference and Education Center, Laurel, MD. For information, contact Lisa H. McCormick, tel: (804) 865-8721, or Van R. Jones, (410) 671-3668/4226, DSN 584-3668/4226.

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SPECIAL OPERATIONS FORCES: STRATEGIC POTENTIAL FOR THE FUTURE

Our Special Operations Forces (SOF) today represent a unique and valuable part of our nation's military capability. On numerous occasions over the past two plus years, the utility and capability of SOF has been clearly demonstrated, but we have not always had this capability.

After the Vietnam war, this nation's special operations capability declined significantly. The failed rescue attempt of our hostages in Iran brought this decline into perspective.

This situation, which began with the storming of the American embassy on the 4th of November 1979, was a national crisis for the United States. A joint task force was formed to plan and conduct a rescue. This was a high risk venture, but the best forces and talent available were assembled for this complex and demanding mission.

Unfortunately, this valiant attempt ended in a tragic failure that cost the lives of eight U.S. servicemen and was a national embarrassment. Key problems that contributed to the failure were:

- the ad hoc nature of the organization;
- unclear command relationships;
- lack of dedicated forces — specifically trained as a joint team;
- and equipment that was not adequate for the requirements of the task.

The failure revealed serious shortcomings in the ability of the United States to equip, employ, and command SOF effectively in complex, high risk operations.

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The Holloway Commission, created to study this operation, recognized that many problems were systemic, and recommended two key solutions:

First, the formation of a counter-terrorist joint task force with permanently assigned forces and staff, to be assigned to the Joint Chiefs.

Second, the establishment of a special operations advisory panel which would provide advice on SOF to the Secretary of Defense.

The next major event that influenced the evolution of modern SOF was Operation URGENT FURY, on the island of Grenada. SOF was assigned several key H-hour missions, including the Ranger jump to secure Point Salines airfield, the security of the Richmond Hill Prison, securing the Governor General's residence, and seizing of Radio Free Grenada.

While an overall success, the operation highlighted problems that still remained, to include:

- improper or unclear command relationships;
- targets inappropriate for SOF;
- inadequate intelligence and maps;
- lack of communications interoperability between forces;
- lack of understanding of SOF capabilities and tactics.

This latter problem resulted in daylight employment of SOF aviation and ground forces with consequent heavy losses.

Subsequent Congressional investigations highlighted these problems and others, to include indications that perhaps the military was not sufficiently attentive to low intensity conflict and non-Soviet threats.

The 1986 Goldwater-Nichols Act made sweeping changes in the U.S. defense establishment. An amendment to that act, introduced by Senators William Cohen and Sam Nunn, was passed in October 1986. It created a unified command for SOF, and established a Low Intensity Conflict Board on the National Security Council.

"Lack of understanding of SOF capabilities and tactics. . . resulted in daylight employment of SOF aviation and ground forces with consequent heavy losses."

On 16 April 1987, the United States Special Operations Command (USSOCOM) was formally activated. The command is responsible for all special operations forces — both active and reserve — to include Psychological Operations (PSYOP) and Civil Affairs (CA) units. Together, these forces number some 47,000 men and women, assigned to the four

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subordinate commands of USSOCOM:

The Joint Special Operations Command (JSOC), the United States Army Special Operations Command (USASOC), the Navy Special Warfare Command (NAVSPECWARCOM), and the Air Force Special Operations Command (AFSOC).

USSOCOM was assigned two primary missions:

- to provide trained and ready forces to the regional or warfighting Commanders-in-Chief, and;
- as a supported unified command, to be prepared to exercise command of selected special operations missions if so directed by the National Command Authority.

Soon after it was organized, USSOCOM was put to the test. By 1989, USSOCOM was able to accomplish one of its primary tasks, providing trained and ready forces to a warfighting CINC, in this case, CINCSOUTH.

Of the 27,000 troops employed in Operation JUST CAUSE, over 4,000 were SOF. They played a key role in this complex contingency operation: securing key objectives during the initial assault.

SOF shouldered the responsibility for the majority of the fight, and supported conventional forces throughout the fight. They gave the U.S. a decisive victory, and returned to the people of Panama their freedom from a ruthless dictator.

Operation JUST CAUSE demonstrated the utility of SOF as key players across the spectrum of conflict, and demonstrated the ability of SOF to work closely with conventional forces to speed the end of conflict while reducing casualties on both sides. As such, it validated many of the reasons why USSOCOM was created.

Essential to the success of SOF in JUST CAUSE were fixes that had been made possible by the creation of USSOCOM. These fixes included:

- clearly delineated command relationships;
- special operations staffs that were proficient in their duties;
- SOF task forces that were tactically proficient and ready for battle;
- procedures to ensure interoperability with conventional forces;
- a thoroughly developed and well-rehearsed battle plan.

Immediately following JUST CAUSE, SOF demonstrated another facet of their capabilities: transitioning quickly to Operation PROMOTE LIBERTY, the rebuilding of Panama. SOF units were crucial in the reestablishment of the Panamanian government, the training of the Panamanian police force, the restoration of

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public facilities and services, and the control and aid of displaced persons caused by the fighting.

SOF units had hardly recovered from JUST CAUSE and many were still employed in PROMOTE LIBERTY when the most severe test of modern SOF occurred in the wake of Saddam Hussein's invasion of Kuwait. As part of the overall joint and combined effort in Southwest Asia, SOF were among the first to deploy, and were integrated into every facet of Operations DESERT SHIELD and DESERT STORM.

A measure of SOF maturity in this conflict is the fact that during Operations DESERT SHIELD and DESERT STORM, SOF performed all of its special operations mission areas, to include Special Reconnaissance, Direct Action, Foreign Internal Defense, Unconventional Warfare, Psychological Operations, Civil Affairs, and the collateral missions of combat search and rescue and coalition warfare.

DESERT SHIELD and DESERT STORM validated the concept of thoroughly integrating SOF with conventional forces into all aspects of the theater commander's campaign plan. It also demonstrated conclusively that SOF provides the theater commander with a capability that would not otherwise be possible.

During DESERT SHIELD and DESERT STORM — and the immediate aftermath of the Gulf War — SOF was performing other, equally important missions throughout the world in support of other theater CINCs, such as civil-military operations, Foreign Internal Defense, humanitarian relief, civic action, and other peacetime engagement operations.

The most visible of these missions were Operations PROVIDE COMFORT and SEA ANGEL. These peacetime missions further highlight the utility of SOF across the spectrum of conflict, particularly at the low end of the scale.

In addition, SOF has participated in many classified activities which, due to security reasons, must go unmentioned. Nevertheless, these missions have contributed significantly to our national security interests.

On any given day, USSOCOM has more than 2,500 personnel in at least 50 different countries around the globe, supporting our national policy objectives. SOF responds to calls from nations around the world that need our help. Highly trained, culturally astute, language qualified SOF teams support the achievement of U.S. national goals and objectives in areas where no other forces would be acceptable.

Take for instance our national effort to combat illegal drugs and

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drug trafficking. Although counterdrug is not a SOF unique mission, it encompasses the entire spectrum of SOF capabilities and missions. Our commitment to this vital mission has doubled over the last two years.

What I have just covered is what the United States Special Operations Command has done in the recent past. It highlights SOF capabilities and contributions to the pursuit of our national objectives. I'd like now to turn to the role of SOF in the future.

It has become almost a cliche to say that the world is changing radically. But it is necessary to reflect for a moment on those changes, in order to understand the role of SOF in the future.

We truly do live in an era of remarkable change. Look at the major changes in the world in the last two and a half years:

- the fall of the Berlin Wall;
- the demise of the Soviet Union and the Warsaw Pact;
- and political and economic changes in Europe, to include German reunification.

What is often overlooked is that this changing world may, in fact, be less stable than the world of the cold war. The threats have changed, to be sure, but they are still there in abundance. Factors that contribute to this lack of stability include economic and political instability, ethnic and factional strife, narcotrafficking, weapons proliferation, terrorism, and religious fundamentalism.

If you add to this the normally occurring natural disasters, both at home and abroad, plus many medical problems, such as the AIDS epidemic, you get a picture of increased chaos. While these problems existed long before the Berlin Wall came down, they have been highlighted in the post Cold War period.

Many cases of latent hostility have now been unleashed into active or incipient conflicts. One need only look at the fighting in the former Yuhoslavia, the famine in Somalia, and the war with Iraq to see these forces at work.

To cope with this new world, the United States will need a highly trained and ready military — a flexible combination of joint capabilities to meet many and diverse challenges across the spectrum of conflict. The unique capabilities of special operations forces are ideally suited for dealing with many of the challenges the United States is likely to face.

SOF have the capability to deal with many of the problems that were related earlier. Because of their special qualities, SOF are better able to work with the military and civilian leaders of developing countries — helping them solve their own problems. SOF are also

acceptable in many situations where conventional forces are not.

The factors that cause the instability discussed earlier have set the stage for what many call the "non-traditional" role for our military in the future. "Non-traditional" for the rest of the force is *very* traditional for SOF. In fact, we have been demonstrating for years the capability that is applicable to the future. Let's look specifically at how SOF will respond to the challenges of the future.

Special operations forces *must* maintain the capability to support the regional CINCs in the event of a major regional contingency. SOF units are both combat multipliers and force multipliers if properly employed. As the total force structure shrinks, these capabilities will become more important. Effective use of SOF before, during, and after conflict can help prepare potential battlefields, magnify the effectiveness of conventional forces, and ease the transition from conflict to peace.

International terrorism has not gone away. The proliferation of weapons of mass destruction in an era of increasing regional instability will require new approaches for dealing with terrorism. In this area, there will be no margin for error. New technologies may be useful, but USSOCOM *must* maintain the world's most effective, credible, and highly trained surgical response force.

We anticipate that SOF will be increasingly recognized as the force of choice to support regional initiatives involving military forces. SOF have been, and will continue to be, a valuable diplomatic asset — while at the same time demonstrating through word and deed the proper role of the military in a democratic society.

We are also exploring new and innovative approaches to expand SOF utility. For example, we are reestablishing a special operations aviation foreign internal defense capability. Once fully fielded, this will be a much sought after capability for assisting third world countries in effectively utilizing air assets in meeting the challenges of insurgencies and narcotrafficking.

Throughout the development, growth, and increasing maturity of SOF, Army Aviation has been a key player. The 160th Special Operations Aviation Regiment (Airborne), SOAR(A), the Army Aviation component of SOF, and the Air Force Special Operations Aviation Command, provide critical capabilities to SOF that far exceed that available anywhere else in the world. The rigorous selection and training process of the 160th SOAR(A) ensures that the Army Aviation component of SOF will be

(Special Ops — cont. on page 55)

CHANGES IN PHILOSOPHY FOR HELICOPTER GUNNERY

The armed helicopter has come of age since Colonel Vanderpool and his associates first strapped a machine gun to the skids of an H-13 helicopter. More recently, combat successes in Operations URGENT FURY, JUST CAUSE, PRIME CHANCE, and DESERT STORM confirm the effectiveness of attack and armed reconnaissance helicopters.

While our current fleet is extremely capable, future high technological investment in the Longbow Apache and RAH-66 Comanche will add immeasurably to the effectiveness of the combined arms team. Consequently, it is time we take a hard look at helicopter gunnery training.

Prior to Army Aviation's establishment as a branch, the Armor School was the proponent for helicopter gunnery. Training guidance was provided in FM 17-40, the predecessor to TC 1-140. FM 17-40 outlined training based mostly upon the Army's experience in tank gunnery. While there are many similarities between tank and helicopter gunnery, special considerations plagued early helicopter gunnery programs.

Helicopter gunnery training was considered mostly an individual skill; crew and collective drills were not well-defined. Range facilities were scarce, lacked space to maneuver, and possessed unrealistic target arrays. Firing was relegated only to approved firing positions and scoring mechanisms were either totally subjective or non-existent. Adding to the dilemma was the technical inaccuracy of rocket and

cannon systems. TOW missile wire imposed safety constraints that detracted from training realism.

Little attention was given to the special requirements of armed reconnaissance aircraft, or door gunnery for that matter. Even though radar and missile threats increased, no attention was paid to aircraft survivability equipment in gunnery drills. Aircrews fired at mostly stationary target arrays, from pre-ordained firing positions, with extremely circumscribed firing azimuths, and limited night training.

For the most part, gunnery resulted in little except the expenditure of training ammunition.

Although our history confirms the value of armed reconnaissance and attack helicopters, our gunnery training still falls short of the mark. In recent gunnery exercises, commanders have found measurable standards lacking for crew and collective training. Training deficiencies range from improper boresighting to deficiencies in laser coding and from lack of crew coordination to vague scoring standards. More than half of mission aborts were due to crew-induced errors.

Mission rehearsals lack standardization in pre-combat checks, distribution of fire, and fire commands. Gunnery tables do not reflect current Standards in Training Commission (STRAC) allocations; nor does a mechanism exist to accurately reflect crew gunnery skills on the unit readiness report.

Clearly, an examination of our entire gunnery program is called for. We need to scrutinize individual, crew and collective training tasks to improve standards. We need to look at our Combat Mission Simulator (CMS) to optimize our ability to accomplish "conduct of fire" training.

"In recent gunnery exercises, commanders have found measurable standards lacking for crew and collective training."

Improved munitions enable us to be more stringent in gunnery standards and gates should be used to ensure proficiency before continuing into advanced gunnery tables. Objective systems and methods for scoring will allow us to remove subjectivity.

While there are many similarities to aerial gunnery, a comparison of the gunnery programs from the Armor and Infantry communities also show many differences. Our warfighting brethren

have training that is well-matured and focused on individual, crew and collective skills as well as Tactics, Techniques and Procedures (TTP) in their gunnery manuals. Their standards are specific.

In contrast, TC 1-140 tends to be technically oriented and shies away from TTPs. Our standards are not so specific. Crew qualification for all gunnery programs is Table VIII. The results of crew qualification for tanks and Bradleys are reflected in unit readiness — not so for helicopter gunnery. Tanks and Bradleys qualify their main weapons system on Table VIII. Few ranges are able to accommodate the helicopter's "main gun" — the Hellfire missile.

Helicopter gunnery, more so than any other type of gunnery training, is extremely resource intensive. Training ammunition is expensive and therefore limited. Few range complexes exist where our weapon systems can be fired at their maximum effective range. It is not feasible, nor should we expect to fire countless Hellfire missiles annually. Missiles are expensive.

Aviators who question why "tankers get to fire their primary weapon system during gunnery exercises, while aviators must rely on simulation" are missing the point. Tankers use sub-caliber devices to help reduce training costs. They employ a very elaborate system of simulation — Unit Conduct of Fire Trainers (UCOFT) — that evaluates a crew through several "reticle aim levels" or gates before they fire the first round.

It is therefore incumbent upon us to look for innovative ways to maximize our training benefit in view of the limitations to aerial gunnery. A coordinated program of conduct of fire training and simulation can complement our live fire exercises. Inexpensive methods of evaluating Hellfire missile shots on live fire ranges may be useful. The use of Flight Weapons and Combat Mission Simulators will help to bridge the gap between the number of training rounds required and those available.

As our Army transitions into a power projection Army, where gunnery standards in peace are quickly transformed into capability in combat, we must correct these deficiencies and train our crews to realistic standards. The Directorate of Training and Doctrine at the Warfighting Center has the mission to get our gunnery house in order. They have started by moving the Gunnery Department into the Maneuver and Fires Division to take advantage of ongoing doctrinal developments. Their immediate objectives are to:

- Align aerial gunnery along the same regimes of tank and Bradley fighting vehicle gunnery;

- Specify qualification standards;
- Standardize evaluation procedures;
- Increase emphasis on basic pilot qualifications in Tables I and II;
- Standardize exposure times and task standards;
- Qualify the impact of gunnery on unit readiness;
- Implement gunnery instruction in Aviation Officer Basic, Aviation Officer Advanced Course, and the Pre-Command Course.

The objective of our helicopter gunnery program re-evaluation is to rewrite TC 1-140 as a Field Manual validating and refining input from the field. We anticipate draft FM 1-140 will be ready for worldwide distribution by December 1993.

"We anticipate draft FM 1-140 will be ready for worldwide distribution by December 1993."

It is critical to the overall success of our effort that we receive your recommendations and proposed changes upon receipt of the draft manual. With your help, we will fix helicopter gunnery.

Helicopter gunnery will be better served by a single source, qualitative field manual focused on all aspects of aerial gunnery. That is our goal. In the meantime, TC 1-140 represents the standard for aerial gunnery for the Army. Annual Table VIII qualification is required of all battle rostered crews. The current 100 rocket strategy resources Tables VI, VII, and VIII and will be adequate if the rockets are MK 66 HE or MPSM. If resources above these requirements are available, the commander should consider advanced table gunnery.

To certify our qualification results, we recommend a notation of either front or back seat "Table VIII" qualification be made to the aviator's flight record (DA form 759). Even though it needs some tweaking, the current TC 1-140 will serve as the standard until the new manual can be developed.

Our mission is warfighting and no one knows that better than our attack helicopter and armed reconnaissance aircrews. A disciplined process of gunnery training and evaluation is absolutely required and the Aviation Center is committed to that end.

★★

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

BY LTC JERRY CRAIG

ARMY AIR-TO-AIR MISSILES

The mission, organizational structure, and current activities of the Air-to-Air Project Office.

The Air-To-Air Missile (ATAM) Project Office, formerly the Stinger Project Office, was chartered by Mr. Conver, the Army Acquisition Executive (AAE), in July 1991. Its primary mission is to provide Army Aviation a world class Air-To-Air Missile which will have ATA and Ground-To-Air (GTA) applications.

As the centralized manager for Army Air-To-Air Missiles, the program includes missile and rocket applications, responsibility for planning, budgeting, project integration, interoperability, and oversight. It also provides overall direction for development, acquisition, testing, integration of applications, product improvement, and fielding.

The ATAM Project is subordinate to the Program Executive Office (PEO) Tactical Missiles and has two Assistant Project Managers (APMs) responsible for Aviation Support (See Figure 1). The APM ATA Integration, collocated with the U.S. Army Aviation and Troop Command (ATCOM) in St. Louis, MO, provides direct interface with the PEO Aviation, Aviation Research Development and Engineering Center, and Aviation PMs.

The APM ATA, located at Redstone Arsenal, provides interface with Ft. Rucker (the primary user) and is responsible for new missile and rocket development. The organizational design allows quick response to user requirements as changes to doctrine and threat capabilities occur.

The concept that helicopters

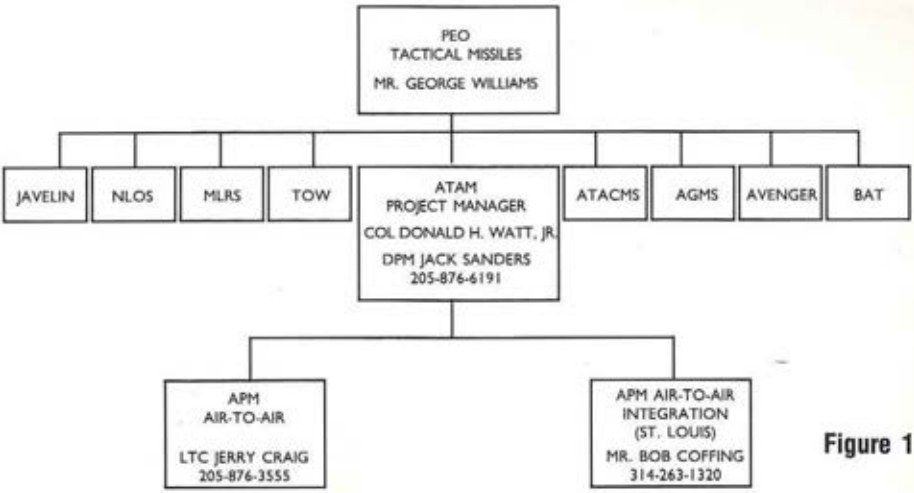

Figure 1

should have an ATA capability is not new. The Army and the ATAM Project Office have been involved in the ATA adaption of manportable missiles since 1967 when a Redeye air launch demonstration program was completed. Since then extensive work with both Redeye and Stinger has been accomplished in acquisition and live fire demonstrations. The Required Operational Capability (ROC) for an ATA system was approved in June 1982. Full Scale Engineering Development (now called EMD) was successfully completed in 1986, culminating in the first fielding of Air-to-Air Stinger (ATAS) on the OH-58C Kiowa in January 1990.

The ATAS provides ATA capability for scout and attack helicopters to counter enemy aircraft while pursuing their primary missions. ATAS is currently fielded on the OH-58C Kiowa and OH-58D Kiowa Warrior helicopters with integration programs completed on the AH-1 Cobra and the AH-64 Apache.

The missile is an unmodified production manportable fire-and-forget Stinger missile. In addition to ATA applications, the Stinger missile is used in GTA applications, such as ManPortable Air Defense System (MANPADS), Avenger, and the USMC Light Armor Vehicle-Air Defense (LAV-AD). The ATAS launch assembly is a lightweight, self-contained unit that provides the electronics and coolant to support and launch two missiles. The ATAS launcher is capable of using all three generations of Stinger missiles: Basic, POST and Repro-

grammable Microprocessor (RMP).

Current activities of the ATAM Project include fielding of Kiowa Warrior with ATAS, developing a Comanche ATA system, missile improvements and rocket development, logistical support and technical assistance. ATAM assisted in the fielding of ATAS on 228 Kiowas and is assisting in the fielding of 315 Kiowa Warriors.

Work has begun on the development of a new launcher for use on the Comanche helicopter. This new launcher will contain updated electronics and will fit in the bay of the aircraft. It will carry two missiles and will be fully integrated into the Target Adaptive Fire Control System. The Preliminary Design Review for this new launcher was completed in August 1992.

The present state-of-the-art ATA missile is the Stinger Reprogrammable Microprocessor (RMP). Stinger RMP is a fire-and-forget system that is reprogrammable to keep pace with the evolving threat, and is effective against fixed wing aircraft and helicopters.

Stinger RMP capability is being enhanced through a preplanned product improvement program which will be implemented as materiel changes to the Stinger. The first materiel change, referred to as BLOCK-I, adds a Ring Laser Gyro and updated software. This not only improves performance in countermeasure scenarios and night engagements, but also eliminates the need to super-elevate the helicopter for firings, thereby simplifying the firing process.

The second materiel change, known as BLOCK-IIA or Advanced Stinger, adds a new infrared (IR) focal plane seeker head array, which improves performance in clutter. The ATAM Project Office is also focusing on the materiel solution for QUICKDRAW, Materiel Need Statement (MNS) for a hypervelocity rocket to replace the existing Hydra 70 missile. This effort is presently concentrating on refining requirements and demonstrations of the technology, and could be fielded by FY97.

In addition to missile improvements and rocket development, the ATAM Project Office provides logistical support and technical assistance. The ATAM System Support Division provides logistics support for the Missile, Launcher, Electronics Components Assembly, Captive Flight Trainer, Field Handling Trainer and Gas Pumping Unit. This support includes management of the Integrated Logistics Support functions such as publications, provisioning, cataloging, inventory management and maintenance engineering.

ATCOM is responsible for New Equipment Training (NET) and Total Package Fielding (TPF) of the

Figure 2

ATAS system. However, the System Support Division supports them by providing a team member for NET and TPF, and contact teams to assist the user in resolving readiness problems. The ATAM Project Office assisted in the establishment and validation of the ATA Missile Firing Ranges at Ft. Stewart, GA, Ft. Bliss, TX, Ft. Carson, CO, Ft. Hood, TX, Ft. Polk, LA, White Sands Missile Range, Yuma Proving Grounds, and the NTC. Currently the Project Office is examining potential ATA ranges for OCONUS units. In FY92, the Department of the Army approved an annual training allocation of one Stinger missile for every three ATAS-equipped helicopters.

1992 was a busy year for the ATAM team. They monitored the firing of 36 Basic Stinger Reliability Assessment Flight Test program missiles from the OH-58C and supported 27 Basic Stinger training ATA firings, conducted an AH-64 check test at Yuma. This check test based on PM directions on AH-64 ATAS Initial Operational Test and Evaluation test results, identified software changes for the Missile Control Unit and recommendations for improved operator firing procedures which improved ATAS system performance for the AH-64. The ATAM Project Office also publishes training aid documentation in support of ATA missile integration on AH-64, ATAS, OH-58C and OH-58D platforms and is searching for a low cost aerial target that adds realism to the ATA firings.

All ATAM personnel are dedicated to providing first class support to the aviation community. Contact the key personnel above for information or technical assistance.

★★

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HELLFIRE: LOOKING TOWARD THE FUTURE

A review of the entire Hellfire family and how Hellfire II and Longbow missiles complement each other.

As the primary armament for the U.S. Army's AH-64 Apache, OH-58D Kiowa Warrior, and the U.S. Marine Corps' AH-1W Super Cobra helicopters, the Hellfire missile system needs little introduction.

During Operation DESERT STORM, Hellfire earned the reputation of being the U.S. military's most formidable tank killer. Its multi-mission capabilities were also successfully demonstrated in combat against a diversity of targets including radar installations, communications posts, bunkers, buildings, anti-aircraft emplacements, oil rigs, and bridges.

The basic Hellfire missiles (AGM-114A, B, and C) are laser guided, anti-armor weapons that home in on a laser spot which can be projected by ground observers, the launching aircraft, or another aircraft. The basic missile is 64 inches long, weighs 100 pounds, and incorporates a seven inch diameter shaped-charge warhead.

Hellfire's ability to destroy targets at ranges up to eight kilometers reduces crew and aircraft losses resulting from enemy counter fire.

Its ability to engage single or multiple targets directly or indirectly and to fire single, rapid, or ripple (salvo) rounds gives combined arms forces a decided battlefield advantage. Hellfire's simple interface makes it compatible with a variety of launch platforms, including helicopters and ships. It has been successfully launched from 14 different platforms to date.

In 1985, an Improved Hellfire Warhead (IHW) development program was initiated as an interim solution to increase the lethality of the basic missile against newly developed reactive armors until a fully optimized missile could be developed. This resulted in the AGM-114F missile which incorporates a forward warhead (or precursor) in addition to the main warhead.

The lethality of this design was demonstrated in a live fire exercise in 1991. The interim missile (which is seven pounds heavier and seven inches longer) is currently being produced by Rockwell International Corp. Material release of the IHW production missile is planned for April 1993.

In March 1990, Martin Marietta Corporation was awarded a development contract for the Hellfire Optimized Missile System (HOMS). This program has resulted in the AGM-114K Hellfire II (HOMS) missile which incorporates many improvements over the current production (IHW) missile including solving the laser obscurant/backscatter problem.

Other improvements include electro-optical countermeasure hardening, improved target reacquisition capability, advanced technology warhead systems capable of defeating dual reactive armor configurations projected into the 21st century, reprogrammability to adapt to changing threats and mission requirements, and shipboard compatibility (the Army's first).

"Other improvements include. . . reprogrammability to adapt to changing threats and mission requirements. . ."

The Hellfire II development will be completed in February 1993, and an Initial Production Facilities and Production Qualification Test contract was awarded in November 1992.

The first production deliveries of the Hellfire II missile are expected in December 1994 and have been designated for the U.S. Army's OH-58D Kiowa Warrior units. As a result of its shipboard compatibility and enhanced capabilities, the U.S. Army and Marine Corps will begin procuring Hellfire II missiles in 1993 to meet laser Hellfire requirements.

In December 1990, a Joint Venture of Martin Marietta Corporation and Westinghouse Electric

Corporation was awarded a development contract for the Longbow missile system. The Longbow system is composed of an updated Apache aircraft, a mast mounted millimeter wave Fire Control Radar (FCR), and a millimeter wave missile system. The radar detects, locates, classifies, and prioritizes enemy tracked and wheeled vehicles, air defense units, and helicopters, and then hands those targets off to the missile.

The primary advantages of the Longbow missile include:

- Adverse weather capability including rain, snow, fog, smoke, and battlefield obscurants;
- Millimeter wave countermeasures survivability;
- Fire-and-forget guidance which allows the Apache to launch and then remask, thus minimizing exposure to enemy fire;
- Advanced technology warhead system capable of defeating dual reactive armor configurations projected into the 21st century;
- Reprogrammability to adapt to changing threats and mission requirements;
- Makes maximum advantage of existing Hellfire II design.

The Longbow system is being integrated into the AH-64 Apache and is planned for the RAH-66 Comanche. As one of the U.S. Army's priority aviation modernization programs, the fire-and-forget capability of the Longbow system will greatly enhance the survivability and lethality of the Apache.

The Longbow missile development contract is scheduled to be completed in 1995, and award of an Initial Production Facilities and Long Lead Item Materiel contract is anticipated in 1994. Award of the first Low Rate Initial Production contract is planned in 1995, and the first Longbow production missile deliveries are expected in 1997.

Hellfire II and Longbow Hellfire are both required on the modern battlefield — they complement each other. The engagement flexibility of the laser Hellfire II missile and the Longbow missile will give future field commanders an unprecedented choice of deployment, attack, and suppression capabilities.

This combination of precision guidance and fire-and-forget capability will provide the battlefield commander a wide range of mission scenarios permitting fast battlefield response and high mobility not afforded by any other combination of anti-armor weapons.

★★

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BY COL JACK D. CONWAY
and JOHN M. BIER

THE EVOLUTIONARY TOW

Retracing the story of how TOW has kept pace with the threat and remains lethal to modern armor.

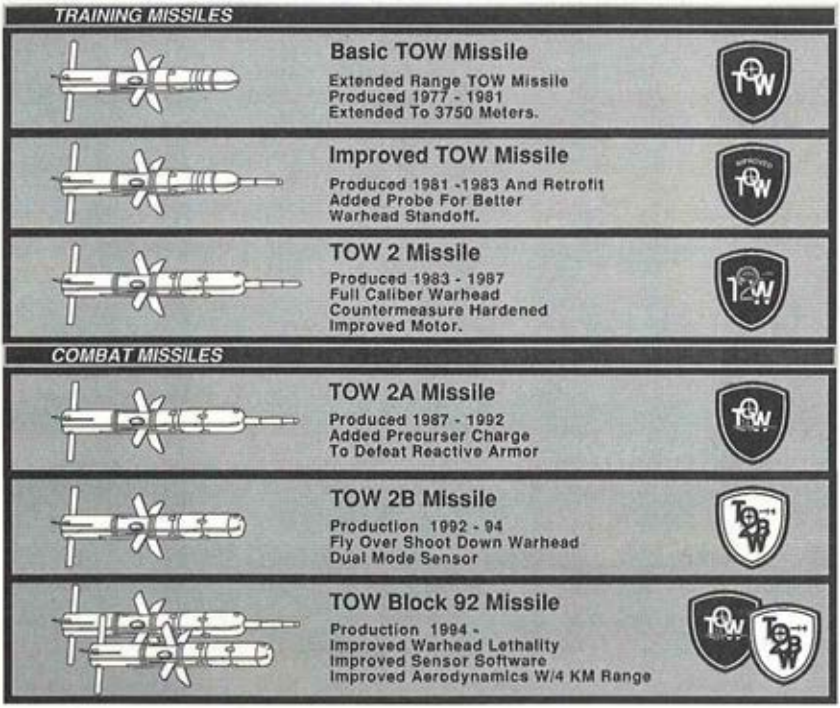
Tube-Launched, Optically-Tracked, Wire-Guided (TOW) missiles have been in production and service since 1970. TOW is one of the oldest systems in the U.S. Army weapons inventory. Even with the apparent age of TOW, however, it remains our primary heavy assault weapon for infantry mounted on Bradley, HMMWV, and Improved TOW Vehicles and is the anti-armor weapon for Cobra helicopters.

In spite of the age of the system, TOW provides an effective, lethal weapon fully capable of defeating any modern armor threat. This phenomenon has been accomplished through an evolutionary series of improvements to both missiles and launchers.

TOW is one of the most combat proven weapon systems in service. It has been used in engagements since 1970 by both U.S. and other forces with devastating results.

In DESERT STORM, TOW once again demonstrated high effectiveness against armored targets and a wide variety of secondary targets. The hit and kill rates achieved were well above expectations. TOWs were successfully employed in a variety of conditions, at all ranges, from all launch platforms. Both missiles and launchers performed exceptionally for the U.S. Army, U.S. Marine Corps, and other members of the coalition forces.

Basic TOW missiles with 5-inch diameter warheads and 3,000 meter ranges were designed to defeat ar-



mor targets of the 1970s. The range was later extended to the current 3,750 meters to provide additional standoff for M-65 airborne launch platforms on Cobra helicopters.

In 1981, to counter a more difficult armor threat, the probe was added to the warhead to increase penetration on the Improved TOW missile (I-TOW). The oldest of the basic and I-TOW missiles are now reaching 22 years, the shelf life of the weapon. These older missiles are being expended in training before expiration to preclude disposing of them.

TOW 2 added dual-track mode to provide capability against Electro-Optical Countermeasures (EOCM). This was accomplished by adding a shuttered thermal source to the missile and night sight thermal tracking capability to the launcher. Other improvements were a larger full caliber (6-inch) warhead and digital (reprogrammable) missile guidance sets. Further improvements of TOW 2 are TOW 2A, which has a precursor charge in the probe to defeat reactive armor, and TOW 2B, with a top attack warhead.

The current combat inventory of missiles capable of defeating modern

armor is TOW 2A and 2B. TOW 2 missiles will either be retrofitted with a TOW 2A warhead or retained for training in future years as older missiles are expended.

The latest version, TOW 2B, incorporates a lethal fly-over shoot-down top attack capability. This warhead takes advantage of the more vulnerable top of armored vehicles and provides better capability against targets with limited exposure. TOW 2B has two Explosively Formed Penetrator (EFP) warheads which are detonated simultaneously over the target.

Penetration by either warhead provides a kill and two warheads increase the probability of hit into vulnerable areas. The system has an advanced dual mode sensor consisting of an optical profilometer and a magnetometer for target confirmation.

The TOW 2B, combined with the direct attack TOW 2A, provides a lethal mix of ammunition capable against all threat targets. The combination of TOW 2A and 2B makes it much more difficult to counter in addition to increasing the capability. Targets in hull defilade with little or no exposure are ideal targets for TOW 2B. TOW 2A is effective against fully exposed targets and secondary targets where precision heavy assault capability is required. Both are effective against modern reactive armor. TOW 2B is in production and is being fielded for use by ground launcher platforms.

Block 92 is the newest planned upgrade in development for TOW missiles. Block 92 includes improved aerodynamic performance through more efficient wing surfaces and closing of wing and control surface slots, additional wire on the bobbins to provide a 4,000 meter range, and increased warhead lethality. The missile case will also be shielded to provide better protection against Electromagnetic Environmental Effects (E^3) and painted tan in color to reduce the heat loading when exposed to direct sunlight in arid regions.

These improvements are scheduled to be cut-in to missiles produced for Fiscal Year 93 and delivered in 1994-1995. All missiles (TOW 2A and 2B) produced after cut-in of the modification will contain the Block 92 upgrade.

Successive improvements to TOW missiles also require launcher modifications to enable the missiles to be effectively fired. Ground TOW 2 launch platforms (Bradley, Improved TOW Vehicle, and HMMWV) have been or are being modified with the latest flight software program to fire all missiles, to include TOW 2B. Additional software is under development to provide guidance for the Block 92 upgrade, and missile guidance sets will be reprogrammed prior to fielding of the missile

Airborne Launch Platform/TOW Missile Capability

Missile	Basic M-65	C-NITE
Basic	Yes	Yes
I-TOW	Yes	Yes
TOW 2	Yes Decreased Probability Of Hit No EOCM Capability	Yes
TOW 2A	Yes Decreased Probability Of Hit No EOCM Capability	Yes
TOW 2B	No Requires New Flight Equations To Be Developed And Procured	No Requires Procurement Of Qualified G-bias Card For MCA *
TOW Block 92	No Requires New Flight Equations To Be Developed And Procured	No Requires Additional G-Bias Card To Be Developed For The MCA *

* G-Bias Card = Gravity Bias Electronic Circuitry
MCA = Missile Control Assembly

The C-NITE provides the AH-1F Cobra with the night sight tracking capability which allows TOW 2 and TOW 2A capability. The M-65 or C-NITE have not been modified to enable firing TOW 2B. The Cobra C-NITE system has been qualified to fire TOW 2B; however, the Army has not provided the necessary funding to field the required changes. Therefore, TOW 2B is currently limited to ground use only for the Army. Further modifications will be required to allow Block 92 and beyond capability for the AH-1 Cobra.

The table shows compatibility of all TOW missiles with existing airborne TOW launch platforms in the U.S. Army. U.S. Marine Corps AH-1W Cobras with the Nite Targeting System (NTS) are being equipped to fire TOW 2B missiles.

Even though TOW is a mature weapon system, it remains highly effective against today's modern armor threat. It provides the heavy assault weapon for the Infantry and anti-armor capability for the Cobra. TOW also has additional room for growth when the need arises. TOW will remain in the inventories of U.S. armed forces and those of over 40 international forces for the foreseeable future.

★★

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BY CW4 TOM REDDICK

AERIAL ROCKETS: EFFECTIVE AND VERSATILE WEAPONS

An examination of the history, status, and future of aerial rocket development and employment.

Hydra 70 is an immensely successful program. It contributes more lethality and flexibility today than the employment of rockets as an armament provided on the first armed helicopters.

The U.S. Army's armed helicopter actually began to materialize in June 1956, when BG Carl I. Hutton, the commanding general at Ft. Rucker, AL, assigned a special project to COL Jay D. Vanderpool. "Vanderpool's Fools", as they were called, were determined to prove that arming helicopters was not only feasible but a necessary evolution in providing lethal and responsive fire support across the battlefield. Based largely upon their efforts, the 2.75 inch Folding Fin Aerial Rocket (FFAR) was determined to be the best available solution for providing an armed helicopter capability.

During Operations DESERT SHIELD/STORM, we conducted numerous missions where we thought the rockets were not only effective but essential to the success of the mission. Most of the missions conducted were either armed reconnaissance or deliberate attacks against dug-in armored and mechanized divisions.

We used the MK 66 Multi-Purpose Submunitions (MPSM) rockets on all of the attack aircraft. All missions were conducted at night and most missions were under adverse weather. Wingman techniques were utilized through Operations DESERT SHIELD/STORM.

In both the Armed Reconnais-

sance and the Deliberate Attack missions, rockets were initially utilized to suppress and destroy personnel and light vehicles in and around dug-in positions.

We quickly learned that by employing these tactics at maximum effective ranges we could easily develop the situation and receive real-time intelligence updates. Normally we would then fire Hellfire missiles at the high priority targets and continue to fire the MPSM rockets at the dug-in positions to further disrupt their command and control.

The MPSM rockets were extremely effective against those dug-in positions. This was then our opportunity to capitalize on the enemy's inability to maintain control of their forces. Without the accurate and reliable MK 66 MPSM rocket, we would have been required to maneuver closer than desired. This provided a high percentage of survivability and lethality on the part of the AH-64 Apache and AH-1F Cobra.

"The MPSM [Multi-Purpose Submunition] rockets were extremely effective against those dug-in positions."

The rocket systems of today have come a long way since the sight systems were grease pencil marks on the wind screen. The Hydra 70 Rocket System is a family of 2.75-inch rockets that now utilizes a Mark 66 (M66) rocket motor. In August 1966, the Assistant Secretary of Defense for Installations and Logistics assigned the Navy the task of designing a standard 2.75-inch rocket motor which would replace both the Mark 4 (M4) rocket motor for use on high-speed fixed-wing aircraft and the Mark 40 (M40) rocket motor for use on helicopters.

In October 1967, the Naval Ordnance Station completed the initial design of the M66 rocket motor and, in May 1972, it was approved for service use. Since the detent flange and electrical contact location for the M66 rocket motor were different than the M4 and M40 rocket motors, a new rocket launcher was required.

The launcher development was initiated but not completed, primarily because of a defective detent design. Because of launcher deficiencies, the M66 rocket motor never entered production. In 1973, the M66 rocket motor technology was shelved until there arose a need for the higher performance. In 1976, the M66 rocket motor was recommended for Army use by the

Training and Doctrine Command (TRADOC) because of its extended range capabilities.

In 1977, a Product Improvement Program (PIP) was initiated by the Army to improve the accuracy of the M66 rocket when fired from a helicopter hovering Out of Ground Effect (OGE) and to be compatible with the new Army lightweight rocket launchers. After numerous nozzle changes and compatibility launcher modifications were completed, the M66 Mod 1 rocket motor was type classified standard in February 1982.

The Mark 66 rocket motor provides increased speed, 2,500 feet per second versus 2,100 feet per second with the Mark 40 (M40) rocket motor. This increases standoff range and reduces ballistic dispersion. A Multi-Purpose Submunition (MPSM) warhead provides reduced range dispersion and improves system lethality.

The MPSM warhead has nine M73 submunitions designed to penetrate light skinned vehicles. MPSM warheads were highly praised during Operations DESERT SHIELD/STORM for their effectiveness and accuracy. The Hydra 70 High Explosive Remote Set (HERS) Rocket provides an aircraft with a remotely settable, multi-option capability for use against canopy penetration or bunker targets as well as against targets in the open. Screening smoke and visible illumination are also available for supportive missions against a variety of targets in the direct and indirect fire mode. A High Explosive Point Detonating (HEPD) rocket warhead is also available.

The Hydra 70 system is fielded Army wide. System enhancements include the M255E1 Flechette, Infrared (IR) Illumination, XM2V8 HEPD and the M229 Seventeen Pound Warhead for the Special Operations Forces (SOF), and the introduction of the M264 Red Phosphorous (RP) Smoke warhead and new FASTPACK packaging now in test and evaluation. A System Improvement Plan (SIP) has been forwarded to TRADOC to improve the Hydra 70 system by making the rockets Insensitive Munitions (IM) and Hazards to Electromagnetic Radiation to Ordnance (HERO) safe for shipboard operations.

The M229 17-pound unitary warhead (M229 17LB W/H) is an elongated version of the M151 warhead and is commonly referred to as the 17 lb. warhead. It was designed and developed to increase lethality and destructiveness of the M151 10 lb. high explosive warhead. The total weight of the loaded unfuzed warhead is 16.1 pounds, of which 4.8 pounds is Composition

8 high explosive. Upon detonation, the warhead fragments into thousands of small, high-velocity fragments.

The M264 Red Phosphorous (RP) Smoke Warhead program consists of replacing the existing temperature sensitive white phosphorous of the M259 Cargo Warhead with a temperature insensitive red phosphorous. In addition, it includes incorporation of the Mark 66 motor inherent to the Hydra 70 program and the M439 remote-set fuze. This program will make it possible to disperse a smoke screen between 500-6,000 meters, rather than the old fixed range of 2,500 meters.

The M255E1 Flechette warhead is the result of a program to develop an air-to-air flechette warhead. It has a payload of 1,179 60-grain flechette and is used for antipersonnel, anti-materiel, and air-to-air purposes. The M255E1 has been type classified Limited Procurement Urgent to allow near-term fielding by SOF aviation units.

The Hydra 70 is currently in the production/deployment phase and is presently fielded and operational on all U.S. Army and Marine Corps attack helicopters, as well as numerous U.S. Air Force and Navy tactical fighters. The basic Hydra 70 rocket was Type Classified "Standard" in FY 82 and has since been in production with various fuze and warhead configurations to support combat, training, and war reserves requirements.

There have been some important engineering changes informally incorporated into the baseline Hydra 70. These include the M66 Mod 3 version of the rocket motor to improve shipboard safety, and the M257 Illumination Warhead and M230 Submunition Fuze to improve reliability. Formal in-process Materiel Change Proposals (MCPs) previously approved and funded are the design and qualification of the FASTPACK metal container packaging improvement and the M264 RP smoke rocket.

Further modifications and improvements to the basic rocket system that are addressed in the Hydra 70 SIP are safety, operational requirements, MANPRINT/Logistics/Cost Reduction, and operational capability enhancements. These enhancements are associated with the materiel changes to the basic Hydra 70 rockets to incorporate the Army/Navy Advanced Rocket System (ARS) and Hypervelocity Rocket (HVR) product improvements.

The Navy Advanced Rocket System (ARS) Program is an effort to replace the current USMC/Navy 2.75-inch rockets and 5.0-inch Zuni rockets with one common family of

rockets for use by both fixed and rotary wing aircraft. The Hydra 70 rockets and warheads are used as a baseline for this product improvement effort of the 2.75 inch rocket. The program will also develop new aerodynamic launchers with a lower radar cross section and provide a rocket management system capability for the AH-1W Sea Cobra.

The Navy has solicited Army participation to develop joint requirements for this new rocket system. A companion materiel change for the Army lightweight launchers would be accomplished since Navy launchers are significantly heavier due to their requirement to operate on fixed wing aircraft and meet catapult launch criteria.

The Hypervelocity Rocket program, a materiel change to the M255 Hydra 70 Flechette rocket, will complement the Hydra 70 family of rockets by providing substantially increased speed for kinetic energy kills of both soft- and hard-skinned targets. Rocket velocities will meet as a minimum 4,200 feet per second with a 10 pound warhead. This increased speed in the rocket motor will allow for greater rocket accuracies and reduced Circular Error of Probabilities (CEP). The current Hydra 70 rocket demonstrated a 3 to 5 milliradian CEP. This reduction in CEP allows for increased rocket accuracy. The increase in speed eases aircraft launch attitude constraints (Quadrant Elevation—QE) by providing a flatter rocket trajectory.

This improves rocket firing under conditions such as Night Vision Goggles (NVGs) and provides increased safety margins from tail rotor strikes during hover firing. Initial application for HVR will be in the Air-to-Air/Air-to-Ground (ATA/ATG) role. This warhead will be effective against air and thin skinned ground targets from 500 to 3,000 meters and possibly beyond.

Fuzing of the warhead will automatically default to 500 meters if manual or larger range is not received. This will allow the rocket the capability of being fired from many launch platforms other than the AH-64, AH-1F, and the OH-58D Kiowa Warrior helicopters.

Today, we marvel at the tremendous firepower demonstrated by armed helicopters during Operation DESERT STORM. Yet we may have barely scratched the surface of future rocket armament capabilities. Rockets and their development will always have a place in Army Aviation history. "Vanderpool's Fools" developed the foundation for armed helicopter combat. Their tactical insights will be the main driver for Army Aviation in the future.

★★

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BY LTC FRED E. BROWN
and DONALD P. CLARK

ARMY ATC: PAST, PRESENT, AND FUTURE

The past, present, and future of Air Traffic Control from the PM-ATC perspective.

"Mayday! Mayday! Eagle GCA, this is Army 21825, twelve miles southeast of the airfield, declaring emergency!"

This urgent radio call is repeated often to Army Air Traffic Control (ATC). The trained professional Army controller typically responds in a calm, reassuring manner and provides the pilot of an aircraft in distress with essential information and navigation guidance.

The soldiers and civilian men and women of Army ATC provide their services with little fanfare and are often taken for granted or overlooked until emergency situations arise or when extreme weather conditions preclude visual flight.

In many instances Army controllers must improvise and perform beyond the call of duty to provide their services with antiquated equipment and minimal support.

The fact is that ATC is an integral part of the Army Aviation mission in the training environment, in the National Airspace System (NAS), and in combat. The combat ATC mission is to provide Air Traffic Services (ATS) in the form of communication and navigation guidance both at terminal airfields and in the area of operations.

ATC services are identical wherever they are performed but the equipment and environment changes with each location. Army controllers must have the flexibility to accomplish their missions while training, providing services in the U.S. NAS and worldwide host

nation systems, and then transition into combat roles when dictated. Historical and projected air traffic figures indicate that air traffic activity will continue to increase worldwide. The AirLand Battle doctrine relies heavily on air power, as witnessed in Operations JUST CAUSE and DESERT STORM. These trends point to an expanded need for ATC and increased navigation capabilities. Army ATC must maintain quality personnel and equipment to provide the best air traffic services in the world.

When a controller contributes significantly to the prevention of an aircraft accident or mishap he/she may be commended with a Safe Aviation Via Exceptional Service (SAVES) award presented by a special board of the U.S. Army Air Traffic Control Activity (USAATCA). Each year several Army controllers have the prestigious SAVES award bestowed upon them for their significant, life-saving actions.

During Operation DESERT STORM the actions of two controllers on separate occasions saved the destruction of a UH-60 on a collision course with an uncontrolled aircraft and a UH-1 attempting to land in zero visibility conditions. ATC is a combat multiplier in terms of the preservation of aircraft and their crews for their combat missions.

The two SAVES in DESERT STORM not only saved the aircraft with a combined cost of approximately $21 million, but also saved the crews and preserved the mission capability of those aircraft. The needless loss of two aircraft could have severely hampered the aviation mission.

"ATC is a combat multiplier in terms of the preservation of aircraft and their crews for their combat missions."

Since 1990 when PM-ATC was formed, Army ATC worldwide has documented SAVES of 8 UH-1, 2 UH-60, and 3 civil aircraft. Each time that Army ATC assists an aircraft to land when the weather is below visual flight conditions, or when phenomena such as sand storms or severe smoke are present, a potential accident is averted.

This type of service is essential to allow aviators to complete their missions and return safely. Army ATC continues to provide for the safe, orderly, and expeditious handling of air traffic supporting Army Aviation's worldwide mission.

Controllers could provide even

more efficient services with modernized equipment. Most of the ATC systems in the current inventory have far exceeded their intended life cycles and are kept operating by the intensive efforts of exceptional maintenance technicians, but recent changes in the ATC management structure have provided opportunity for improvement.

This article endeavors to show the history of the air traffic controller, ATC equipment, and some of the key organizations that are or have been a part of ATC.

After the formation of the U.S. Air Force and prior to 1958, Army ATC was non-existent since the Army had only a few aircraft used as artillery spotters, MEDEVAC, and observers. ATC services were provided by the Air Force, Navy, or civilians at fixed-base airfields. At the inception of the Vietnam conflict, contract civilians were hired to provide ATC services at Army airfields.

Escalation of the war and the increasing use of Army aircraft created the need for large Army airfields and trained Army controllers. The first Army ATC training was conducted by the Air Force at Keesler AFB, commencing in 1958. During Vietnam the numbers of Army aircraft grew significantly and the doctrine of Air Mobility evolved giving Army Aviation a real warfighting capability. To provide ATC services, the Army used equipment inherited from the Air Force and Navy including radar and communications equipment developed in the 1940s. Initially, Army ATC personnel and equipment were assigned to combat aviation units until the Air Traffic Regulation Company TO&E was developed to support a combat theater.

As the need for controllers grew, the Army opened its own ATC school at Fort Rucker in 1969. In the early 1970s, the rapid increase in Army ATC requirements created a need for centralized control over equipment development, configuration management, and procurement.

To satisfy that need, the Project Manager for Navigation and Control (PM-NAVCON) was chartered to manage tactical navigation and ATC projects. The PM-NAVCON developed and fielded current ATC systems including the TSC-61 flight operation central, TSQ-71 landing control central, TSQ-97 man-portable tower, TSW-7A high density tower, and the TRN-30 nondirectional beacon.

As the Vietnam era drew to a close it became necessary to streamline and centralize the management of Army ATC. In the 1973 study titled "Systems Approach to the Acquisition,

Maintenance, and Operation of Air Traffic Control and Navigation Facilities" or "the SAMOAN study" recommended consolidating Army fixed base ATC under one command. The USAATCA was formed in 1973 at Fort Huachuca, AZ. USAATCA was subordinate to the Army Communications Command, which is today the Information Systems Command (ISC).

USAATCA provided an ATC project manager at the 0-6 level within the framework of a stovepipe organization responsible for all aspects of Army ATC management including research and development, acquisition, and command and control. Fixed base ATC assets were assigned to TDA ISC units at posts, camps and stations. ATC equipment was purchased and installed by ISC but became an airfield asset after installation. Airfields were operated by the post or garrison commander and ATC units under ISC supported the airfield commander with ATC and equipment maintenance.

"This long void in materiel management. . . . left ATC behind the power curve in equipment and system acquisition. . ."

In 1981 the PM-NAVCON was deprojectized and the responsibility for tactical ATC equipment development shifted to the Information Systems Command (ISC). Tactical ATC personnel and equipment were assigned to ATC battalions under tactical signal commands.

In 1982, the U.S. Army ATC Combat Support Activity of the 7th Signal Command was formed at Ft. Ritchie, MD, to manage the two CONUS based ATC battalions and the TO&E maintenance company, and to provide staff management of fixed-base ATC facilities within CONUS.

In 1983 the Aviation Branch was formed as a combat arm, and aviation support functions were gradually incorporated into the branch. ATC became a part of the branch by virtue of the direction of GEN Carl E. Vuono, then Deputy Chief of Staff for the Army, in 1985.

In October of 1986 the USAATCA was moved from ISC at Ft. Huachuca and became a TRADOC asset at Ft. Rucker. The ATC Combat Support activity was deactivated, transferred to FORSCOM, and reactivated as a staff element of FORSCOM Aviation without command and control. This transfer of responsibility for Army

ATC originally included the premise that USAATCA would become a field operating agency under the Deputy Chief of Staff for Operations (DCSOPS) at the Department of the Army, but that concept never materialized.

After the transfer, USAATCA retained responsibility for Army ATC operations, policy and procedures, ATC equipment requirements, and equipment program funding. Tactical ATC units were assigned to the MACOMS, and TDA ATC assets were assigned to the post aviation units. ISC retained the responsibility for ATC equipment including research and development, procurement, ownership of equipment, procedures to engineer, furnish, install and test and, overall project management.

In 1989, TRADOC recognized that the ATC transfer plan was incomplete because ATC program funding, normally an Army Materiel Command function, was not a mission of TRADOC and, thus was not treated as a command priority.

This long void in materiel management from the time PM-NAVCON was terminated until PM-ATC was formed left ATC behind the power curve in equipment and systems acquisition and left the controllers to use antiquated, maintenance-intensive equipment with which to perform their essential services. The Army Council of Colonels, recognizing this shortcoming in ATC materiel management, approved forming a Product Manager (PM) for ATC as part of AVSCOM (now ATCOM) in 1989. The PM-ATC was formed in December 1990 with a PM in St. Louis and Deputy PM assigned to Ft. Monmouth, NJ. The materiel development functions and associated personnel of ISC, along with scheduling and funding functions personnel from USAATCA, were transferred to ATCOM forming the PM-ATC.

Today, the PM-ATC, in conjunction with the USAATCA functions remaining at Ft. Rucker, are working in consonance to establish requirements and acquire vitally needed enhancements and replacements for the antiquated ATC systems that are currently fielded.

Under the management of PM-ATC (which is supporting requirements generated from USAATCA), four new tactical ATC system requirements have been placed in the acquisition cycle. Studies are under way to plan a comprehensive system upgrade for the future, including tactical, fixed-base, and NAS facilities as well as Army Airspace Command and Control equipment. Programs are on-going to replace the fixed-base surveillance radars and the communications switching

(ATC — continued on page 45)

BY CW2 BRYAN A. WALKER

IS IT TIME TO JETTISON THE JAAT?

An examination of Joint Air Attack Team tactics in light of AH-64 effectiveness.

The Joint Air Attack Team (JAAT) is the ultimate expression of Combined Arms Doctrine. Artillery, attack helicopters, and fixed-wing close air support (CAS) all combine forces in perfect coordination to inflict upon the enemy a maelstrom of destruction. Dignitaries and VIPs from all over the world have been treated to the awesome display of firepower only a JAAT can provide. Unfortunately, the reality of the JAAT isn't quite so impressive.

This article is not intended to be an all-encompassing treatise on JAAT tactics, but rather a compilation of concerns, complaints, and suggestions from Army and Air Force "line pilots" and Aviation Liaison Officers (ALOs). It will also illustrate why, given the proven effectiveness of the AH-64, elimination of the classic combined-sequential AH-64/A-10 JAAT mission in favor of sectored attacks or other tactics may be justified.

JAAT tactics originated in experimental exercises pairing A-10s with AH-1s in cooperative attacks to maximize the effectiveness of each system while covering their weaknesses. The A-10/AH-1 interface proved viable and caused the possibly erroneous assumption that, "If it works good with a Cobra, it'll work *great* with an Apache."

While the targeting, navigation, weapons, and night-fighting capability of the Apache are undeniably superior to that of the

AH-1, there are several problems familiar to those who have participated in the "business end" of a JAAT.

Reliable communications are absolutely required to coordinate air support. The lackluster performance of the dated VHF and FM radios in the AH-64 are an obstacle to good commo. In reality, Have Quick synchronization is a chore with just organic aircraft, not to mention CAS.

During the Gulf War, Air Force frequencies were difficult to obtain, making spontaneous JAATs virtually impossible without relying on non-secure Guard frequencies. Asking for clear communications in peacetime has proven to be a tall order. Expecting clear commo in an intense battle against a capable enemy is an invitation to disaster.

On a similar note, the probability of a unit having the time to coordinate a pre-planned combined-simultaneous JAAT is understandably low, given recent wartime experience. The fluid battlefield envisioned by AirLand Battle doctrine and the high mobility of potential threat forces aren't conducive to the timing and planning required to implement the classic JAAT. Of the three Air Force ALOs interviewed for this article, none had any knowledge of a formal JAAT taking place during the ground war phase of DESERT STORM. They also unanimously emphasized the previous points regarding cumbersome levels of coordination in a fluid battle.

Task overload is another important consideration. During combat, the cockpit of an AH-64 requires total concentration. Distractions can easily lead to fatal mistakes. By incorporating not only fixed-wing elements, but also artillery into the battle, the chance of Murphy's Laws coming into effect rises exponentially, if not tragically.

Given the airspeed and range limitations of current scout aircraft, they could very well not be present to ease the task of coordination. Leaving JAAT coordination to an Apache pilot greatly reduces the time that aircraft will spend engaging the enemy and adds a dangerous amount of distraction.

The characteristics of the weapon systems involved in the JAAT should also be considered. CAS can provide considerable punch, but at a much slower engagement rate than AH-64s. Artillery could raise considerable amounts of smoke and dust on the battlefield, hindering laser operations. Further, most Apache pilots chafe at hovering inactive in a battle position with targets in sight while waiting for the other JAAT elements to finish their attacks. Not only can this be exasperating, but it also gives the

WEAPON SYSTEM ENGAGEMENT TIMES

Figure 1

Aircraft	*Weapon*	*Range*	*Rate of Engagement*
AH-64	Hellfire	6k	As fast as 15-20 seconds between launches
A-10	Cannon	1 - 3 k	1-2 engagements per pass*
A-10	Maverick	6.5k	Maximum of 2 engagements per pass
F-16	Maverick	6.5k	Maximum of 1 engagement per pass**

* *The nature of the target being engaged will obviously dictate the number and range of engagements on each pass.*

** *The higher speed of the F-16 can reduce the time the pilot has to engage targets with the Maverick before pulling off the target.*

enemy valuable time to target the Apaches. By insisting that all JAAT participants engage targets in the same area in a synchronized fashion, the effectiveness and even survivability of the AH-64s could be compromised.

Figure 1 is a compilation of estimates derived from discussions with Army AH-64 pilots and Air Force F-16 and A-10 pilots. These estimates are based on experience under realistic or actual wartime conditions as opposed to textbook figures. This table makes no pretense to being "gospel" but is a general comparison. The major anti-armor weapons of each aircraft are featured.

Figure 2 compares the time required to reposition for subsequent engagements. These figures will vary, depending on weather, terrain, threat, and coordination factors.

Looking at a different viewpoint, consider what kind of target would actually warrant the classic combined-sequential JAAT attack. With the "heavy" configuration of 16 Hellfires per helicopter, an AH-64 company itself possesses the firepower to destroy an entire armored battalion. Involving CAS and artillery could achieve the same effect, but almost certainly require more time. Forcing more assets into an engagement that an Apache unit can handle could pull valuable CAS and fire support from other units in need. Finding enemy forces numerous, concentrated, and static enough to merit the employment of a combined-sequential JAAT is, frankly, unlikely given the current threat.

There are other practices traditionally used in JAATs that could hinder the effectiveness of AH-64s.

Repositioning Times for Subsequent Engagements
Figure 2

Aircraft	*Time Required*
AH-64	0***
A-10	45-60 seconds minimum
F-16	120 seconds minimum

*** the AH-64 can utilize hovering tactics, keeping its weapons systems oriented towards the target constantly.

FM 1-112, *The Attack Helicopter Battalion,* calls for an initial artillery prep of the engagement area prior to the helicopter and CAS attacks. As mentioned before, indirect fires could degrade visual and laser conditions while inflicting minimal damage to an armored, mobile enemy.

A more effective tactic might be to allow the Apaches to initiate the attack with direct fire, while using the artillery to mop-up and cover the egress of the helicopters. While artillery could "button up" an enemy, it may also cause them to scatter and take cover as terrain permits. If an enemy force "bolts" into wooded terrain for cover, the effectiveness of the AH-64 and CAS forces would be greatly diminished before they've even begun their attacks.

While death from friendly fire will be an ugly reality of any war, the tragic incidents involving CAS fratricide during the Persian Gulf war clearly show that the ability of fixed-wing CAS aircraft to identify friendlies is sometimes lacking. The optics of the Apache can provide target identification and designation for CAS aircraft. However, the OH-58D is frankly a better choice for this job.

While some observers have claimed the AH-64 and OH-58D are "a marriage made in heaven," the airframe limitations of the OH-58D are among other factors that make the AH-64/OH-58D team less than ideal in reality. Instead of forcing the OH-58Ds into Apache units where they add little additional capability, it may be far more prudent to dedicate them to coordinating indirect fire and CAS.

By being the "eyes" of the CAS and using the Automatic Target Handover System (ATHS) to call

fire support as needed, the capabilities of all elements involved would be enhanced considerably.

Much of this article has illustrated the fundamental weaknesses of the combined-sequential JAAT, with its "clock," probably the best-known of JAAT missions. Yet the combined-simultaneous and -random tactics are also suspect in their potential effectiveness.

To avoid "throwing the baby out with the bathwater", remember there are other tactics to utilize. If CAS and artillery *must* be used, the sectored JAAT is much more realistic and workable by easing the communication and coordination required to complete the attack.

By assigning each weapon to different target sectors, each can be utilized to its maximum capability.

While JAATs make an impressive airshow, the time has come to incorporate tactics that maximize the effectiveness of the Apache. By clinging to outdated and unrealistic tactics, the Army's premier anti-tank weapon will be forced to fight with one hand tied behind its back.

★★

CW2 Walker has been an AH-64 Apache pilot for the past five years, and served with the 3/227th Aviation Regiment during Operation DESERT STORM. Currently, he is attending the Apache Armament Course at Ft. Eustis, VA.

ATC
(CONTINUED FROM PAGE 40)

systems in the towers and radars.

There is also an effort to replace the tactical and fixed-base radar systems with one common system. The Army has 37 ATC facilities in CONUS that interface with the FAA's NAS facilities. In order to maintain NAS interoperability, these facilities will be modernized as part of the DOD-NAS Program managed for the military services by the Electronics System Division at Hanscom Air Force Base, MA.

Considering the great expense of today's modern aircraft, the loss of one due to unavailability of appropriate ATC services would be very tragic. In perspective, the cost of one SAVED AH-64 aircraft would pay for a substantial portion of the update of ATC tactical systems. The PM-ATC is committed to keeping ATC systems viable and providing the Army Aviation community with the best ATC services possible.

Look for future articles on PM-ATC current and planned initiatives for the acquisition and fielding of tactical, fixed-base, and airspace management ATC Systems.

★★

LTC Brown is the Product Manager, PM-Air Traffic Control (ATC), Aviation and Troop Command (ATCOM), St. Louis, MO. Mr. Clark is the Deputy Product Manager, PM-ATC, ATCOM, St. Louis, MO.

BY DR. JACK STEVENS

THANK YOU, MR. BOB STEPHENS

A retired Vietnam veteran recalls an event during advanced flight training that taught him more than how to fly.

Rucker was no more a picnic for me than Wolters and I doubted that I would ever complete the ORWAC program. The one thing that kept me going (in spite of the "pink slips" that seemed to be coming with increasing frequency) was my flight instructor, Mr. Robert A. (Bob) Stephens.

Mr. Stephens was alternatively supportive and rough on my "stick buddy", Ted Speaker, and myself, depending on our needs at the time. But Mr. Stephens was consistently demanding of us to do our best in learning to handle the UH-19 Chickasaw which gave me fits on a daily basis even though I saw Ted fly it as though he had been born in a cockpit.

Ted's prowess only added to my frustration and, even though I hung on during the advanced flight training as a few other classmates fell by the wayside, the pink slips in my file increased in number and it seemed that I would fail to earn the coveted silver wings of an Army Aviator.

The climax came in August of 1962. Graduation was scheduled for the last day of the month but it appeared that I would not be in the graduation lineup. Although I had finally managed to execute most required maneuvers in a satisfactory manner, I could not perform a safe autorotation in the belligerent Chickasaw. Whenever Mr. Stephens "cut the power", I would always reach a state of panic and loss of air-

craft control part way through the maneuver thereby requiring the flight instructor to take the controls and safely land the UH-19.

After two days of consecutive pink slips (three in a row meant automatic elimination), Mr. Stephens greeted me on the flight line with a broad smile and a remark that, "Today is the day that 2LT Stevens conquers the Chickasaw."

I knew that I had to make a satisfactory autorotation that day or face elimination from the flight program. I also knew that I was unable to perform an autorotation. However, my flight instructor seemed supremely confident and off we flew.

After more than 45 minutes of frustrating and unsuccessful attempts at autorotations, Mr. Stephens took control of the aircraft and flew it around the traffic pattern, calmly explaining for the umpteenth time how easy it was to autorotate the UH-19. When we were nicely lined up on the autorotation lane, he cut the power again. I handled the aircraft well for a few seconds and then slowly began losing control.

Mr. Stephens calmly but sternly folded his arms and pressed the floor mike button. "Steve," he said, "this is your autorotation. You can land us safely or you can crash. But this autorotation is yours."

As usual, within seconds, I had pulled the nose of the aircraft too high and allowed it to turn to the right and drift off the centerline. The airspeed was decreasing, the sink rate was increasing, and I looked at Mr. Stephens, expecting him to take the controls.

"This is your autorotation. You can land us safely, or you can crash. But this autorotation is yours."

The flight instructor had his arms folded and he stared straight ahead. His only movement was to press the floor mike button with his foot and exclaim again, "Steve, this autorotation is yours."

We were approaching the ground at an abnormally high rate of descent and not enough airspeed to make a normal autorotation when I realized that this autorotation was indeed mine.

I somehow gained control of the aircraft, leveled it for touchdown at just a slightly nose high attitude, and got it over the center line to make a wobbly and bouncing but nonetheless survivable landing. Mr. Stephens was jubilant. "I knew

you could do it, Steve! Now, take us around and do another one."

For the first time in a long time, I felt great in the cockpit. I got my clearance from the tower, took off, and easily swung around the pattern.

On downwind, Mr. Stephens cut the power — thereby requiring me to attempt to do the far more difficult 180 degree autorotation which I had never come close to doing right. But, I now felt that I had conquered the Chickasaw and I made a smooth autorotation that seemed effortless.

I felt that I could fly forever, but Mr. Stephens abruptly said, "You've done great. Let's head for the barn." Surprised because we still had almost 30 minutes remaining on the flight period, I nonetheless cleared the pattern at Knox Stagefield and headed for our home base, Hanchey Army Heliport.

As we shutdown the aircraft and I began filling out the logbook, I said proudly, "It looks like I sign this off as 'Flight 3, OK.'"

"You'd better write, 'Flight 3, tail skid'," Mr. Stephens replied. I thought he was making fun of my first bouncing but satisfactory autorotation, but upon examination, I found that the tail skid on the aircraft was indeed bent.

Mr. Stephens had gone "beyond the call of duty" that day to get a rough but (at least, to him) salvageable student pilot through the flight training program. And he taught me a valuable lesson: In a pinch, I could do what I thought was impossible for me.

But the real lesson came a little later — on the evening of August 30, 1962, the evening before graduation from flight training. Ted Speaker and I had invited Mr. Stephens out for dinner and celebration of our satisfactory completion of flight training.

As we sat around the table of six (our wives were with us), our Instructor Pilot gave us final words of wisdom which I believe were as important to our later success as Army Aviators (Ted and I ultimately both became Master Army Aviators and well-decorated Vietnam veterans).

Mr. Stephens said to me, "Steve, in the past, I've had students whom I *knew* would make it through the [flight training] program who surprised me by screwing up and dropping out. I've had students whom I *thought* would make it through the program who somehow dropped out. I've even had a few whom I thought would *not* make it through the program who somehow shaped up enough to graduate, but, you, my friend, are the first student that I've had whom I knew *was not* going to make it who pulled it together

enough to graduate."

He went on to offer me the advice which I believe was lifesaving. He said, "Steve, you can fly for the next twenty years and you will *never* become a 'hot pilot'. But," he continued, "if you realize that you have limitations, work hard, and fly professionally, you can have a long and illustrious career in Army Aviation."

Not to let Ted off the hook, Mr. Stephens had a few sage words for him which I believe were also valuable. "Ted," he said, "you fly like a bird. You're a natural. And I expect to hear and read great things about you. But," he continued, "if you get cocky, and think you're a hot pilot, then I expect that I'll read about you in the obituary column someday."

I don't know what impact Mr. Stephens' words had on Ted, but I know that his words to me — which followed his herculean efforts to shape me into an Army aviator — made a major difference in my life.

As with most people, my life has had many ups and downs. But, I have survived and I have prospered. What is more, I sincerely believe that the lessons Mr. Stephens taught have had an impact that continues more than 14 years after I retired from an Army Aviation career that spanned 15 years, three continents, and more than 4,500 flying hours (including more than 1,400 combat hours in Vietnam).

My flight instructor taught me that in spite of limitations, I could do a job well.

He taught me that I couldn't make it on my own but that I could function well as part of a team. He also taught me by his example the importance of going "beyond the call of duty" not only to accomplish the mission but also to help younger, less experienced people.

"My flight instructor taught me that in spite of limitations, I could do a job well."

His lessons were important to me in combat. They are also important far beyond the cockpit and the flightline. The instructor taught more than simple flying, he taught about life.

Mr. Stephens, thanks again.

★★

Dr. Stevens is a psychologist and management consultant, and served in the U.S. military for 24 years, 19 of those in the Army, where he attained the rank of Major. His awards and decorations include the Distinguished Flying Cross, Bronze Star, and Purple Heart.

BY MG DEWITT T. IRBY, JR.

AVIATION SYSTEMS MANAGEMENT

A report from the Program Executive Officer, Aviation, on acquisition initiatives and realities.

I have been your Program Executive Officer for over a year and a half now, and it is time to bring you up to date on the progress we have made in the management of aviation systems.

One of the most important initiatives has been the development of the idea of Project Manager as "trail boss" of his system. PM charters have been revised to reflect this idea. The charters now clearly state the PM's responsibility for sustainment of his system.

Our experience in DESERT STORM told us that somebody must be in charge, and that somebody has to have accountability and authority. This person must lead a team that pulls together the many actions needed to do the acquisition and sustainment job.

The first team we put together was Team Comanche. I am convinced that the only reason the Comanche program is alive today is the outstanding way this team pulled together with a common cause in the face of seemingly endless attacks.

This team, including various industry representatives as well as all the Army players, knows they have accountability to me, to the Army Acquisition Executive and to our customers. Within the PEO and Aviation and Troop Command (ATCOM), we are actively forming other teams to manage our systems. It is the only proven way to do the job as resources become scarce, and I predict that other PEOs will be using our team concept soon.

One of the things I've discovered is

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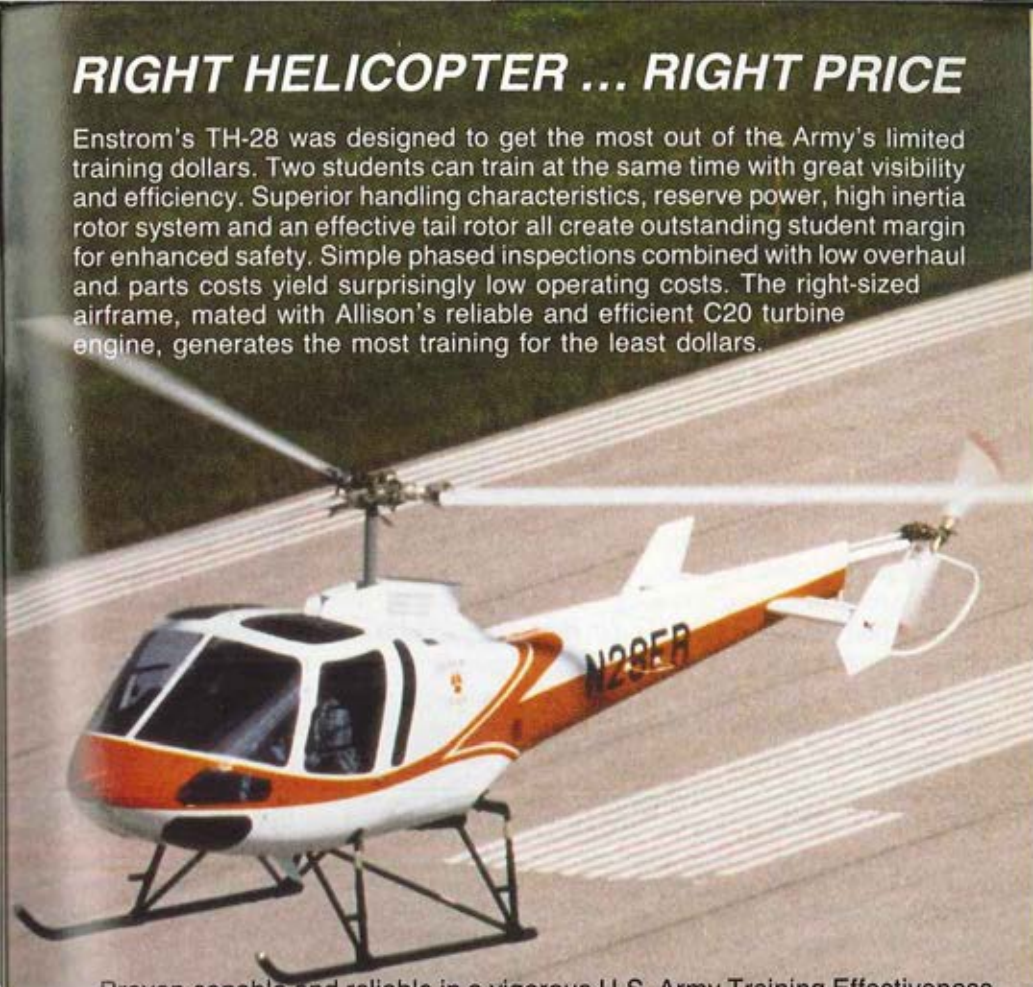

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that at every milestone event the PM is faced with a phalanx of special interest groups who think that their purpose is to grade papers, without having made any positive contribution. They give the PM an F and send him back to start over. I have told the PMs, "Open your door. Communicate with everyone that has authority. Bring them in early and make them a part of the solution. If they don't want to be involved early, making positive contributions, then their grading will be ignored."

MG Donald R. Williamson, the Commander of ATCOM, and I believe that we have to connect the pieces of the leadership puzzle together. We have been working very hard in the areas of customer satisfaction, continuous improvement, training, teamwork and process orientation — especially process orientation.

We have killed a lot of trees to make the paper on which we have drawn, over and over, the flow charts that describe how we do business. We have searched for the value added in each process. We have looked hard for the common goals. We have searched for ways to improve processes, so that in the end, our support for the soldier is continuously improved. It is tough work. Many find it threatening to their way of doing business. But it must be done if we are to be good stewards of the resources entrusted to us, and if we are to get the best product available to the soldiers in the field.

"It is not the PM's job to break the back of his contractors."

Every large and complex organization needs a relatively simple statement of vision. We share our vision with ATCOM and it goes like this: provide our units with superior, yet affordable systems that are state-of-the-art, safe, capable, reliable, survivable, and sustainable for long periods of time. From this we derive our mission: deliver equipment in the shortest time, in the right quantities, following sound business practices.

PMs are judged by how well they meet these requirements, as well as how well their systems operate. They are expected to know the business world and to help their industry teammates hold up their end, while making a reasonable profit. It is not the PM's job to break the back of his contractors.

Our Mission Essential Task List (METL) is composed of the following:

- resource modernized warfighting systems;
- retire or contract out older marginal fleet;
- technology insertion;
- invest in the future;
- leadership — continuous improvement — managed change.

We must put our efforts into sustaining and improving the modernized systems because resources do not allow us to do more. We put our dollars and efforts into the Apache, Black Hawk, Kiowa Warrior, and Chinook. If the Army continues to operate the Cobra, Huey, Mohawk, and A and C series OH-58s, and we must for some time, then we will be seeking to support them through contracts.

We will continue to improve the modernized systems through the insertion of appropriate technologies. And we will continue to invest in the future. That means, principally, Comanche. Throughout all of this there runs the thread of continuous improvement.

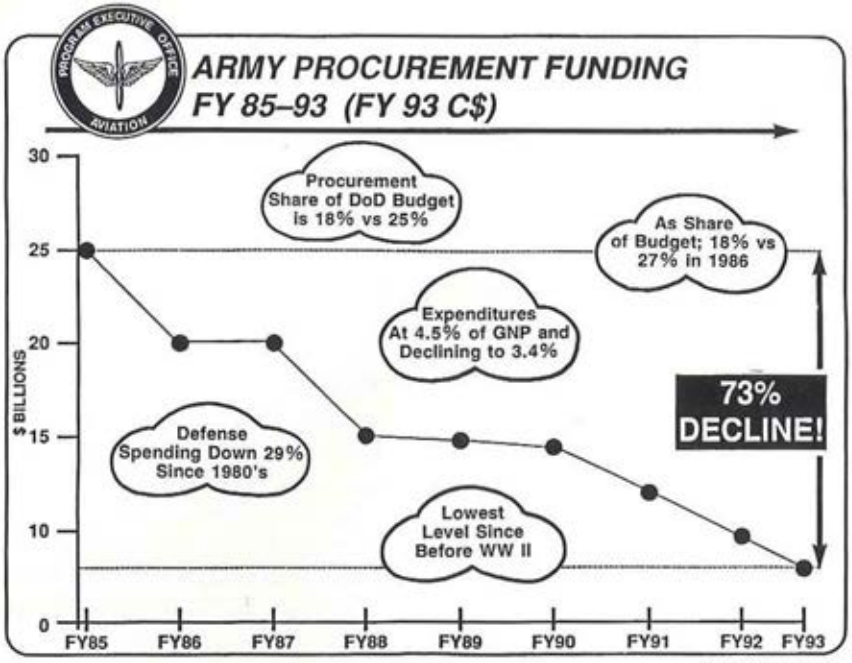
A smaller Army must be a highly technological Army. We must always have something on the drawing board. It is clear to me that our future aircraft, like Comanche, will be packed with electronics. The half-life of electronics packages seems to be only two or three years.

Because of budget constraints, we must expect our helicopters to remain serviceable for up to 30 or even 40 years. This dilemma raises more than one concern. We must think in terms of modernizing our systems, much like we have done with the Chinook as we progressed from A, B, and C series to the D, the E and probably to the F series in the near future. We must insert technologies and do it in a smart way so that the aircraft systems do not defeat the electronics systems that we insert.

For our part, we have recently combined the Avionics and Aircraft Survivability Equipment PMs into one shop. It is now the Aviation Electronic Combat PM. We did this to give Avionics a more powerful management structure and to bring coherence to the total package of aviation electronics.

The figure on page 54 tells the whole story of what we are about. The Army's procurement account is down 73% since 1985. That means we have to do our job smarter. We must get things right the first time. We will be accountable and we will only work with those who also accept accountability. At the last AAAA Convention, GEN Crosbie E. Saint made it clear that he and all the other CinCs expected nothing less from us.

Let me give you a brief listing of the challenges we are facing as we look at this fairly dismal budget projection. Longbow is critical to our ability to fight at night in all condi-



tions. It is a software nightmare. We are not as good at software management as we should be, and this is a major focus of our efforts to improve. The same applies to our Special Operations aircraft. Although we are making good progress here, we still need some improvement. We are going to build Team Apache Modernization, because we still have 254 Apaches out there that will need modernizing as we convert 308 to C series and 227 to D series. We will roll this challenge into one team and work the whole task as one effort.

We still have a deficiency in light utility aircraft. We probably cannot afford to replace all the UH-1s with Black Hawks. It may be time to look at the OH-58A or some nondevelopment solution to this requirement. We can already see the time when we will be retiring CH-47s. If we had the funds, we should have started an Advanced Cargo Aircraft Program in 1991. But the whole story this year is reduced funding, so we are looking at another modernization of the Chinook. This time we will likely buy new airframes with improved rotor systems, bigger engines, better cockpit and electronics and a better cargo handling system.

By the time you are reading this article, we will have conducted a flyoff of a new training helicopter for the school at Ft. Rucker, AL. It is an effort to save dollars, and it is a challenging acquisition. But it is one where we are cutting through the bureaucracy, cutting out requirements that don't make sense, and focusing on the things that truly matter.

Finally, we must do a better job of projecting our requirements and training for electronic warfare. Army Aviation has made great progress in preparing for combat employing aircraft survivability equipment, but this is an area where you can never stand still.

We will integrate ASE better. We will equip our helicopters with better navigation gear, and we will develop better communications systems.

This is a formidable list of challenges, but it only makes our job more interesting. We know that we have something important to do every day.

It is up to us, and to every aviation unit in the Army, to see that we are ready before we are needed.

There will be more operations like JUST CAUSE, DESERT STORM, and PRIME CHANCE.

★★

MG Irby is the Program Executive Officer, Aviation (PEO-Aviation), St. Louis, MO.

SPECIAL OPS
(CONTINUED FROM PAGE 15)

ready to meet any future challenges.

But in addition to the superb soldiers who make up the 160th SOAR(A), USSOCOM is procuring even better helicopters to improve the Night Stalkers' already outstanding capabilities.

The MH-60K will give Army SOF aviation the most advanced assault helicopter in the world, with significantly enhanced navigation and penetration capabilities over the helicopters it replaces. The MH-47E will significantly enhance the medium lift capability with an aircraft that can haul more troops to more targets, faster and with greater survivability, than current models.

America's special operations community today represents a capability that was only dreamed of a decade ago. These quiet professionals offer the nation unique and highly useful instruments in protecting our interests. Army Aviation has been a key part of SOF from its beginning, and will remain so.

We must retain and enhance this capability through rigorous selection and training together with state-of-the-art equipment. Our nation deserves no less.

★★

GEN Stiner is the Commander-in-Chief, U.S. Special Operations Command, MacDill Air Force Base, FL.

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NEB MINUTES

AAAA's National Executive Board (NEB) conducted its Winter meeting at the Officers' Club at Fort Rucker, Alabama, on 2 December 1992. Major actions included:

NEB APPOINTMENTS. A motion was approved to ratify MG Drenz' appointment of Mr. James P. Schwalbe, Bell Helicopter Textron, to complete Mr. John E. Gallagher's term.

INSURANCE COVERAGE & UNDERWRITING OF CHAPTER FUN RUNS. MG Drenz briefed the NEB that CONUS insurance coverage had been purchased. A motion was approved to purchase OCONUS coverage. MG Drenz advised that athletic events, such as "Fun Runs" were not covered under the AAAA's policy. A motion was approved that any Chapter sponsoring an event not covered under AAAA's insurance policy would be responsible for obtaining coverage and for the premium either by purchasing local coverage or requesting that AAAA National add a rider to the AAAA insurance policy and reimbursing AAAA National for the premium.

FUTURE CONVENTION SITES. A motion was approved to consider for the 1995 AAAA Convention Charlotte, Louisville, and Kansas City in that order. A motion was approved to consider for the 1996 AAAA Convention Fort Worth and Louisville in that order.

FISCAL: REVIEW OF AUDIT & REPORT ON AAAA/AAPI RELATIONSHIP. A motion was approved that the NEB consider the necessity of an audit concurrent with the change in terms of the President and the Secretary/ Treasurer. A motion was approved to establish a Strategic Planning Committee to weigh the strategic direction of the organization through the balance of the decade. MG McNair advised that MG Richard H. MacMillan, Jr., Ret., Vice President, of Smith, Barney, in Atlanta, GA, had volunteered to review AAAA's investment portfolio at no charge.

FISCAL: FUNDING REQUESTS. A motion was approved to allocate excess funds as follows: 1) Emergency Fund $5,600, 2) 1995 Hall of Fame Inductions $9,000, 3) Archives $3,000, 4) AAAA Scholarship Foundation Donation $25,000, 5) U.S. Army Aviation Museum $14,398, 6) AAAA Distinquished Graduate Awards Program $6,700, 7) Purchase of General Liability Insurance Coverage $5,710, and 8) AAAA Essay Contest $1,000.

NOMINATIONS: SLATE FOR 1993-1996. A motion was approved to accept the Nominations Committee's recommendations that the following individuals be placed on the ballot for the election on Thursday, April 1, 1993, at the AAAA Membership Luncheon: MG Robert S. Frix, MG Carl H. McNair, Jr., Ret., and MG Rudolph Ostovich III.

AAAA NEB NOMINATIONS. In accordance with the AAAA By-Laws, notice is hereby given that in addition to the nominations recommended by the Nominations Committee for those NEB offices in which vacancies occur at the time of annual election, floor nominations may be made at the Annual Meeting, provided that the name of the floor nominees appear on nomination petitions signed by 25 AAAA members and said petitions are provided to the Chairman of the Nominations Committee at the AAAA National Office at least 30 days prior to the conduct of the AAAA Annual Meeting.

National Awards Presented at

The AAAA Army Aviation Air/Sea Rescue and the Army Aviation Trainer of the Year Awards were presented at the Army Aviation Center Chapter Banquet, 3 December 1992.

AAAA Chapter award winners included: **CW3 Doyle N. Wooten III**, the James H. McClellan Aviation Safety Award; **James E. Speigner**, the Outstanding Department of the Army Civilian Award; **CW4 Gordon W. Lester**, the Robert M. Leich Award; **SFC Sherman A. Loney**, the Army Aviation Soldier of the Year Award; **CW4 David A. Sorenson**, the Army Aviator of the Year; **CPT Charles A. Jarnot**, AAAA Trainer of the Year Award; and the **1/14th Aviation Regiment**, the Outstanding Aviation Unit Award.

Pictured above, after the Chapter level awards were made, the AAAA U.S. Military Academy Cadet of the Year, **2LT Michael D. McKay**, right, and the AAAA ROTC Cadet of the Year, **2LT Victor S. Hamilton**, left, were also recognized by AAAA President, MG Charles F. Drenz, Ret., center.

Next, the Army Aviation Air/Sea Rescue Award, AAAA's newest functional award, was presented. Sponsored by Lucas Aerospace, this award is presented annually to "the crew or crew member who has performed a rescue using a personnel rescue hoist that saved the life or eased the suffering of an individual or individuals during the awards period encompassing October 1, 1991 through September 30, 1992."

WO1 J. Tucker Rojas, WO1 Christopher F. Latin, SGT Anthony Robinson, and **SPC Dwane Means**, 377th Medical Company (AA) were recognized for rescuing a badly injured soldier in Korea. On the afternoon of 21 August 1992, the 1st Flight Platoon's "1st Up" crew was on stand-by at the "DUSTOFF NORTH" field site, Camp Casey. At approximately 1515 hours, the crew of DUSTOFF 18 received a request for an urgent MEDEVAC for a soldier who had fallen during a rapelling exercise near the Imjin River. Arriving at the scene at approximately 1526 hours, the crew positioned the helicopter near the river and observed two small patrol boats moving towards a cliff as the ground personnel who were with the patient set off red smoke.

WO1 Latin determined that the only successful way to extract the seriously injured soldier was by use of the High Performance Rescue Hoist on board the DUSTOFF aircraft. While the pilots held the aircraft at a steady, Out of Ground Effect (OGE) hover

Fort Rucker Ceremonies

above the patient, SPC Means lowered SGT Robinson to the site on the hoist's Jungle Penetrator. After spending 15 minutes on the ground, providing emergency care, the medic radioed that he was ready for the patient to be extracted. At that time, the crewchief verbally guided the aircraft over the patient, bringing the main rotor blades to within one rotor disk of the cliff.

After the patient was aboard, SPC Means again lowered the penetrator to retrieve the flight medic. Once aboard, SGT Robinson immediately initiated medical care.

During the 15 minute flight to the 121st Evacuation Hospital, WO1 Latin passed vital patient information to the emergency room. As WO1 Rojas landed at Yongsan, an emergency crew was standing by to continue the outstanding medical treatment.

Pictured below on the facing page accepting the award on behalf of the crew from President Drenz, is COL Larry Turnage, Commander, 17th Aviation Brigade, center, as Mr. Richard C. Murphy, Aerospace Field Marketing Manager, Lucas Aerospace, looks on.

The 1992 AAAA Trainer of the Year was presented to **CW3 William Oates**. Sponsored by CAE-Link Corporation, this AAAA National Award is presented to "the trainer who has made an outstanding contribution to Army Aviation during the awards period encompassing September 1 through August 31."

CW3 Oates' subject matter expertise in standardization, maintenance and safety was responsible for 4th Squadron, 3rd ACR's 27 OH-58s' outstanding OR rate and and accident free 3,300 flying hour program for Fiscal Year 1992. With over 6,300 accident free hours as an Army Aviator, CW3 Oates trained 51 crewmembers directly and over 130 indirectly through the Instructor Pilots he trained.

Pictured above left to right, are AAAA President, MG Drenz, CW3 Oates, and Mr. Billy White, VP Instructional Systems, CAE-Link Corporation.

The last of the evening's awards was a very special presentation of the Silver award of the Order of Saint Michael to **COL Dave Carothers, Ret.,** by Army Aviation Branch Chief, MG Dave Robinson. COL Carothers was recognized for his outstanding contributions to Army Aviation over the course of his career. Pictured at right presenting the certificate to COL Carothers is MG Robinson, left.

AIR ASSAULT CHAPTER
FORT CAMPBELL, KY

CPT Michel JW Jimerson
SGT Charles P. Stumpf
MAJ Jeffrey S. White

ALOHA CHAPTER
HONOLULU, HI

CPT Michael Boeding
CPT Jimmy D. Bowie
CPT Maureen C. Callan
CPT Peggy C. Combs
1LT Michael T. Fisher
CPT James B. Jenkins
CW4 Lowell L. Kennedy
CPT Michael J. Kerzie
CSM Clifton P. O'Brien II
MW4 Clifford J. Richmond
SFC Randall G. Silavent
CW2 David S. Taylor
CW2 Wayne Y. Umeda

AVIATION CENTER CHAPTER
FORT RUCKER, AL

2LT Stephen B. Alexander
2LT Richard C. Anderson
WO1 Lorie A. Balonis
2LT Leonard D. Brannom, III
CW3 Larry C. Bugg
2LT Bevin K. Cherot
CPT Robert K. Emery
CPT Marc L. Gauvat
CW2 Daniel S. Grant
2LT Nicholas J. Hoelz
COL Roderick J. Isler
Ms. Tina Johnson
CPT Robert J. Johnston
CPT James R. Macklin, Jr.
2LT Cornelius P. MacKrell
2LT Michael L. McChesnie
1LT Mark L. Merrell
2LT Noel M.B. Namauu
2LT Damon A. Patterson
WO1 Alejandro Porter, Jr.
1LT David P. Ray
2LT Stanley A. Reeves
WO1 Shawn R. Shevalier
1LT Melvin C. Sinoben
MAJ Roland "Ed" Strickland
2LT Peter C. Yoon

CENTRAL FLORIDA
ORLANDO, FL

Mr. George D. Minto
Ms. Sherry L. Wilson

CHESAPEAKE BAY CHAPTER
EDGEWOOD, MD

PV2 John H. Green, Jr.

COLONIAL VIRGINIA CHAPTER
FORT EUSTIS, VA

Mr. Zalph Andrews
PV2 James E. Bain
PV1 Kark R. Bodner
PV2 Aaron L. Brown
PVT Yvette F. Carpus
PV1 Travis D. Coe
PVT Karen R. Coleman
PV2 Ruben Diaz
PVT Mark J. Eisenman
PVT Jim A. Hicks
CPT Joseph E. Hicks
PVT Lonnie L. Johnson II
LTC Gary E. Morgan
PV2 Michael D. Nypower
PVT Samuel W. Parker
PVT Jaime J. Planelles
PV1 Gregory T. Porter
PVT Christina M. Selcik
PVT Michael C. Sullaway
PV2 Jason T. Weir
PVT Tian M. Xu

CONNECTICUT CHAPTER
STRATFORD, CT

Mr. John H. Kiss
Mr. Peter Kujawski
Mr. Donald E. Uzelac

CORPUS CHRISTI CHAPTER
CORPUS CHRISTI, TX

Ms. Fontaine D. Bocanegra
Mr. Krestin L. Cook
Mr. Robert Farr
Mr. Roberto Flores
Mr. Daniel B. Funk
Ms. Leslie G. Gambino
Ms. Valerie A. Kinney
Mr. Ralph R. Lesmeister
Ms. Gloria Mendoza
Ms. Yolanda R. Peronis
Ms. Betty J. Ramirez
Mr. Henry F. Riebschlaeger
Mr. Francisco F. Saenz
Mr. Santos V. Saldana
Mr. Luis H. Salinas
Mr. Edward J. Slonaker
Mr. Gerald G. Villarreal
Mr. Cruz Z. Villegas
Mr. Jerry Voelcker

DELAWARE VALLEY
CHAPTER
PHILADELPHIA, PA

Mr. Christian B. Tocatlian

EDWIN A. LINK MEMORIAL
CHAPTER
BINGHAMTON NY AREA

Mr. Alan E. Goess

GREATER ATLANTA CHAPTEF
ATLANTA, GA

Mr. Steven E. Brown
Mr. William R. Choate
Mr. Monte M. McDonald
MAJ JoniLynn Siepert-Hall

HANAU CHAPTER
HANAU, GERMANY

1LT Don E. Bridgers
CW3 Robert E. Davis
CW2 Robert J. Hounchell
SFC Kevin R. Krum
CW2 James E. Lingo
1LT Brian K. Sperling
1LT(P) David C. Wood

HIGH DESERT CHAPTER
FORT IRWIN, CA

COL Neal H. Bralley
WO1 Billy F. Powell
CW2 Edward R. Stettin

HUDSON-MOHAWK CHAPTER
ALBANY, NY

SGT Joseph M. Hart
Ms. MaryAnn Stallmer

INDIANTOWN GAP CHAPTER
INDIANTOWN GAP, PA

SGT Timothy W. Seesholtz

IRON MIKE CHAPTER
FORT BRAGG, NC

CPT Jamie F. Dodson
MAJ Brent H. Fullerton
PFC John Anthony Gagan
CPT Jed L. Goad
SGT Robert P. Ives II
CW2 Paul J. Stutsman
MAJ James A. Suarez

ISTHMIAN CHAPTER
FT. CLAYTON, PANAMA

MAJ Kurt A. Andrews

LEAVENWORTH CHAPTER
FORT LEAVENWORTH, KS

LTC Floyd D. Parry

LINDBERGH CHAPTER
ST. LOUIS, MO

Mr. Glenn C. Hooker
Ms. April K. Hunt
PVT Gavan K. Rorie

MACARTHUR CHAPTER
NEW YORK/LONG ISLAND
AREA, NY

CW2 Anthony M. Helmel

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MG William W. Hartzog
MSG Ralph E. Millard
1SG Juan Morales
CPT James J. Pennington
SPC Jason W. Sheer
CSM Jacobus Z. tenBroek
SPC Richard D. Wilson

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WESTOVER AFB, MA

COL Thomas F. Cox
Mr. John M. Wallace
SFC William Wilson

MONMOUTH CHAPTER
FORT MONMOUTH, NJ

Mr. Arthur L. Arford
Ms. Joan F. Hulse
Mr. Robert J. Ruth
Mr. John C. Weinfeldt

MONTEREY BAY CHAPTER
FORT ORD, CA

CPT Brian J. Diaz
CW2 Victor K. Hawkins

MORNING CALM CHAPTER
SEOUL, KOREA

CW2 Brent F. Ogburn
CPT Anthony S. Pelczynski
CW2 Marvin J. Winn

NIAGARA FALLS NYARNG
CHAPTER
NIAGARA FALLS, NY

SSG Gregory K. Bush
CW3 Robert L. Fritz
CW2 Michael T. Pasternak

NORTH COUNTRY CHAPTER
FORT DRUM, NY

CW2 Harry J. Gray

OLD BILL CHAPTER
FORT BLISS, TX

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SSG Carlos A. Diaz
CPT Jon A. Mason
CW3 James W. Oates
Mr. Jose A. Palomo
1LT Wiley C. Thompson

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FORT HOOD, TX

CSM Jerome G. Chappelle
CW2 Michael E. Croslin II
CW2 E. Thomas Frierson
CPT John T. Harwig
Mr. Larry W. Jensen
CPT Veronica S. Zisdo

PIKES PEAK CHAPTER
FORT CARSON, CO

CW2 James W. Clark
CW2 Eric A. Fowler
CW4 James M. Hague
CW2 Robert J. Steinbauer, II

RHINE VALLEY CHAPTER
MANNHEIM, GERMANY

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MAJ Josef R. Lassan, III
SFC Mark E. Miles
CW2 Miguel Rosado
CW4 David N. Stewart
CW2 Lowell K. Syers
CW2 Lowell K. Timmons, Jr.
CW2 Peter F. Wohlars

SAN JACINTO CHAPTER
ELLINGTON FIELD,
HOUSTON, TX

Mr. Michael L. Harvey

SAVANNAH CHAPTER
FT STEWART/HUNTER AAF, GA

CW4 Robert E. Gordon
CW3 Michael Jordan

Scholarship Program Modified

One of AAAA's most important, tangible benefits is the Scholarship Program. As a result of the recent Enlisted Member Survey, a number of our members have asked how the selection process works and particularly if the program is biased toward officer members.

I can say unequivocally that we have made every effort to assure that the process is completely blind with respect to the rank and names of individuals. All the applications have the name of the member and the applicant removed before going to the selection committee.

In addition, we make sure that we have representatives on the selection committee from each of our membership groups (enlisted, warrant officer, etc).

That having been said, have most AAAA scholarships been awarded to the children of our senior officer members? Yes. Is there a reasonable explanation? Again, yes.

Until recently, junior officers and enlisted personnel weren't able to benefit from this fine program because they weren't old enough to have college age children. It was only in 1990 that we opened up eligibility to include spouses, siblings and the AAAA members themselves.

Are we satisfied? NO!

Last year we appointed a committee chaired by MG Carl H. McNair, Jr., Ret., to review the entire Scholarship program. The final report to the December National Executive Board (NEB) Meeting found that the program should be further expanded to insure that the benefits extend to our more junior members.

The NEB agreed. You will notice on the following page, that the 1993 program has been modified to "reserve" six $1,000 scholarships—two each for enlisted, warrant officer and civilian AAAA members in pursuit of college studies at the undergraduate or graduate level. However, it is important to emphasize that applications are needed in order to receive a scholarship.

This is the latest demonstration of AAAA responding to the needs of our members. I hope that you will continue to communicate with those of us on the NEB to let us know how we can do an even better job in the future.

MG Charles F. Drenz, Ret.
AAAA President

NEW MEMBERS (continued)

SOUTHERN CALIFORNIA CHAPTER LOS ANGELES, CA

CAPT Roy C. Christian, USN
Mr. Harry W. Franz, Jr.
Mr. Larry E. Johnson

TALON CHAPTER ILLESHEIM, GERMANY

CW2 John P. Davis
CW2 Brian R. Fuller
MAJ David H. Richards
MAJ James R. Robertson
1LT Derek R. Rountree
CPT Mark A. Smith
CW2 Paul D. Swanson

TARHEEL CHAPTER RALEIGH, NC

CW2 William G. Purvis

TENNESSEE VALLEY CHAPTER HUNTSVILLE, AL

Ms. Katherine C. Blevins
Ms. Kathlyn C. Dulaney
CW2 Curly W. Mann
Ms. Theresa M. McGinnis

WASHINGTON DC CHAPTER WASHINGTON, DC

CW3 Bill Arsenio
LTC John F. Bilhos
SSG Carl A. Graham
WO1 Stuart J. Grimm
Mr. Joseph P. Jolley
MSG Bradley C. Sullivan
SSG Anthony Vazquez

WINGS OF THE DEVIL CHAPTER FORT POLK, LA

CW2 Gerald D. Caskey
WO1 Michael R. Leonard

WINGS OF THE WARRRIORS CAMP STANLEY, KOREA

2LT Ann A. Gibson
CPT Oren L. Hunsaker
CW2 Patrick J. Shea

WRIGHT BROTHERS CHAPTER COLUMBUS, OHIO

PV2 Brent L. Clemens

MEMBERS WITHOUT CHAPTER AFFILIATION

Mr. Dan R. Ballard
MAJ Joseph W. Bost
LTC Richard M. Briggs
WO1 Harold H. Hay
PV2 Amos D. Heard
Mr. Jack D. Jordan
COL Peter Markopoulos
Mr. Thomas Wm. McGarry
2LT David B. Merritt
WO1 Craig J. Pino
Mr. Randall L. Schleicher
PFC Adam J. Souza
PV1 Shane R. Sumption
2LT Robert S. Workman

AAAA NEWS

New AAAA Chapter Officers

Army Aviation Center:
CPT Patrick Wilson (VP,Awrds)

Central Florida:
LTC Robert P. Birmingham (VP, Military Affairs)

Greater Atlanta:
COL James L. Mowery (Pres); MG Robert S. Frix (Sr. VP); MAJ JoniLynn Siepert-Hall (Secy); MAJ James B. Blunk, Jr. (VP, Memb); MW4 Robert M. Peterson (VP, Prog); LTC Howard T. Comer (VP, Conv. Activities)

Iron Mike:
COL Thomas A. Green (Pres); LTC Patrick Thomas (Secy)

Isthmian:
COL Michael J. Vanairsdale (Pres); MAJ Kurt A. Andrews (Treas); MAJ John A. Farris (VP, Memb); CW5 Earle C. Irwin (VP, Programs)

Lindbergh:
Mr. James M. Richey (VP, Reserve Affairs)

Mid America:
MSG Ralph E. Millard (VP, Enlisted Affairs)

Minuteman:
CW2 Mark W. Onorato (VP, East); CW2 Daniel J. Ferreira (VP, Communications East)

Monterey Bay:
CPT Darwin L. Haines (Treas); CSM Pete Velasco, Jr. (VP, Enlisted Affairs)

North Country:
LTC Frank G. Atkins (VP, Membership)

North Texas:
Mr. Thomas A. Russell (SrVP); Mr. David O. Smith (VP, Memb. Enroll); COL William Bond (VP, Mil Affairs)

AAAA offers $114,000 in 1993

Two scholarships now open to upperclassmen
One scholarship now open for graduate study
Two scholarships now open for spouses of AAAA members
Scholarships also open for AAAA Enlisted, Warrant Officer, and Civilian members

■■**SCHOLARSHIP GRANTS AND LOANS:** A minimum of thirty scholarships will be presented to entering freshmen — ranging from $1,000 to $12,000 grants given out as one, two or four year scholarships; five interest-free loans of up to $4,000 ($1,000 a year); a $4,000 scholarship ($1,000 a year) to an eligible applicant pursuing a four-year B.S. degree in an aeronautical-related science.

In addition, two $1,000 scholarships will be "reserved" for AAAA enlisted members in pursuit of college studies at the undergraduate or graduate level; two $1,000 scholarship will be "reserved" for AAAA warrant officer members in pursuit of college studies at the undergraduate or graduate level; two $1,000 scholarships will be "reserved' for AAAA civilian members in pursuit of college studies at the undergraduate or graduate level; two $1,000 scholarships will be "reserved" for spouses of AAAA members in pursuit of college studies at the undergraduate or graduate level; two $2,000 scholarships will be "reserved" for undergraduate sophomores, juniors or seniors ($1,000 a year) and one $2,000 scholarship will be "reserved" ($1,000 a year) for graduate study.

■■**AWARD PHILOSOPHY:** The AAAA National Scholarships are awarded on the basis of academic merit and personal achievement.

■■**APPLICATION PROCEDURE:** To apply, please request a Scholarship Grant/Loan Application and return it to the AAAA Scholarship Foundation, 49 Richmondville Avenue, Westport, CT 06880-2000 on or before May 1 (postmark will govern). On our receipt of the completed application, you will be mailed further instructions and assigned an AAAA interviewer. All forms, together with other supporting data, must be received by the Foundation on or before June 15 for consideration by the National Scholarship Selection Committee.

■■**ELIGIBILITY CRITERIA:** The applicant must be attending an accredited college or university for Fall entry as an undergraduate or graduate student. No recipient can hold concurrent AAAA Scholarships. The AAAA member to which the applicant is related must have an effective date of membership on or before **October 15** of the year preceding the year in which the applicant is seeking aid unless the member is deceased.

■■**SELECTION AND NOTIFICATION:** Selection of winners will be made by the AAAA National Scholarship Selection Committee during mid-July with each applicant to receive a list of the winners not later than August 1.

AAAA Annual Essay Contest

To be conducted for the first time in 1993, the contest is designed to encourage the writing of original essays on topics that further the general knowledge of U.S. Army Aviation. Suspense Date is 1 July 1993.

■■**DOCUMENTATION:** The official application form should be used and is attainable from the AAAA National Office, 49 Richmondville Avenue, Westport, CT 06880-2000; Telephone (203) 226-8184; FAX (203) 222-9863. The form may be reproduced locally.

■■**SELECTION:** The essays will be reviewed by members of the AAAA Awards Committee appointed by the AAAA Awards Committee Chairman.

■■**AWARD PRIZE:** The essays will be selected for prizes. First prize earns a $500 honorarium; second prize earns a $300 honorarium; and third prize earns a $200 honorarium.

■■**PRESENTATION:** The three winning essays will be published in ARMY AVIATION Magazine. Essays not awarded prizes may also be published in ARMY AVIATION. The winning essay may also be considered for presentation at the AAAA Annual Convention.

CALENDAR

January, 1993

Jan 29. AAAA Scholarship Board of Governors Executive Committee Meeting, Best Western, Arlington, VA.

Jan. 30. AAAA National Awards Committee Meeting to select CY92 National Award Winners.

February, 1993

Feb 3-5. 19th Annual Joseph P. Cribbins Product Support Symposium sponsored by the AAAA Lindbergh Chapter, Stouffer Concourse Hotel, St. Louis, MO.

Feb. 4. AAAA Outstanding Aviation Logisitcs Support Unit of the Year Award Presentation & AAAA Industry Award Presentations, Stouffer Concourse Hotel, St. Louis, MO.

March, 1993

March 31-April 4. AAAA Annual Convention, Tarrant County Convention Center, Ft. Worth, TX.

Mar. 31. AAAA National Executive Board Meeting, Tarrant County Convention Center, Ft. Worth, TX.

April, 1993

Apr. 1. AAAA Scholarship Board of Governors Annual Meeting, Tarrant County Convention Center, Ft. Worth, TX.

New AAAA Chapter Officers (continued)

Old Bill:
MW4 Ronald A. Edwards (President); CW2 David E. Milligan (Secretary); 1LT Wiley C. Thompson (Treas); CW3 Fernando Martinez (VP Membership Enrollment); 1SG Ronald C. Payne (VP Programs)

Rhine Valley:
1SG Diane E. Williams (VP, Renewals)

Savannah:
CPT Andrew B. Nocks (Treasurer)

Talon:
MAJ Jim D. Bodenheimer (President); CPT John R. Cunningham (Secretary)

Thunderhorse:
CPT Jeffery T. Kappenman (Pres); CPT Michael D. Parrish (Senior Vice President); 1LT Douglas S. Miller (Secy); CPT Ricardo M. Rivera (Treas); CW2 James P. Kennedy (VP, Memb)

Wings of the Warriors:
MW4 Randal R. Lindsey (Senior Vice President)

AAAA Aviation Soldier of the Month

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

SPC Jason W. Sheer
Mid-America Chapter
November 1992

AN/ARC-217

HIGH HF STANDARDS FOR DEEP-STRIKE MISSIONS.

Now deep-strike missions by U.S. Army helicopters will benefit from new standards in HF radio performance.

These standards – ECCM/ALE capability – are available off-the-shelf today in the Collins AN/ARC-217 (V) High Frequency communications system. The ARC-217 is a derivative of the HF-9000 System, of which more than 1,000 systems are flying to date in applications worldwide.

Designed for reliable interoperable communications in hostile ECM environments, the ARC-217 sets new standards in mission reliability and mean time between failure.

Fiber-optic interconnects make the unit less susceptible to the effects of electromagnetic interference. The radio's embedded MIL-STD-188-148 Tri-Service compatible ECCM capability foils close-range ECM.

MIL-STD-188-141A Automatic Link Establishment (ALE) is also embedded in the ARC-217. This capability, integrated with either an effective and simple control or MIL-STD-1553B bus interface, allows the pilot to concentrate on his critical mission objectives instead of controlling the radio.

And the ARC-217 maintains the ability to communicate with fielded high-frequency communications systems deployed by other services, including the IHFR equipment utilized by ground troops.

The ARC-217 – nothing less than the new standard for a new generation of HF communications.

For more information, contact: Collins Avionics and Communications Division, Rockwell International, 350 Collins Road NE, Cedar Rapids, Iowa 52498. (319) 395-1600. Telex 464-435.

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