

**SPECIAL ISSUE: THE ARMY'S AH-64 APACHE ADVANCED ATTACK HELICOPTER**

**GUEST EDITORIAL** • *General Fred K. Mahaffey, CINC, USREDCOM* 2

**FIELD REPORTS** • *Aviation agencies and units provide updates* 49

**AAAA** • *New Nat'l Executive Board electees and appointees* 63

# ARMY AVIATION

ENDORSED PUBLICATION OF THE ARMY AVIATION ASSOCIATION • JUNE 30, 1986 • \$2.50

## Apache in the field





# Army Aviation: A microcosm at work

by General Fred K. Mahaffey  
Commander-in-Chief, Readiness Command

AN ADDRESS GIVEN AT THE AAAA AWARDS BANQUET AT THE  
MARRIOTT MARQUIS HOTEL, ATLANTA, GEORGIA, APRIL 12, 1986

I have been invited to conclude the formal events this evening with a few observations concerning Army Aviation from my perspective as a joint force commander — CINC.

It seems fitting to me that this convention end on a positive note, and I can tell you that my perspective on Army Aviation — now and for the future — is both positive and upbeat.

As some of you know, I was G-3 of the Army when the Aviation Branch was formed three years ago, and participated directly in most of the force design and force structure initiatives that have launched an expanding Army Aviation Branch on its present course. Consequently, I have more than a passing interest in the present and future course of Army Aviation.

## Unified commands

In my present role as CINCREG, I am not (in a technical sense) "in the Army," but rather command one of the nation's seven unified commands. As I am sure you know, the unified commands are the operational commanders, the warfighting CINCs, of this nation's combat forces, charged with carrying out the operations plans which support the national military strategy.

The unified commands are all joint force commands with broad regional and functional responsibilities for the readiness, deployment, employment, and sustainment of joint forces across the globe. The significance of all that lies in that, from my perspective, it is clear to me that under almost any conceivable scenario, if we go to war, we will go as joint forces with all that implies for organization, doctrine, training, and interoperability.

I have mentioned all of this only to make the point that my perspective on Army Aviation is one

of a joint force commander, and my message to you this evening is simply this: Not only has Army Aviation become a full-fledged partner on the Combined Arms Team, but the need for and process of integration of Army Aviation into the fabric of the Army's overall force structure is, in a sense, a microcosm of the broader issue — which REDCOM grapples with daily — of building greater jointness among the services.

## Creating combat synergy

Consider the roles and missions of attack helicopters, air cavalry, and combat support aviation in the Combined Arms operations of an Army corps — either light or heavy. Here you see evidence of all of the same kinds of issues and challenges involved in building effective joint task forces of Army, Air Force, and Naval forces. The same interdependence that exists among elements of a corps for firepower, battlefield mobility, and sustainment also exists — or should exist — among the components of a joint task force. And the combat synergism created by sound organization and training of joint and combined forces is absolutely essential if we are to prevail in a high-intensity conflict against a numerically superior enemy.

This view of Army Aviation, as a microcosm of the larger set of issues involving a joint force, stems from the Readiness Command's top-priority mission of providing combat-ready forces as a conventional strategic reserve to augment or reinforce the other joint force commanders worldwide. The combat readiness of those forces — their preparedness to fight as an integrated air/land team — depends, to a very large extent, on the same kinds of linkages and in-

**(A MICROCOSM — Cont. on Page 56)**



# AH-64A APACHE

## Enhanced Survivability Through Simula Inc. Energy-Absorbing Crewseats

SIMULA INC. is proud to be a member of the Apache Team, providing crash protection to crewmembers since the beginning of the program. Simula seats have flown in all AH-64A pre-production helicopters and are now being installed in all production Apaches—ready to provide the same outstanding crash protection now being afforded to crewmembers of the first 300 plus UH-60A Black Hawks.

SIMULA INC. retains its leadership in crashworthiness technology by continually advancing the state of the art through research and development, including accident analysis, computer simulation, and testing. This constantly improving technology contributes to the store of public knowledge and assures the superior quality of our products.



AH-64A  
APACHE  
CREWSEAT



*Simula Inc.*

10016 S. 51st St. Phoenix, AZ 85044  
(602) 893-7533

*WORLD LEADER IN THE DEVELOPMENT OF AVIATION  
CRASH SAFETY TECHNOLOGY AND PRODUCTS*

**MANAGING EDITOR**

Dale Kesten

**PRODUCTION MANAGER**

John Kiernan

**EDITORIAL ASSISTANT**

Joan Zinsky

**BUSINESS MANAGER**

Lynn Coakley

**CIRCULATION MANAGER**

Jill Thomas

**CIRCULATION ASSISTANTS**Mary Ann Stirling, Debbie Coley,  
Beth Bartsch**ADVERTISING MANAGER**

Terrence M. Coakley

Army Aviation Magazine is a professional journal endorsed by the Army Aviation Association of America (AAAA).

**ADVERTISING**

Display and classified advertising rates are listed in SRDS Business Publications, Classification 90. For advertising information, call (203) 226-8184.

**SUBSCRIPTION DATA**

ARMY AVIATION (ISSN 0004-248X) is published monthly, except April and September by Army Aviation Publications, 1 Crestwood Road, Westport, CT 06880. Phone: (203) 226-8184 and (203) 226-8185. Subscription rates for non-AAAA members: \$14, one year; \$26, two years; add \$7.50 per year for foreign addresses other than military APO's.

**ADDRESS CHANGES**

The receipt of change of addresses is verified by the publication of the residence change in the "Takeoffs" or PCS columns of the magazine. Senior AAAA members (O-6's and above) are asked to provide their new duty assignment for publication in the magazine's "Command & Staff" column.

**POSTAL**

Second class postage paid at Westport, CT.

**FORTHCOMING ISSUES**

July 31, 1986—A General News Issue which includes the "SPOOF Roster", a directory of AAAA's retired members.

August-September, 1986—The 1986 "Blue Book", a directory of Army Aviation units, offices & agencies worldwide.

October 31, 1986—The 1986 "Aviation NCO Roster", a new voluntary directory of Aviation NCOs members of AAAA.

**FRONT COVER**

McDonnell-Douglas AH-64A APACHE attack helicopters await takeoff.

**EDITOR AND PUBLISHER**

Arthur H. Kesten

**ASSOCIATE PUBLISHER**

Dorothy Kesten

# Army Aviation

**VOLUME 35****NUMBER 6**

- Guest Editorial** — Army Aviation: A microcosm at work  
by General Fred K. Mahaffey Jr., CINC, Readiness Command.....2
- Aviation Branch** — Midyear and the major milestones attained  
by Major General Ellis D. Parker, CG, USAAVNC & Ft. Rucker.....6
- AAAA** — The 1986 AAAA National Scholarship Award winners.....46
- AAAA** — AAAA National Board slate elected for 1986-1987.....63

**SPECIAL ISSUE — FIELDING THE APACHE**

- APACHE** . . A most significant increase in combat capability  
by GEN Robert W. Sennowald, CG, FORSCOM, Ft. McPherson, GA..10
- APACHE: Providing leaders with the decisive edge**  
by Major General Charles F. Drenz, former PM-AAH, St. Louis, MO...13
- The APACHES have arrived!**  
by COL Jack L. Turecek, former Cdr, 6th Cav Bde, Ft. Hood, TX..14
- Combat skills training in the AH-64 Combat Mission Simulator**  
by COL (P) James W. Ball and CW3 Mark W. Ammon.....21
- Upgrading the TADS/PNVs Program**  
by COL David E. Sullivan and Robert Kennedy, St. Louis, MO.....25
- APACHE Training: USAAVNC gears up!**  
by Lt. Colonel David Sale, TSM for TADS/PNVs, Ft. Rucker, AL....29
- APACHE: Shifting into high gear at Ft. Hood**  
by Jerome J. Sullivan, V.P., Product Support, McDH, Mesa, AZ.....37
- TADS/PNVs production at Martin Marietta**  
by J. Richard Cook, V.P. for TADS/PNVs, MMOA, Orlando, FL.....39
- GE's T700: Mission ready for the Army's APACHE**  
by Louis A. Bevilacqua, GM, T700 Projects Dept., GE, Lynn, MA....43

**JUNE, 1986 FIELD REPORTS**

- International** — Military Assistance: U.S. Army Aviation in Turkey  
by CW4 Michael D. McDonald, Chief, Aviation Div, JUSMMAT.....49
- Operations** — Light Infantry Combat Aviation Brigade at the NTC  
by COL Jerry W. Childers, Cdr, Combat Avn Bde, Ft. Ord, CA.....50
- Operations** — 307th Attack Helicopter Battalion studies battle tactics  
by CPT Mark J. McKearn & CW3 Larry J. Carrillo, Ft. Ord, CA.....51
- Procurement** — AVSCOM: Promoting greater competition in bidding  
by Annamaria Przygoda, U.S. Army AVSCOM, St. Louis, MO.....52
- Safety** — Taking the long view of safety in Army Aviation today...  
by Albert E. Hervey, Cdr, USA Safety Center, Ft. Rucker, AL.....53
- Research & Development** — Airland Battlefield Environment Program  
by MAJ Robert P. Petersen, U.S. Army Corps of Engineers.....54

**OTHER DEPARTMENTS**

- AAAA Calendar**.....8      **AAAA Overview**.....62
- Awards & Honors**.....48      **PCS—Changes of Address**.....58

**EDITORIAL MATERIAL**

The views expressed in the magazine are those of the individual author and may not necessarily be those of the Department of the Army or the staff of this publication. Manuscripts, drawings, photos, and other material cannot be returned unless accompanied by a stamped envelope bearing the submitter's return address.



# IN THE FIELD IT'S TOO LATE . . .

## TO ASSEMBLE. CHECK OUT AND CERTIFY FUEL TANKS FROM STORAGE.

Do it ahead of time with the Fairchild Universal External Fuel Tank Certifier.

The Certifier, currently in production for the USAF and NATO, is air transportable and simple to operate, both in the shop and in the field. Use of the Certifier gives Maintenance the ability to test and have the stockpile of tanks ready to hang before the aircraft's return.

Additionally, the Operations staff benefits with the decrease in turnaround times, which leads to an increase in sortie rates.

Capable of rapid and dependable use in austere conditions with practically no support, the Fairchild Universal External Fuel Tank Certifier is a true force multiplier.



Fairchild Control Systems Company  
Dept. 24  
1800 Roscrans Avenue  
Manhattan Beach, California 90265-3797  
Tel: (213) 643-9222  
Telex: 910-325-6216



**FAIRCHILD**  
CONTROL SYSTEMS COMPANY



## Midyear and the major milestones attained

by Major General Ellis D. Parker,  
Commanding General, U.S. Army Aviation  
Center and Ft. Rucker, Alabama

**W**E have reached midyear and a quick glance back reminds us of the milestones attained and encourages us all to press forward with our schedule of progress.

In previous months, I have mentioned a multitude of projects, policies, and concerns affecting the Aviation branch; and as we continue to move ahead I'll comment on a few of the many current aviation items and actions.

### An in-depth look

Always of interest are our aircraft development initiatives. In that regard, let me call your attention to this month's issue of "Army Aviation" which carries a special, in-depth look at our most advanced helicopter in the current fleet, the AH-64 APACHE.

Let me also mention events relative to the CH-47 CHINOOK Modernization Program. This April, General Maxwell R. Thurman, VCSA, directed a CH-47D Modernization Program increase from 436 to 472 D-model CHINOOKS. Another initiative for the CH-47D was the approval (also in April, 1986) for incorporation of selected Special Operation Forces (SOF) Mission Equipment Package enhancements for the CH-47D fleet. These modifications will significantly upgrade the operating capabilities of the worldwide CH-47D fleet by expanding the role of CHINOOKS in Army operations.

The CHINOOK Modernization will be in con-

junction with the retirement of the CH-54 TARHE, which will be phased out of the total Army Force. Because of the phaseout we will review all CH-54 Product Improvement Program (PIP) initiatives to determine possible PIP cancellations. Any cancellations will then free those funds for use in other programs.

### The UH-60B

As we go to press, the UH-60B Required Operational Capability (ROC) document, finalized by a Joint Working Group (JWG) at the U.S. Army Aviation Center (USAAVNC) in May, is being forwarded to Headquarters, Training and Doctrine Command (TRADOC). A draft Operational and Organizational (O&O) Plan is also being forwarded to TRADOC with the ROC.

Special Electronic Mission (SEMA) efforts continue in the requirements process for a follow-on SEMA platform. A recent General Officer in Progress Review, attended by BG Rudolph Ostovich III, Assistant Commandant, USAAVNC, validated the need for a manned Signal Intelligence (SIGINT) collection platform to be utilized at Corps level.

USAAVNC, in coordination with the Intelligence and Security Command and the U.S. Intelligence Center and School, has taken the lead in preparation of the O&O plan and ROC. Our goal is to have an approved O&O plan by August 1986 to compete for funding in the Fiscal Year '88 budget.



In this column a few months ago, I reviewed the Army's involvement in the V-22 Osprey Vertical Take-Off and Landing program. Since then numerous actions have been taken to plan for the V-22's acquisition. Between March and May, 1986, an Army JWG convened to establish Army V-22 milestones, and a Defense Systems Acquisition Review Council II was conducted. During the same period, a JWG convened to review the Joint Service Operational Requirements and the Army's specific V-22 requirements. One item of note is that because of recent SOF aviation decisions, changes will be made to the O&O plan.

### "Commissioning" warrant officers

Strong interest has been generated by legislation that changes Title 10, of the United States Code (U.S.C.), to provide for the "commissioning" of Army warrant officers. The legislation took effect in May, 1986 and is designed to standardize procedures and policies among all the Armed Forces concerning warrant officer appointments. Previously, permanent chief warrant officers of the Navy, Marine Corps, and Coast Guard were commissioned, while the Army's permanent CWOs were appointed by warrant.

Although the legislation provides authority to commission all permanent chief warrant officers currently serving in those grades (CW2, 3 and 4), as well as those newly promoted to the same ranks, that provision has not yet been implemented.

In other words, the law now authorizes the commissioning of permanent chief warrant officers, but an effective date for implementing commissioning has not been set. The implementation delay is to allow ample time for aligning policies and procedures. Once aligned, implementation will be smoother.

The actual commissioning process will be twofold. First, warrant officers, *Other Than Regular Army (OTRA)*, when promoted to a permanent chief warrant officer grade, will be commissioned by the Secretary of the Army. Second, *Regular Army (RA)* warrant officers will be commissioned by the President upon permanent promotion to a chief warrant officer grade. There will be no distinction between Presidential and Secretarial commissioning regarding the status of the warrant officer receiving the commission.

Those promoted under the temporary (AUS) system will not be commissioned until perm-

anently promoted. Further, warrant officers in the grade of WO-1 will continue to be appointed (not commissioned) by the Secretary of the Army.

Congress, in enacting this legislation, highlighted the following three consequences of commissioning for chief warrant officers:

1. They will have authority to administer oaths for reenlistments.

2. Warrant officers in command will be designated as "commanding officers".

3. Service as a commissioned warrant officer will be characterized as "commissioned" service.

The full scope of this action is not fully defined at press time. Regulations need to be screened to identify areas affected by the commissioning of warrant officers, and the full impact upon the rights and responsibilities for aviation warrant officers is yet to be determined. I realize these short comments leave many unanswered questions. Be assured, however, that as answers are determined and impacts defined, they'll be given the widest possible dissemination.

### TWOIs

The implementation of the Total Warrant Officer Initiatives continues to proceed on schedule. The Position Requirement Inquiries (PRI) used to survey each warrant officer position have now been completed and the data is being analyzed. The information being provided by the PRI will be the basis for the actual grading of each WO position. Each TOE and Table of Distribution and Allowances will be graded and then reviewed by both the MOS proponent and the MACOMs.

Discrepancies found in this review will be resolved during the reclama process. Each MOS proponent (the Aviation branch for Aviation Warrant Officers) will be responsible to ensure that each Military Occupational Specialty (MOS) has a realistic Rank Distribution Structure. The goal is to begin loading the approved grading system into the Army Authorization Documents System by March 1987.

Although these are just a few snapshots of the many concerns affecting Army Aviation, we're once again reminded of the dynamic nature of our business. I commend you, the many soldiers and civilians, whose combined contributions make ours a successful business. As the Aviation Branch Chief, I pledge my continued efforts to lead our press for progress. ■■■■



# May-June, 1986 Calendar of AAAA Chapter Activities

**JUNE**

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

## May, 1986

- May 20. Bonn Area Chapter. Professional/Social meeting. H.J. Mummenbrauer, Commander, BGS Aviation Group, guest speaker. "Helicopters in the German Border Guards". The Rheinhofel, Driessen.
- May 23. Suncoast Chapter. General membership meeting. Guest speaker from the U.S. Army Aviation Center at Ft. Rucker. Presentation, "40 years of Army Aviation". MacDill AFB Officers' Club.
- May 23. Colonial Virginia Chapter. Professional/Luncheon meeting. Ray D. Leoni, senior VP, Sikorsky Aircraft, guest speaker. "Vertical Lift Technology — Current and Future". Ft. Eustis Officers' Club.
- May 30. Thunderhorse Chapter. Chili Cookoff and general membership meeting. Troop Hangar, SAAF.
- May 31. Lindbergh Chapter. Casino Night and Army Emergency Relief Fund Drive. SLASC Community Club.

## June, 1986

- June 11. Rhine Valley Chapter. Professional/Dinner meeting. Sergei Sikorsky, guest speaker. "Update on Sikorsky Programs". Mannheim Officers' Club.
- June 12. Stuttgart Chapter. General membership meeting. Sergei Sikorsky, guest speaker. Nelligen Soldiers' Club.
- June 18. Southern California Chapter. Professional/Dinner meeting. COL Woody Spring, NASA astronaut, guest speaker. "Shuttle Mission 61-B". Hacienda Hotel, El Segundo, CA.
- June 20. Indianapolis Chapter. Professional/Dinner speaker. BG Richard E. Stephenson, DCG, Readiness & Procurement, AVSCOM, guest speaker. Ft. Benjamin Harrison Officers' Club.
- June 24. Army Aviation Center Chapter. Annual Aviation Appreciation Dinner. Ft. Rucker Main Officers' Club.



## ARMY AVIATION ASSOCIATION

1 Crestwood Road, Westport, CT 06880



I wish to join the Army Aviation Association of America (AAAA). My past or current duties affiliate me with U.S. Army Aviation and I wish to further the aims and purposes of the AAAA. I understand that the annual membership includes a subscription to the AAAA-endorsed magazine, ARMY AVIATION, and that my membership starts on the subsequent 1st of the month.

RANK

FIRST NAME

M.I.

LAST NAME

STREET ADDRESS

CITY

STATE

ZIP

 I HAVE ENCLOSED A CHECK PAYABLE TO AAAA.

 MASTERCARD

 VISA

CARD NUMBER \_\_\_\_\_ INTERBANK # (MC) \_\_\_\_\_

AMOUNT \$ \_\_\_\_\_ EXP. DATE \_\_\_\_\_ SIGNATURE \_\_\_\_\_

### List your AAAA Professional Qualification

#### Government

- USA Active Duty
- DA Civilian\*
- Army National Guard\*
- Army Reserve\*
- Army Retired\*
- Other Services

#### Non-Government

- Manufacturing\*
- Small Business\*
- Retailing\*
- Consultant\*
- Professional\*
- Other\*

\* National Office may request additional information.

### AAAA ANNUAL DUES

#### New & Renewal Dues for other than below:

- 1 year, \$15     2 years, \$29     3 years, \$43

#### New & Renewal Dues for Enlisted, GS-6, & below; and Wage Board 12 DACs & below:

- 1 year, \$10     2 years, \$19     3 years, \$28

Add \$5.00 per year for foreign (other than APO) addresses. This application form will be accepted at the dues prevailing at the time it is submitted. It may be reproduced locally.



A silhouette of an Apache helicopter is centered in the frame, set against a dramatic sunset sky. The sun is a bright, glowing orb in the upper left quadrant, casting a long, shimmering reflection on the water in the foreground. The helicopter's rotor blades are blurred, suggesting motion. The overall color palette is dominated by warm, reddish-orange tones.

**SPECIAL  
REPORT**

**FIELDING THE APACHE**



# APACHE . . . A most significant increase in combat capability

by GEN Robert W. Sennewald

**T**HE introduction in U.S. Army Forces Command (FORSCOM) this spring of the AH-64 APACHE Advanced Attack Helicopter represents one of the most significant increases in combat capability we have seen. Equally significant is the way we are fielding APACHE.

This attack helicopter is designed to fight worldwide and survive. For the first time, we will have an airborne tank killer that can strike swiftly and effectively in all kinds of weather, 24 hours a day.

For the first time, we will be fielding combat-ready aviation units, providing the division commander with a combat multiplier ready for action.

These "firsts" will meet the considerable challenge of integrating this extraordinary machine in the Combined Arms team at a high level of readiness.

## Fielding

In the past, it took a considerable amount of time to field a combat-ready unit. Units gradually accumulated personnel and equipment; new equipment training was conducted; and soldiers attended resident schools, all of which took several months.

Two concepts have been developed in the fielding of major weapon systems which have greatly reduced this long drawn-out process.

The first, Total Package/Unit Materiel Fielding (TP/UMF), gives the activating or converting unit all of the equipment it needs, including support items and repair parts in a single package.

General Robert W. Sennewald serves as the Commanding General of the United States Army Forces Command, with headquarters at Ft. McPherson, Georgia.

The second, the Single Station Unit Fielding and Training (SSUFT) concept, combines individually trained soldiers with a complete unit set of equipment and provides a distraction-free environment for intensive unit training.

The result of these two methods is that when an APACHE-equipped battalion arrives at its home station, it is a fighting force lacking only local orientation.

The Army leadership has provided the emphasis and the resources to do this right. The APACHE Training Brigade (ATB), at Ft. Hood, Tex., manages the battalions that will be activating at or transitioning through Ft. Hood.

Each battalion will be manned to its required strength levels with school-trained, MOS-qualified soldiers and all of their required equipment. After this, the unit will undergo an intensive, structured unit training program culminating in a six-day Army Training and Evaluation Program (ARTEP) assessment.

## Transitioning Units

Existing CONUS-based attack helicopter battalions transitioning to APACHes will turn in their COBRAs and HUEYs at their home stations, and move en masse to Ft. Hood to be attached to the APACHE Training Brigade. There they'll receive the AH-64 and UH-60 BLACK HAWKS as total packages.

Once the battalions begin their training cycle, they will be in an environment free of distractions to get the most out of their training time. Even intermediate maintenance will be provided by a contractor at Ft. Hood.

## New activations

The nine new battalions activating at Ft. Hood will build from scratch. After the person-



nel arrive, the ATB will have about three months to put the entire unit together before starting the training cycle. Red River Army Depot will hand off to Ft. Hood a complete set of equipment for each new unit.

Emphasis will be on eliminating anything that might detract from training. In keeping with this, new trucks are now being issued with radio mounts already installed, the chains welded on the steering columns, and the bumper numbers painted on, ready to drive away.

Pilots will pick up the battalion's APACHES at the McDonnell Douglas Helicopter plant in Mesa, Ariz., and fly them to Ft. Hood.

The ATB staff has been working every conceivable angle to be certain that anything that might go wrong in fielding the unit is identified and corrected. Everything possible will be done to take the load off of the unit.

### Training

APACHE-equipped units present unique training challenges both in the initial unit training period and in their day-to-day sustainment training. The capabilities of the APACHE will cause an evolution in our attack helicopter tactics and doctrine as we learn how to get the most out of the machine.

The cost of training ammunition and laser safety considerations will force us to make the

most of the Combat Mission Simulators and other training devices. Learning to interface with Ground Laser Locator Designators is an example of a critically important task that our crews haven't experienced before.

### The future

There's no question about it — the APACHE gives the Army that added punch it needs to meet the threat. FORSCOM's mission is to provide the division commander with this new equipment ready to perform in the Combined Arms team. The dimensions of the Airland Battle doctrine require APACHE to perform at the highest state of readiness.

The addition of the AHIP, the APACHE's counterpart, will greatly add to the APACHE's combat capability. Currently, the AHIP is under evaluation at Ft. Rucker, Ala. It is critical that this new system join the Army's inventory.

### Summary

The fielding of the APACHE is complex and demanding. To succeed, a total Army effort is essential. The Army Materiel Command provides the equipment; Training and Doctrine Command provides the trained soldiers; and FORSCOM, through the ATB, puts it all together to mold a fighting force the ground commander can immediately use. ■■■■



## LHX (POWER)<sup>2</sup>



© 1986 LHTEC

As the designs of others take shape, LHTEC's two T800 technology prototypes are already in test.

Allison and Garrett engineers have put these full-up powerplants through more than 500 hours of design and performance verification. Testing continues. Lowering development risk now, while laying the founda-

tion for reliable T800 propulsion.

Tests confirm transient and steady state performance throughout the flight envelope. Heat rejection and hot section thermal surveys, as well as early evaluation of sand ingestion and loss-of-oil capabilities are completed.

We're ahead in testing on the LHTEC Power Series. Going beyond requirements. Demon-

strating today how the Army will meet the military threats of the 1990s.

Hardly business as usual.

# LHTEC

Allison & Garrett  
America's LHX Propulsion Team.





# APACHE: Providing leaders with the decisive edge

by Maj. Gen. Charles F. Drenz

**T**HIS is my final article for "Army Aviation Magazine" as the Program Manager on May 23, 1986, I will take command of the U.S. Army Test and Evaluation Command at Aberdeen Proving Ground.

I leave with a great feeling of pride in the accomplishments made over the last 40+ months. The production base for the APACHE is established to include a new modern facility in Mesa, Ariz. Over 80 APACHE aircraft, including 18 for the first Advanced Attack Helicopter Battalion, the 7/17th, stationed at Ft. Hood, Tex., have been delivered and fielded.

## A well established training base

APACHE soldiers are training today to achieve an initial operating capability by the time you read this.

The TRADOC training base is well established at Forts Rucker, Eustis, and Gordon. This is just the start of the process that will see a total of 34 Attack Battalions fielded through Ft. Hood by the middle of FY91. There are 309 APACHE aircraft currently on contract, and 366 more are being negotiated.

As the aircraft are delivered, we are tracking very favorably toward achievement of our Maturity Program RAM goals. The Maturity Program for the APACHE will be accomplished when the fleet has accumulated 100,000 flight hours. That should occur in late 1987. Over 12,000 flight hours have been accrued so far.

Several Product Improvement Proposals (PIPs) are currently planned and the require-

Major General Charles F. Drenz has served as the Program Manager, Advanced Attack Helicopter at Aviation System Command for the past 40 months.

ment for a "B" model is under consideration as well as additional APACHES beyond the current 675 aircraft procurement.

So far the approved PIPs include SINGARS, THS, ATAS, and wire cutters. Enhanced NBC protection, fire and forget missiles, and an advanced cockpit are in planning.

In the past year, the Army has demonstrated the self-deployability of the APACHE. I had the opportunity — along with **CWO Bob Sullivan** — to fly an APACHE with external tanks from Mesa, Ariz. to Ft. Rucker, Ala., with but one fuel stop. The longest leg — 850 NM — was accomplished in six hours. On arrival at Ft. Rucker, fuel remaining would have allowed continued flight for almost another 300 NM.

## A new era

The APACHE provides the Army with an awesome capability. It makes obsolete the old way of employing attack helicopters — a new era has begun. It has taken many years of teamwork on the part of the people in industry and the Government to provide this capability to the soldiers in the field.

It will take the continued close teamwork of AMC, TRADOC, FORSCOM, and industry to equip and train the remaining attack battalions.

I'm confident that the dedication of the hundreds of people who have worked for so many years will see the job through successfully.





# The APACHES have arrived!

by COL Jack L. Turecek

**O**N the 24th of February, the first four of 72 APACHES destined for the 6th Cavalry Brigade (Air Combat) flew out of the setting sun of Central Texas and touched down at Hood Army Airfield.

The following day, Ft. Hood marked this most significant event in the history of Army Aviation with a first class welcoming ceremony hosted by **MG John M. Brown**, Deputy Commanding General.

Included as participants in the ceremony were **MG Ellis D. Parker**, Commanding General of Ft. Rucker; **MG Charles F. Drenz**, APACHE Project Manager; **William P. Brown**, President of McDonnell Douglas Helicopter Co.; **Robert C. Little**, Corporate Vice President and Group Executive of McDonnell Douglas; and **J. Richard Cook**, Vice President, Martin Marietta.

After years of extensive planning and a great

**COL Jack L. Turecek**, former Commander of the 6th Cav Bde (Air Combat) at Ft. Hood, now serves as Chief of Staff, 24th Infantry Div Ft. Stewart, GA.

deal of hard work by many dedicated people, the last chapter in the Army's plan for the unit fielding of the AH-64 began . . . the "check" had finally arrived.

## Two years in the planning

For those of us in the 6th Cavalry Brigade, the planning for the arrival of the aircraft and training of the first unit to receive the APACHES, the 7th Squadron, 17th Cavalry (Heavy Cav), began well over two years ago.

Since that time 46 aviators have completed or are about to complete transition courses in the AH-64A at Ft. Rucker; four instructor pilots have been trained; and five maintenance and three ar-





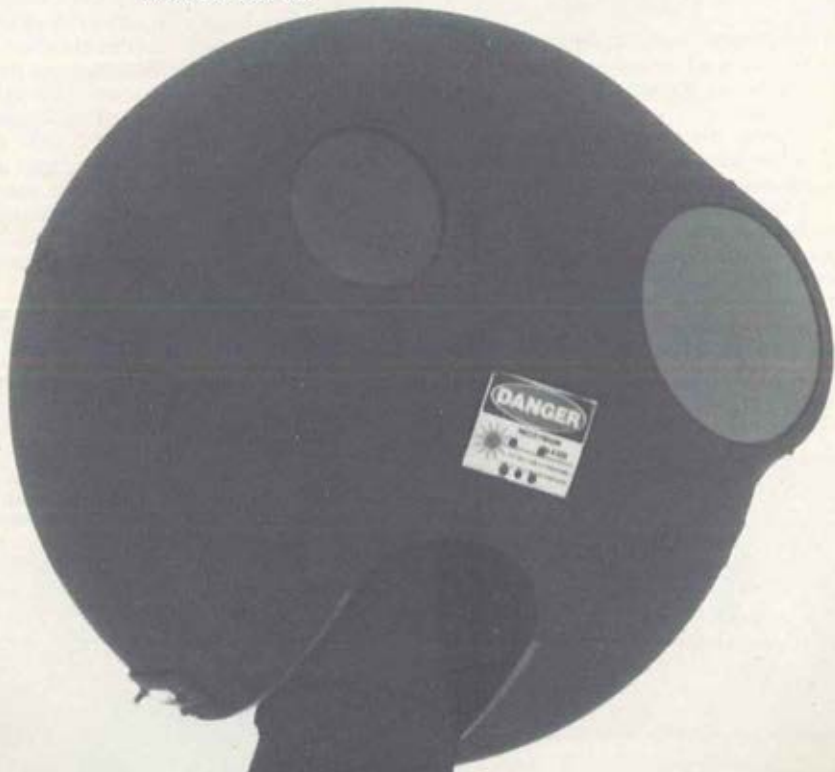
# YOU'RE BEING WATCHED

...by the crew of an Army OH-58D Aeroscout helicopter equipped with a McDonnell Douglas Mast-Mounted Sight.

The sight is a system in itself for battle surveillance, target acquisition and handoff. It is field-supportable: Major components including sensors, electronics, and the upper shroud can all be replaced in the field.

The sight has exceeded performance specifications. It is now in production for the Army Helicopter Improvement Program.

Watch for it.



**MCDONNELL  
DOUGLAS**

mament officers have completed courses at Ft. Eustis.

At the same time 63 enlisted soldiers in grades ranging from Private to Sergeant First Class have attended various courses at both Ft. Eustis and Ft. Gordon. These include soldiers sent TDY for training from the 7/17th as well as those who trained on the APACHE and its many sophisticated systems following basic training.

While all of this individual training has been going on at the various TRADOC schools, we've been busy developing a detailed 90 day unit training plan based on TRADOC guidance that will commence on 14 April and culminate with a very demanding External Evaluation during the first part of July.

### The training plan . . .

The 90 day training plan includes six phases:

- . . . two weeks of individual and crew operations,
- . . . four weeks of troop operations, to include gunnery,
- . . . a week of squadron operations,
- . . . a two week squadron field exercise/internal evaluation,
- . . . a second two week field exercise, and finally
- . . . the one week external evaluation.

Simultaneously with the ongoing individual training cited above, we've been turning in the 7/17th's COBRAs, to include not only the aircraft, but the prescribed load list (PLL) and peculiar ground support equipment (PGSE) previously needed to support the units' 18 COBRAs.

Based on the guidance of **General Maxwell R. Thurman**, Vice Chief of Staff, U.S. Army, and

with the tremendous support of DA, FORSCOM, AMC, TRADOC, and the III Corps, the Heavy Cav will begin unit training in mid-April with 100% of its authorized people and equipment.

Not only is it great to be selected as the first unit to field the APACHE, but to do so with a full authorization is an opportunity in which few of us have ever been privileged to partake.

Utilizing the same training plan as the 7/17th, the 1st Squadron, 6th Cavalry will begin unit training in July, 1986; followed by the 4th Squadron, 9th Cavalry in December, 1986; and the 5th Squadron, 17th Cavalry in February, 1987.

### "Enthusiasm and excitement"

Needless to say, the enthusiasm and excitement that exists today among the soldiers of the 6th Cavalry Brigade is at an all-time high. Although the Brigade has been involved in many exciting and challenging training events and tests during the past ten to 15 years, none can compare to the fielding of the most sophisticated attack helicopter that exists in the world today.

The task ahead for the leadership of the 6th Cav is to take the soldiers and the equipment of the unit and mold them into an effective fighting force capable of deploying and winning on the modern battlefield as part of the combined arms team.

We stand ready to accept the challenge the Army leadership has placed before us, and are confident that at the end of each 90 day training period we will provide the Army a unit trained to its potential and ready to go into combat and win. IIII



A student receives instruction on the McDonnell Douglas Cockpit Weapons Emergency Procedure Trainer (CWEPT) at the U.S. Army Aviation Center. ♦

♦ Enlisted soldiers take part in all phases of APACHE training at the U.S. Army Aviation Logistics School at Ft. Eustis, Va. An instructor is shown with a student at the Mission Equipment System Trainer.







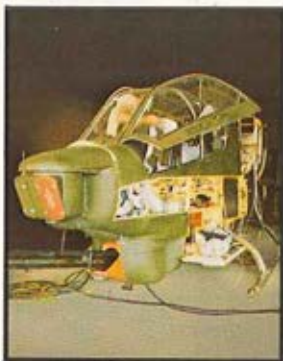
AMERICAN ELECTRONIC LABORATORIES, INC.



## AERO DIVISION

**Integration, installation and testing of  
weapons systems and avionics**

The Aero Division of AEL provides system engineering to integrate and install these systems in production and ORC modes. This capability applies to both rotary and fixed wing aircraft. The Aero Division of AEL, located at Allaire Airport, Farmingdale, NJ and Reading Municipal Airport, Reading, PA, offers unmatched efficiency and economy in the retrofit of armament/protection systems such as the AIM-9L



Sidewinder missile system and the AN/ALE-39 chaff dispensing system and communications, navigation and identification equipment.

Whether your requirements entail assembly of kits and wiring harnesses, EMI/EMC/TEMPEST testing, or updating of aircraft with equipment manufactured by AEL and other leading organizations, the AEL Aero Division is ready to provide cost effective service.

AEL has immediate, long-term employment opportunities in many challenging advanced technology areas. For more information, contact: Director of Recruitment

© 1984, American Electronic Laboratories, Inc.



American Electronic Laboratories, Inc.  
Subsidiary of AEL Industries, Inc.  
P.O. Box 552  
Lansdale, PA 19446  
(215) 822-2929  
TWX: 510-661-4976

MASK

MIC

SPKR  
VOL

VHF-2

VHF-1

UHF

FM

HF-1

HF-2

ICS

-PA

L. HAIL

PHONE  
VOL

HOT MIC

ICS OFF

Collins

5.75"

12.125"

# Collins CMS-80 can put at least half your cockpit console into a space this big.

Next to the pilot, you know better than anyone that console space in a cockpit is at a premium. Still you have to make room for all the avionics vital to a successful mission.

Enter the Collins CMS-80 cockpit management system. A unit as small as this ad which uses a high resolution CRT and keyboard to manage a multitude of different avionics systems. Including comm/nav



...position, target, velocity, fuel, weapons, and much more.



Using the military standard 1553 Multiplex Bus, CMS-80 is compatible with existing as well as new avionics. Which means mission capability and flexibility never before available.

We could go on, but like you, we're cramped for space. Contact us for more information: Collins Government Avionics Division, Rockwell International, Cedar Rapids, Iowa 52498. 319/395-2208.



**Rockwell International**

...where science gets down to business



A  
U  
D  
I  
O

# Apache.

Don't leave home base  
without it.



The Army's AH-64A Apache is everything an airmobile escort should be—and more. Fast. Aggressive. And armed with a payload of eight Hellfire missiles, 38 2.75-inch rockets and 1200 rounds of 30mm ammunition.

No other attack helicopter can carry as much firepower at a cruise air speed exceeding 150 knots for a range of 200 nautical miles and without auxiliary fuel tanks.

In escorting troop transports, Apache defeats the threat...lives up to its name as "a total system for battle."

For further information, contact: Marketing, McDonnell Douglas Helicopter Company, Bldg. 1/T137, Culver City, CA 90230 USA, telex: 182436 HU HELI C CULV.

**MCDONNELL  
DOUGLAS**





COL (P) Ball

## Combat skills training in the AH-64 Combat Mission Simulator

by COL (P) James W. Ball  
and CW3 Mark W. Ammon

**A**N AH-64 of the 7/17 CAV unmasks as the Co-pilot-Gunner (CPG) prepoints the Target Acquisition Designation Sight (TADS) to the assigned engagement area. The sound of two search radars on the APR-39 breaks the silence.

Quickly, the pilot calls out, "Gunner, 020 and 010 degrees." The gunner searches for the radar emitters as the pilot positions the aircraft to provide maximum Aircraft Survivability Equipment (ASE) utilization while maintaining prelaunch constraints.

The conversation continues:

**CPG to Pilot:** "Mark, Seven-Zero feet." (referencing the radar altimeter).

**Pilot to CPG:** "Roger, Seven-Zero."

**CPG to Pilot:** "SA8. Tree in the way. Move right. Stay up. Launch."

**Pilot to CPG:** "Roger. Mark, Eight-Zero feet." (Aircraft climbs to 80 feet.)

**Pilot to CPG:** "Gunner, tanks moving into view top right. Launch second missile."

**CPG to Pilot:** "Roger."

**Pilot to CPG:** "Good shot. Kill, one SA8."

**CPG to Pilot:** "I've got the tanks ... going autonomous."

**Pilot to CPG:** "We've been up here awhile and I still have search radar on us."

**CPG to Pilot:** "Just one more tank."

**Pilot to CPG:** "OK."

**SCOUT to APACHE:** "Alpha 02, this is Sierra 12. I have a T80 tank, engagement area 71. At my command." (Request by the SCOUT for Alpha 02 to launch remotely).

COL (P) James W. Ball is PM-Training Devices at the Naval Training Center in Orlando, Fla. CW3 Mark W. Ammon is an AH-64 Combat Mission Simulator Instructor Pilot assigned to D Company, 7th Aviation Training Battalion at Ft. Rucker, Ala.

**CPG to Pilot:** "Pilot. Target Index is in, align the aircraft in constraints."

**CPG to SCOUT:** "Sierra 12, Alpha 02 is ready."

**SCOUT to APACHE:** "Alpha 02. Fire, over."

**CPG to SCOUT:** "Shot, over." (Remote missile is launched).

**SCOUT to APACHE:** "Shot, out."

**CPG to Pilot:** "SA6 launch. Chaff! Move! Chaff ... Move!"

The aircraft is shaken by a violent jolt; primary and utility hydraulic caution lights illuminate; No. 1 fire handle illuminates; the aircraft descends as the pilot desperately reaches the emergency hydraulic switch, just in time to cushion the landing with collective pitch.

A hard landing, but the crew survives the impact.

**CPG to Pilot:** "This is going to huuurrrt."

**IP to Crew:** "Freeze. Now let's talk about what went wrong". (Over the intercom).

This is how a typical first day engagement in the AH-64 Combat Mission Simulator (CMS) often ends.

With the beginning of combat skills training as part of the AH-64 Aircraft Qualification Course (AQC), an aviator must now learn to fight and survive on the modern high-intensity battlefield. During this final portion of qualification training the aviator receives 15 hours of flight instruction; 7½ in each seat.

He's required to fly ten missions using five different scenarios. The first two scenarios are day/VFR missions. The last three scenarios are performed at night using the Forward Looking Infrared (FLIR) sensors to fly and engage threat targets.

Each day the aviators participate in classified

briefings and discussions, and attend classes on the HELLFIRE missile, aircraft survivability equipment, the Fire Control Computer, and the Target Acquisition and Designation System (TADS).

Briefings on threat identification emphasize the importance of knowing the enemy, his capabilities, and his limitations. Armed with that knowledge the aviators learn how to use the systems of the AH-64 to defeat the threat.

After the daily briefing the crews conduct a mission brief-back of the Operation Order received the day earlier. During brief-backs all areas are covered:

... weapons loads, waypoint update points, battle positions, size and positions of engagement areas, and most importantly, where the friendly forces are and what they're doing on the ground.

### Preparing for battle

Before moving out into the computer generated battle area, the crew prepares the systems of the aircraft (Combat Mission Simulator) for battle. They program the FCC and Doppler, bore-sight the TADS, and ensure that all weapon systems are operational.

As the crew departs the Forward Assembly Area, the threat instructor selects one of 20 pre-programmed target engagement exercises (TEE). Each TEE contains ten vehicles, five of which move along pre-determined paths while the other five are in fixed positions. He also selects threat lethality and controls target movement and speed.

The second instructor, in the role of Battle Captain, simulates the scout and controls the battle to make it flow smoothly. He provides the AH-64 crew with spot reports, acts as the Ground Laser Locator Designator (LLD), and provides local security.

Training is conducted with the crew free to choose courses of action. The Battle Captain at any time can freeze the simulator to discuss mistakes, review techniques and tactics, and touch on the finer points of HELLFIRE engagements.

Once the crew has destroyed all targets or run out of ammunition, it returns to one of ten Forward Arming and Refueling Points (FARPs) that can be activated within the battle area. While the APACHE taxis up to the fuel point and ammunition boxes to refuel and rearm, the threat instructor inserts a new TEE and the Battle Captain

issues a FRAG Order to the crew for a change of mission.

The crew reacts by inserting new coordinates in the aircraft's computers and departs to assist in stopping a breakthrough in another valley. Enroute, the crew is surprised by a pair of MI-24 *Hind* helicopters. The crew takes evasive action and engages them with the 30mm cannon. When contact is broken, they report the *Hind* positions to the Battle Captain.

Using this training format the crew learns to employ classroom tactics against a lethal threat. They expend large amounts of ammunition to become proficient in acquisition, identification, and destruction of multiple moving targets.

They learn the different techniques of employing the laser which is utilized as an aid in determining terrain features and ranges which are difficult to determine in high powers of magnification, as well as a target designation device.

The CMS provides the aviator with training that cannot be done in the aircraft. It provides the ability to utilize all the HELLFIRE missile launch modes, such as rapid and ripple in either an autonomous or remote engagement situation, and displays real-time battle damage assessments.

### Night missions

As the week progresses, so does the intensity of training. Crews move from day to night missions, thus appreciably increasing their task loading. The threat begins using laser sensors to detect laser energy, allowing him to hide behind trees and burning vehicles.

Threat lethality is increased from Level Three to Level Five and sometimes to a maximum level of Ten. All of these activities push the crews to their limits as they learn to fight and survive in the high-intensity threat environment only available in the CMS.

Because the training is so realistic, the crew quickly learns combat responsibilities. They learn to deal with the stress of knowing someone is trying to kill them.

They quickly come to the realization that they, as a crew, must become a system. . . The most important system on the APACHE. . . The system that integrates and orchestrates all of the aircraft systems quickly and efficiently. Then and only then will the APACHE helicopter become a "Total System for Battle".

IIII



Compared to previous engines...

30% less fuel.  
50% less maintenance.  
600% better reliability.

The T700/CT7:  
The best value  
in helicopter engines...  
by far!

Aircraft Engine  
Business Group



 A registered trademark of  
General Electric Company, U.S.A.

# Your best defense against thunderstorms.



## 3M Stormscope® Weather Mapping Systems— electronically passive thunderstorm mapping for all military aircraft.

- **UNIQUE.** The only airborne instruments developed specifically to map thunderstorms.
- **ELECTRONICALLY PASSIVE.** Uses a non-transmitting, non-detectable system which receives information from the electrical discharges within the thunderstorm.
- **VERSATILE.** Data is presented on a 3" cockpit display. Can be used on all military aircraft—rotor-wing or fixed-wing.
- **REAL TIME THUNDERSTORM INFORMATION.** Works as well on the ground as in the air.
- **PROVEN.** Ten thousand units sold since 1976.

For complete information, please contact:  
3M Stormscope Weather Mapping Systems,  
Aviation, Safety Systems/3M, 6530 Singletree  
Drive, Columbus, Ohio 43229, (614) 885-3310.

GSA price schedule catalog  
available on request.



**3M**  
**Stormscope®**  
Weather Mapping Systems

**3M**





COL Sullivan

## Updating the TADS/PNVS Program

by COL David E. Sullivan  
and Robert Kennedy

**T**HE Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS) is the "eyes" of the AH-64 APACHE allowing mission completion during day, night, and adverse weather conditions.

The pilot is provided video imagery from the PNVS Forward Looking Infrared (FLIR) sensor overlaid with corresponding pilotage symbology. This information, projected on the helmet display unit of the Integrated Helmet and Display Sight system (IHADSS), allows the pilot to fly Nap-of-the-Earth (NOE) during night and restricted visibility conditions.

The co-pilot/gunner is provided a wide range of choices of video imagery from either the TADS FLIR and TV or magnified optics of the Direct View Optics (DVO) sensor.

### Sensor information combined

The TADS also includes a Laser Range-finder/Designator (LRFD) that is boresighted to the TADS sensors, a Laser Spot Tracker, and an automatic video imagery tracking capability. This combination of sensor information, in conjunction with corresponding symbology, and use of the LRFD and trackers allow the co-pilot/gunner to detect, recognize, designate, and track targets, as well as perform navigational duties as required during day, night, and adverse weather conditions.

Previous issues of "Army Aviation" have contained more detailed descriptions of the various TADS/PNVS sensors and operational modes which will not be repeated here.

The first full production contract was award-

In April, 1982, to MMOA for delivery of 13 TADS/PNVS systems. The second year production contract was awarded in December, 1982, for 52 additional systems. The third year production contract was awarded in March, 1984, and the fourth year production contract in April, 1985, for 112 and 138 systems, respectively.

We're currently working on a contract for the remainder of the TADS/PNVS systems to support the 675 APACHES to be procured.

### Production milestone

The first major production milestone occurred in July, 1983 with the Army acceptance of the first production TADS/PNVS. A total of 121 TADS and 123 PNVS systems have been delivered as of February, 1986 to support the AH-64 APACHE Program.

Several of these systems have been delivered to Ft. Eustis, Va., for use as maintenance bench trainers, and ten of the systems are on Category B training aircraft. In addition to the systems delivered in direct support of the APACHE Program, MMOA has delivered five PNVS systems to the Navy for use in the engineering development of the Helicopter Night Vision Systems (HNVS) Program.

Additionally, ten PNVS systems have been delivered to the AH-1S (MOD) PNVS Surrogate Trainer Project. These trainers were developed by Northrop Corporation and have been delivered to the Aviation Center at Ft. Rucker where they're being used to provide initial PNVS training to candidate APACHE pilots prior to hands-on training in the APACHE.

Using AH-1 qualified aviators and the PNVS Surrogate Trainers in lieu of the APACHE for the initial PNVS training results in a significant cost savings to the Army.

COL Sullivan is the Project Manager for the (TADS/PNVS); Kennedy serves as chief, Technical Management Division, both are in St. Louis, Mo.

**How the enemy sees the Apache at night.**





**How the Apache sees the enemy.**

## **Thanks to the TADS/PNVS.**

The Apache, unlike the illustrious warriors it's named after, stays on the warpath at night.

Flying low-level night missions, the Apache pilots can see where they're going and, for the first time, can see targets without depending on flares and other illumination.

What enables the Apache to find and attack targets day and night is TADS/PNVS.

The Pilot Night Vision Sensor (PNVS) permits battlefield navigation at night and in adverse weather. Army helicopter pilots can now confidently fly nap-of-the-earth in darkness.

The Target Acquisition and Designation Sight (TADS) locates and designates a target with laser, day or night, tracking it for attack with Hellfire missiles or other weapons.

The laser designator can also mark targets for attack by ground artillery firing laser-seeking Copperhead projectiles.

By providing longer recognition ranges and shorter exposure to enemy fire, TADS/PNVS—designed and produced by Martin Marietta—gives the U.S. Army's powerful attack helicopter a better chance to survive. And it enables the Apache to do something the enemy can no longer do: hide under cover of darkness.

**MARTIN MARIETTA**

Martin Marietta Corporation  
6801 Rockledge Drive, Bethesda, Maryland 20817, USA

Performance testing of the production configuration APACHE, including the TADS/PNVs, began in March, 1984, by McDonnell Douglas Helicopter Company with the support of Martin Marietta Orlando Aerospace (MMOA).

The production testing culminated in December, 1985, with the completion of the First Article Test — Validation Phase conducted by the Aviation Development Test Activity (ADTA) at Yuma Proving Grounds.

The results of the production testing indicate that the TADS/PNVs system meets the requirements of the user community. In addition, comments from the field indicate full approval of the quality of the video, optics, range resolution, accuracy, and overall capability of the TADS/PNVs.

### Supportability

With the increasing numbers of TADS/PNVs systems being delivered, the emphasis on supporting and maintaining the systems has been growing. In order to provide technical assistance, rapid turnaround, and responsiveness of failed components to the TADS/PNVs Program, MMOA has established repair facilities at Enterprise, Ala., near Ft. Rucker; Killeen, Tex., near Ft. Hood; and Falcon Field in Mesa, Ariz. MMOA will continue providing logistical support through January 1987, with transition to full organic logistic support scheduled to occur at that same time.

The contractor has also been developing and delivering Test Program Sets (TPSs) to support Aviation Intermediate Maintenance (AVIM) required to be performed on the TADS/PNVs systems. A total of 18 individual AVIM TPSs is required to test the Line Replaceable Units (LRUs) and

Shop Replaceable Units (SRUs) of the TADS/PNVs systems.

The TPSs will be utilized in the APACHE automatic test station known as the Electronic Equipment Test Facility (EETF). Incorporated in the EETF, and built by MMOA, is the unique electro-optical bench, which will provide to the field a capability to test and automatically fault isolate the complex electro-optical TADS/PNVs LRUs.

Through February, 1986, the Government has accepted nine of the 18 AVIM TPSs. The remaining TPSs will be completed by June, 1986, and multiples of the test sets will be delivered to the AVIM locations as fielding continues. The contractor has already delivered several of the TPSs to Ft. Rucker to support the aircraft training base and Ft. Gordon, Geo., to support the Automatic Test Equipment (ATE) training base.

### New PM team

Both the contractor and the Army Program Managers have changed in the last year. Mr. J. Richard Cook assumed the position of Vice President, Program Manager of the TADS/PNVs Program for MMOA, in September, 1985.

I assumed the responsibility of TADS/PNVs Project Manager for the Army in January, 1986. Although we're both new to the TADS/PNVs Program, each of us has eagerly accepted the challenge of fulfilling total support requirements and providing quality hardware of an extremely complex electro-optical system at a rate of 12 per month.

We welcome this challenge, and are dedicated to the continued on-schedule delivery of the "eyes" of the world's best attack helicopter. IIII







# APACHE Training: USAAVNC gears up!

by LTC David Sale

I have decided to open this article with a quote given to **MG Ellis D. Parker**, USAAVNC Commander, on 25 March 1986 at Ft. Hood, Tex., as we welcomed the first AH-64A Advanced Attack Helicopters to FORSCOM, "We have come a long way, baby."

In just a few minutes **MG Parker** related how he had fielded OV-1 Mohawks to Ft. Hood in the early 1960's. While he was attending OV-1 transition he was earmarked for the OV-1 Program and ordered to proceed to Ft. Hood, Tex., in order to accept and field OV-1s.

The six new aircraft were accepted with no manuals and no special tools, and the mechanics did not receive any special training on the aircraft. It should be noted that **MG Parker** was the only OV-1 pilot at Ft. Hood for some six months.

Yes, "We have come a long way." On 14 May 1986, Ft. Hood's 7/17 Attack Helicopter Battalion will be fielded with its entire allocation of equipment!

## Logistics support

We've had 43 manuals written to support the outstanding maintenance training given by the personnel at the USA Aviation Logistic School (USAALS), at Ft. Eustis, Va., and the USA Signal Center (USASC) at Ft. Gordon, Ga.

As a matter of record, we're currently fielding our third battalion of maintainers at this time. The USA Aviation Center (USAAVNC) is currently accepting 12 attack pilots every two weeks in order to meet the Army's AH-64 needs. The school is scheduled to ramp up

LTC David Sale is the Training and Doctrine Command System Manager for the TADS/PNVS with assignment at Ft. Rucker, Alabama.

again in October of this year to 20 attack pilots every two weeks.

Our first class of Initial Entry Rotary Wing (IERW) graduate pilots will start training on 14 May 1986.

I would be a "story teller" if I told you that the road has been easy. Many a lesson has been learned by both the Army and the private contractors, especially McDonnell Douglas Helicopter and Martin Marietta.

The problems included two aircraft groundings, one for main rotor trailing edge cracks, and the other occurred for a mixer support bolt failure. Both of the defects have been resolved. However, it's truly been a team effort on everyone's part.

## Some significant events

Both the team and the AH-64 are maturing. For an example, look at some of the recent significant events:

.. The first Instructor Key Personnel Training (IKPT) class took six months more than contracted. The second took two months more than scheduled and the third and final class not only completed IKPT III on time, but also completed instructor training within the contracted qualification training phase.

.. It should be noted that we also trained the maintenance test pilots during the above three IKPTs.

.. Flight training began on 12 June 1985 at Ft. Rucker. Through 15 April, we've graduated 92 AH-64 instructor pilots and pilots.

.. Maintenance training began at Ft. Eustis, Va., on 29 July 1985 and at Ft. Gordon, Ga., on 15 October 1985. Since then we've graduated 269 AH-64A maintainers.

In this brief article, I've chosen to discuss



## Advanced Attack Helicopter Program Manager's Office



**Colonel  
Gerald T.  
Hipp**  
Asst. Program  
Manager for Test,  
Evaluation & Rqmts  
x1921



**Colonel  
David E.  
Sullivan**  
Project Manager,  
TADS/PNVS  
x1992



**Lt. Colonel (P)  
John H.  
Dick**  
Asst. Program  
Manager for  
Logistics  
x1921



**Harold A.  
Kiehl**  
Deputy Project  
Manager  
TADS/PNVS  
x1992



**Lt. Colonel  
John G.  
O'Hara**  
Executive Officer  
and Asst. PM for  
Int'l Operations  
x1921

**Corresponding Address:**  
ATTN: AMCPM-AAH  
US Army Materiel Command  
4300 Goodfellow Blvd.  
St. Louis, MO 63120-1798

**Vacant**

**Program Manager,  
Advanced Attack  
Helicopter**



**John P.  
Clarke**  
Acting  
Program Manager  
Advanced Attack  
Helicopter  
x1911





Photo  
not  
available  
at  
press  
time

**Lt. Colonel  
David  
Salvadorini**  
Project Manager  
Automated Test  
Equipment  
x1952



**Lt. Colonel  
Carl R.  
Propp**  
Mesa  
Field Office  
(602) 891-3590



**Barry J.  
Baskett**  
Chief,  
Systems  
Engineering  
Division  
x1961



**Ronald E.  
Boehme**  
Chief,  
Procurement &  
Production  
Division  
x1937



**Craig W.  
Breder**  
Chief,  
Logistics  
Management  
Division  
x1944



**Frederick D.  
Murphy**  
Chief,  
Financial  
Management  
Division  
x1925



**Telephone:  
Autovon — 693-XXXX  
Commercial — (314)  
263-XXXX**



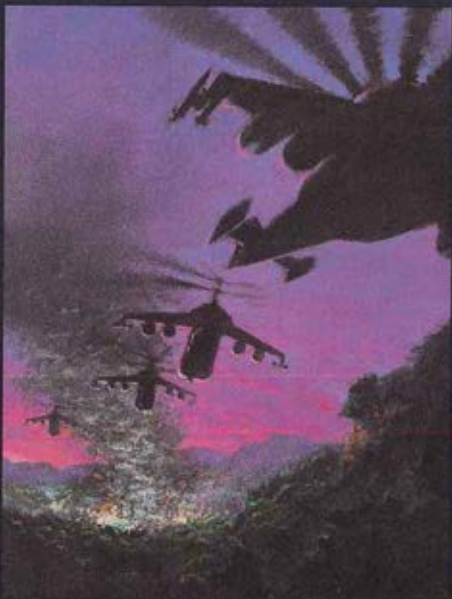
**Barbara A.  
Ambs**  
Chief,  
Administrative  
Services Division  
x1906

"The next war." Consider the threat those words imply. Imagine men in machines, pitted against one another on a battlefield where nuclear, biological, and chemical weapons are used.

Where darkness and rain are not havens, but are exploited to launch attack. Where new air-to-air and surface-to-air threats await Army Aviation.

The threat is real. And it is growing. As Soviet Hind helicopters operate unopposed in armed conflict today. And the Hokum and Havoc, still on the drawing boards, progress inexorably toward reality.

It is the future. It is here. And Army Aviation knows what it needs to answer the call.



*"We must hold our minds alert  
and receptive to the application of  
un glimpsed methods and weapons.*

**The next war will be won  
in the future, not in the past.**

*We must go on, or we will go under."*

General Douglas MacArthur  
1931



LHX. Its success will depend not only on the imagination of designers or the integration of complex systems. But on the ability of businessmen to manage the technologies and systems that will fulfill the Army's

requirements. To apply these technologies intelligently. And deliver a highly lethal aircraft of awesome capability. On time. On budget.

One team can do it. Boeing Sikorsky. Our track record proves it. The BLACK HAWK and CH-47D helicopter programs. Demonstrations that low-cost solutions can successfully fulfill high technology needs. Models of excellence and efficiency that have earned multi-year contracts for both companies.

LHX is a formidable task. And an important one. But Boeing Sikorsky is up to the challenge. Because we have the vision to see it. And the capability to see it through.



Bill Walls, Deputy Director LHX Program (left)  
Low Cotton, Director LHX Program

**Answering the call.**

**BOEING SIKORSKY**  
THE FIRST TEAM FOR LHX

# McDonnell Douglas Helicopter Company APACHE Program Management Team



**William P. Brown**  
President,  
and  
Chief Executive  
Officer



**Allen C. Haggerty**  
Executive Vice  
President  
Engineering  
and Operations



**Norman B. Hirsh**  
Executive Vice  
President  
Program  
Management



**Jerome J. Sullivan**  
Vice President  
Product  
Support



**Paul K. Henney**  
Vice  
President  
Operations







**Stuart D. Dodge**  
Vice President,  
AH-64  
Programs



**Morton J. Lieb**  
Director,  
AH-64  
Project  
Engineering



**Ray E. Deyo**  
Director,  
AH-64  
Advanced  
Programs



**Gerald M. Ryan**  
Director,  
AH-64  
Production  
Program



**Vincent F. Cremonese**  
Director,  
AH-64 Logistics  
Program  
Management



**Richard A. Williams**  
Manager,  
AH-64  
Contracts

**Corresponding  
Address:**  
5000 East  
McDowell Road  
Mesa, AZ 85205



**Telephone:**  
**(602) 891-3000**

flight training in some detail, and I plan to discuss the aviation maintenance schools in a later "field report." Let's not forget that without the maintainer-ground crews we can't our mission.

Flight training begins when the AH-1 attack pilots are welcomed and introduced to the AH-64A Qualification Course by **MAJ John Pack**, the current Commander of D Company, 7th Aviation Training Battalion, Aviation Training Brigade.

The course is 14 weeks long and considered to be one of the most comprehensive at USAAVNC. The attack pilot will receive 135 hours of academics ranging from Pilot Night Vision Training (PNVS) to the complex HELLFIRE Missile System.

### The PNVS surrogate trainer

Much time is spent on the three weapon systems and the Fire Control Computer. While academics are on-going, our new attack pilot is introduced to the AH-1S (PNVS) surrogate trainer in which he'll receive 24 hours of intense PNVS training with 17+ hours of daytime training being spent in the back seat enclosed by blackout curtains.

During this phase, the pilot is taught to rely completely on the PNVS System. Upon completing the daytime PNVS phase flight evaluation, the attack pilot receives the remaining PNVS hours at night with the curtains removed. The PNVS phase of training is the most demanding, thus most difficult of the qualification course.

Prior to completing surrogate training, we introduce the pilot to the Cockpit Weapons

Emergency Procedure Trainer (CWEPT) which is used to teach what its name implies. During the first instruction block of ten hours, the attack pilot receives high fidelity training on how to start, run up, and shut down the AH-64 APACHE. Also, heavy emphasis is placed on emergency procedures.

Upon completing surrogate training and starting CWEPT training, the attack pilot proceeds into basic AH-64 transition flight for 12 hours. Here he learns basic helicopter AH-64A tasks, including single engine procedures and high-low G maneuvers.

Just when he starts to feel comfortable, we put him back into PNVS training, but this time he does it in the AH-64 for another nine hours. The first two flights are in the bag (surrounded by curtains) during the day with the remaining flights at night.

The next phase of training is TADS/Gunnery. TADS stands for Target Acquisition Designation Sight. Here the attack pilot is given 20 hours of training, mostly in the front seat. Just prior to this phase of training, he's given another ten hours of CWEPT training to better prepare him for TADS gunnery instruction.

Prior to starting TADS gunnery instruction we require 10 hours in the TADS Selected Task Trainer. The TSIT is a primary fire control panel and optical relay tube (ORT) computer-driven training device, which allows self-paced training on how to fire the three weapon systems onboard the AH-64 from the front seat.

The primary purpose of TADS gunnery is to teach the attack pilot how to operate the TADS and how to employ the AH-64A's three weapon systems.

### Combat skills honed

Combat Skills is the last phase of instruction and it's presented in the Combat Mission Simulator (CMS). The CMS came on line on 24 Feb 86 with the first class of AH-64A attack pilots being trained at the Singer Link plant in Binghamton, NY.

We currently train combat skills at that location and will continue to do so until the CMS becomes operational at Ft. Rucker, Ala., about mid-August 1986.

From a training standpoint, it cannot be denied that combat is the best teacher. (TRAINING/Continued on Page 55)







# APACHE: Shifting into high gear at Ft. Hood

by Jerome J. Sullivan

**T**HE U.S. Army/McDonnell Douglas Helicopter Company APACHE Program shifted into high gear on 25 February 1986 as the first of more than 600 AH-64A Attack Helicopters began arriving at Ft. Hood, Tex.

Under the Army's new single Station Unit Fielding and Training concept, Ft. Hood will form, train, and equip all 34 planned Army and Army National Guard AH-64A Attack Helicopter Battalions for deployment around the world.

This extensive effort is being coordinated by U.S. Army Forces Command (FORSCOM) and will continue into the early 1990s. The 6th Cavalry Brigade's 7th Squadron, 17th Cavalry will be the first unit to undergo the 90-day APACHE unit training program.

## Training for the ARTEP

The unit training schedule calls for 30 days of individual pilot and maintenance instruction, 30 days of company-level and gunnery training and a final month of battalion tactical training, which culminates with a battalion-level ARTEP.

McDonnell Douglas has been actively involved in support of the APACHE fielding effort since the Advanced Attack Helicopter first came off the drawing board. This support has evolved into two distinct phases; support to the Army training bases and the fleet of instructional aircraft at Ft. Eustis and Ft. Rucker, and now support to the FORSCOM using unit.

The McDonnell Douglas training phase for the AH-64 was a unique departure from the programs previously associated with the fielding of new Army weapon systems. In earlier weapon ac-

quisitions, Army New Equipment Training Teams (NETT) received training at the contractor's location, and then assisted the Army schools in developing their respective training programs.

For the AH-64, MDHC was responsible for the design, development, and presentation of aircrew and maintenance training courses and a complete range of classroom panel trainers and hardware devices to support this training. McDonnell Douglas designed courses, developed course programs of instruction and lesson plans, then presented each course to the instructors and key personnel at the aviation-associated service schools at Ft. Rucker, Ft. Eustis, and Ft. Gordon.

## Too much better than too little

After teaching instructors and key personnel, McDonnell Douglas training personnel assisted the newly graduated Army instructors in the conduct of the first MOS-producing courses. The helicopter company's training personnel are presently in a sustaining phase of this contracted work, updating the courses to comply with the latest engineering changes to the aircraft.

They also taught the civilian contractor personnel at Ft. Rucker who are responsible for maintaining the Aviation School's APACHE fleet.

Because of the newness of the single station unit fielding and training concept, McDonnell Douglas is operating under the premise that too much support is better than too little. With that philosophy in mind, the company has implemented a FORSCOM Fielding Assistance Plan which provides for approximately 30 company personnel on-site at Ft. Hood from now through the end of 1986 and beyond, if required.

This team, primarily logistical in nature, consists of a manager from the McDonnell Douglas program office and representatives from the tech-

Jerome J. Sullivan serves as the Vice President for Product Support for the McDonnell Douglas Helicopter Company, in Mesa, Arizona.

nical publications, field service, supply support, and maintenance training departments of the company's Product Support Division.

Additional system engineering personnel also are on site and the company is opening a warehouse facility in Killeen, Tex. to support the fielding effort.

The following details the type of support McDonnell Douglas will provide the FORSCOM fielding operation at Ft. Hood:

### Technical publication

In the technical publications area, McDonnell Douglas has completed revisions to all APACHE technical manuals at Ft. Hood in advance of the activation of the attack helicopter units. Company publications people are assisting Army technical manual experts in assuring that an adequate supply of the most current manuals is available as unit training commences.

The technical publications department also will provide supply bulletins to Ft. Hood to accommodate, by aircraft serial number, part number differences that have occurred as a result of recent aircraft engineering changes.

### Field service

The AH-64 field service support at Ft. Hood consists of two teams of field service representatives (FSRs) and one logistics support (supply) FSR. These teams are supplemented with Automatic Test Equipment (ATE) technicians and selected service representatives from subcontractors. An APACHE FSR team is made up of airframe, avionics/electrical, and armament/fire control representatives.

The purpose of the two-team concept is to have one team as an on-site permanent party while the second team works directly with the training unit. Upon completion of training, it's proposed that the second FSR team will deploy with the trained unit to its ultimate location.

### NEXT MONTH

The July 31, 1986 issue of "Army Aviation" will carry the "1986 SPOOF Roster", the biennial roster of the professional and personal listings of AAAA's retired members. The SPOOF acronym stands for the "Society for the Preservation of Old Friendships."

At that time, another APACHE FSR team will be placed on site with the next unit to be trained.

The FSR team maintains a direct line of communication through the McDonnell Douglas product support field service department for technical, engineering, management, and spare parts support.

Periodically, the FSR teams are brought back to the home office to receive updates on the various AH-64 systems to stay current with configuration changes. This updating keeps the APACHE technical representative trained and skilled in order to give the customer the support necessary to keep the APACHE ready to fulfill its mission.

### Supply support

McDonnell Douglas is establishing a supply support facility and warehouse at Ft. Hood with a mission to expedite the flow of major Line Replaceable Units (LRUs) to and from the using activity. This facility will maintain an inventory of major components, selected hardware, and expendables.

On-site supply support personnel will interface with using activities at Ft. Hood as well as with the APACHE Material Fielding Team, McDonnell Douglas Helicopter Company headquarters, and Red River Army Depots to ensure prompt response to resolve any supply support problems which may occur.

### Maintenance training

To support the FORSCOM fielding plan, McDonnell Douglas' training department is conducting a series of maintenance refresher training courses for each activating battalion and will provide training, under a separate contract, to the civilian contractor responsible for maintaining the APACHE fleet at Ft. Hood.

Through March, the Army had accepted more than 75 APACHES into the inventory. McDonnell Douglas Helicopter company's production line is now producing AH-64s at a rate of more than ten a month and will reach a production rate of 12 a month by this July.

The company is dedicated to assisting the Army in assuring that the AH-64 fielding plan is a success. McDonnell Douglas is proud of its continuing role as a key player in the military/industrial team which is providing the U.S. Army with the finest attack helicopter in the world. ■■■■





# TADS/PNVS production at Martin Marietta

by J. Richard Cook

**M**IDNIGHT, Ft. Hood . . . APACHE helicopters hover over the barren landscape at this sprawling Texas Army base. On a training mission, a co-pilot spots tank targets. In minutes, the targets are destroyed by APACHE-launched laser-seeking HELLFIRE missiles.

The aircraft have carried out their mission using the world's most advanced helicopter night navigation and targeting system called the Target Acquisition Designation Sight and Pilot Night Vision Sensor (TADS/PNVS).

The heat-sensing eye penetrates darkness, providing U.S. helicopter forces with a night-fighting capability never before possible.

Without TADS/PNVS, APACHE's effectiveness at night would be impaired. Because of its importance, the system must be kept in top-flight condition in the field. The Army and its maintenance contractor keep TADS/PNVS in the air, and are supported by Martin Marietta Orlando Aerospace (MMOA), the system's contractor.

## Extensive support

Martin Marietta's support extends from the field to the factory. Technical representatives at Ft. Rucker; Ft. Hood; Mesa, Ariz.; Ft. Eustis; and Ft. Gordon help aircraft repairmen keep equipment in top condition.

Martin Marietta Field Repair Centers at Enterprise, Ala.; Killeen, Tex.; and Mesa, Ariz. funnel needed units to the flight line. Our company's plant in Orlando, Fla. is the designated Army Depot and Central Inventory Site (CIS),

J. Richard Cook serves as Vice President, Target Acquisition Designation Sight and Pilot Night Vision Sensor at Martin Marietta Orlando Aerospace.

stocking and repairing parts, monitoring field system requirements, and shifting spare hardware between locations to minimize aircraft downtime.

There has been little aircraft downtime. After 7,800 operating hours, the PNVS System MTBF was 224 hours against a 130 hour requirement. The TADS System MTBF was 67 hours versus a 63 hour requirement.

## Meeting MTBF objectives

Jim Neal, a logistics engineer here at MMOA, indicates that "with the performance to date, meeting mature MTBF objectives is virtually certain."

The system's high availability is due in part to a computerized asset-management system that permits Martin Marietta to respond the same day to requests for line-replaceable units (LRU) and subcomponents.

Frank Cardinale, our Field Support Chief for TADS/PNVS, has a team that tracks 3,250 LRUs installed on 125 aircraft. The status of this hardware is updated daily and kept on computer. Critical part numbers are tracked on a magnetic wall board that spans the length of a 20-foot long control room.

Critical parts are routed quickly to the field by the Central Inventory Site (CIS) controlled by MMOA in Orlando. The supply depot, or CIS, stocks 7,200 different parts for the TADS/PNVS, surrogate trainer PNVS, and training and ground-handling equipment.

A computer system links the CIS with the MMOA repair centers, the Army program office, and Army flight lines. The real-time hookup allows the CIS to ship orders within 24 hours. The CIS center forwards incoming parts in need of repair to the Martin Marietta factory

# Martin Marietta Orlando Aerospace TADS/PNVS Program Management Team



**A. Thomas  
Young**  
President,



**J. Richard  
Cook**  
Vice President  
TADS/PNVS



**William L.  
Hadley**  
Director  
PGSE



**William  
Simonini**  
Director,  
Product  
Assurance



**Anthony  
Bressi**  
Director  
Operations







**Henry E.  
Brakmann**  
Advanced  
Programs  
Manager



**Dale L.  
Cox**  
Program  
Manager,  
TADS/PNVS  
Product Support



**Craig  
Andrews**  
Technical  
Director,  
TADS/PNVS  
Program



**Kenneth L.  
White**  
Manager,  
Integration  
and Test,  
TADS/PNVS



**William  
Leach**  
Manager,  
Business  
Development



**Milton  
Fluker**  
Principal  
Engineer

**Corresponding  
Address:**

**P.O. Box 5837  
Orlando, FL 32855**



**Telephone:  
(305) 356-2000**



or to the appropriate vendor or subcontractor. The CIS also prepares modification kits used at field repair centers to update hardware.

"We're one of the first companies with an online parts depot linked directly to the Army's Project Management Office," according to **Art Shevchenko**, our supply manager for TADS/PNVs.

"The Army knows right away its assets availability, without waiting weeks for paperwork to process through the system."

### Keeping track

The CIS's inventory system tracks hardware by part and serial number. Numbers are logged into the computer system as hardware is sold to the government. The Martin Marietta CIS uses the data base to trace individual components to a particular aircraft.

The computer system also keeps track of dozens of hardware modifications and configurations. The historical data is used to verify the compatibility of spares with a given hardware design in the field. **Chuck Messer**, our Chief, Field Configuration Control, says the system makes it possible

to provision the right parts for the right aircraft.

When a design change occurs, Martin Marietta issues installation procedures and modification kits to field repair centers. Pertinent information about each modification is logged into the computer. To prevent aircraft downtime, technicians at the repair centers modify spare parts when they are sent to the repair center for normal maintenance.

Martin Marietta has an excellent tracking system for controlling hardware in the field. The system tracks all serialized items (approximately 360 items per system) in the field and in repair.

### Flight line assistance

On the flight line at Ft. Rucker and Ft. Hood, Army mechanics replace most LRUs in 15 minutes; however, Martin Marietta flight line personnel are available to help troubleshoot hard-to-fix items. Martin Marietta's flight line representatives help Army supply specialists obtain spare parts if none are currently in stock. Within 24 hours, a spare can be shipped from the factory or from one of the repair centers at Enterprise, Ala.; Killeen, Tex. or Mesa, Ariz.

**Dale Cox**, who heads our TADS/PNVs product support reports that "We know where every spare LRU is at all times, and we can move them around quickly from location to location to keep aircraft flying. As a result, we maintain a very small spares pipeline. That saves the Army a lot of money because they don't have to keep a large quantity of spare parts at each location."

### A gradual Army takeover

Eventually, Martin Marietta will transfer greater responsibility to the Army for TADS/PNVs supply support and repair work. The Army depot at Martin Marietta's plant in Orlando will continue to function as long as required while our MOMA flight line technical representatives will continue to help keep the TADS/PNVs system operating properly. The number of company personnel will gradually diminish as Army personnel become more familiar with the system.

Our primary objective in product support is to keep the APACHE in the air so the Army can train its pilots and field the system at Ft. Hood. Our asset-management, Central Inventory Site, Field Repair Center, technical representatives, and support personnel in the field are all dedicated to that task.

IIII





# GE's T700: Mission ready for the Army's APACHE

by Louis A. Bevilacqua

**P**RODUCTION T700-GE-701s have accumulated more than 25,000 engine flight hours in U.S. Army APACHE Attack Helicopters at Ft. Rucker, Ft. Eustis, and Ft. Hood. The -701 engine, a growth derivative of General Electric's internationally respected T700/CT7 turboshaft engine family, has demonstrated its value to the Army that was the guiding force behind the powerplant's development.

In the areas of reliability and maintainability (R&M), the T700-GE-701 is exceeding all goals and has demonstrated exceptionally high availability. The engine requires no adjustments, scheduled oil changes, or oil sampling, so routine flight line maintenance is very minimal.

## The development strategy

The development strategy for the higher horsepower T700-GE-701 was premised on using incremental increases in temperature and airflow for increased power while preserving as many of the parts and components of the proven, original design as feasible.

Such an approach assured a new powerplant capable of providing mission-mandated features while minimizing development costs and attaining far earlier maturity than would otherwise have been feasible. This experience assures that, after the engine enters production, costs are lower, reflecting economies of scale and experience curve benefits.

Today, Army field experience with the General Electric T700-GE-701 aboard twin-engine McDonnell Douglas APACHES is proving the wisdom of that approach.

Louis A. Bevilacqua is General Manager for the T700 Projects Department of the Aircraft Engine Business Group of the General Electric Company

The engine is giving the aircraft the dependable power that its missions require. The T700-GE-701 is producing 10% more shaft horsepower than the original T700 during intermediate rated power operation and 20% more power for single-engine contingency operation in hot ambient temperature and high-altitude environments.

The T700-GE-701 utilizes much of the same hardware as the original T700-GE-700. The T700 engine family has accumulated more than one million engine flight hours with the -700 also becoming the industry standard for reliability, maintainability, and cost superiority in intermediate size helicopter engines. The high-time T700 engine now exceeds 4,400 engine flight hours.

## High volume production

To date, General Electric has shipped more than 525 T700-GE-701s for production APACHE helicopters. Current plans call for the Army to procure a minimum of 675 APACHE helicopters and 1,500 T700-GE-701 engines, plus modules for the overall program.

Since production began in 1979, General Electric has manufactured more than 2,800 T700 powerplants. Today, these engines power about 925 aircraft operating on four continents in 13 countries. By themselves, these production volumes would be expected to and will provide scale economies. In the case of T700s for the U.S. military services, the Department of Defense (DOD) has also used multi-year procurement to drive down costs even further.

## Multi-year procurement

The U.S. Department of Defense has awarded General Electric a \$272 million increment of a multi-year contract for T700 engines, spare



modules and other services. This award is the first phase of a three-year agreement which is expected to have a total value of approximately \$850 million.

The three-year contract, the second multi-year award for the T700 engine, calls for engine deliveries over the next four years to power four different helicopters for the Army and Navy. The latest multi-year contract will result in substantial savings to the Government from firm, fixed prices with reductions of about 5% per year in then year dollars. U.S government estimates peg savings at about \$103 million compared to the same procurement decided on an annual basis. Such savings are roughly equivalent to the cost of 245 engines.

### A pledge to quality

In pledging the wholehearted support of General Electric's Aircraft Engine Business Group to DOD's second multi-year T700 purchase, **Robert C. Hawkins**, Vice President and General Manager of General Electric's Lynn Aircraft Engine Product Operations, said, "We believe that the multi-year approach to procurement of T700 engines continues to provide significant cost savings to the Government, expansion of the industrial base, expanded competitive procurement, and increased product base stability for improved planning with reduced fluctuations. We recognize this program as a major opportunity to continue the many past GE efforts toward achieving cost superiority for the T700 engines. We have worked closely with our suppliers to maximize their commitment to the multi-year opportunity."

Success of the original T700 and its derivatives has led to requests for still more powerful T700s. General Electric is meeting these needs with the

◆ General Electric Aircraft Engine Group's "Plant III" flexible machining center in Lynn, Massachusetts

same proven strategy it used in developing the T700-GE-701; growth engines will be "drop in" replacements for current production models.

General Electric is presently working on a T700-GE-701C development program which offers a 13% power increase (contingency/SLS) and a 14% power increase (4K/95°) with a maximum ten minute rating over today's T700-GE-701 engine. This new derivative utilizes advanced compressor aerodynamics, an advanced technology high pressure turbine design, improved materials, and enhanced cooling system techniques, and will be fully interchangeable with the T700-GE-701 presently used in the Army's APACHE program.

General Electric is also currently developing a growth engine, designated the CT7-6, which has nearly 20% more power than the T700-GE-701 engine. The CT7-6 is focused on European applications, but is fully interchangeable with today's APACHE engine.

With additional compressor and turbine improvements, the T700 has the potential for a derivative with a shaft horsepower increase of 70% over the original design.

### "Tough and mission ready"

General Electric's T700-GE-701 is delivering to the U.S. Army's APACHE program the high standard of excellence that has made T700s the engine of choice for intermediate size helicopters around the world. Because of General Electric's growth T700 development strategy, high production volumes, and DOD's use of multi-year procurement, the Army is receiving exceptionally high value from its T700-GE-701 engines. The -701 is built tough and mission ready. ■■■■



There's  
No Secret  
to Quality  
Helicopter  
Service. *Just Work*  
*at it for 30 Years*  
*... Like We Have*



**KEYSTONE HELICOPTER SERVICES**

Advancing Helicopter Service for Over 30 Years

1420 Phoenixville Pike • West Chester, PA 19380  
(215) 644-4430 • TWX 510 668 5061

Modifications • Engines • Major Overhaul  
Logistics Support • Engine Test Cell



## 1986 AAAA National Scholarship Award Winners

**The 1986 AAAA National Scholarship—\$8,000 (\$2,000 a year for four years)** Mary G. Herrick, daughter of COL Curtis L. Herrick, Chesterfield, MO. (AAAA Interviewer: COL Wayne W. Wright).

**Robert M. Leich Memorial Scholarship—\$4,000 (\$1,000 year for four years)** Rebecca L. Drake, daughter of LTC Van T. Drake, Alamogordo, NM (2nd Teacher's Report utilized)

**O. Glenn Goodhand Memorial Scholarship—\$4,000 (\$1,000 year for four years)** Lisa M. Knudson, daughter of BG Wayne Knudson, Annandale, VA (AAAA Interviewer: MG Francis J. Toner)

**Joseph E. McDonald Memorial Scholarship—\$4,000 (\$1,000 year for four years)** Richard A. Erich, son of Richard W. Erich, Binghamton, NY (AAAA Interviewer: Rolland Quick)

**William B. Bunker Memorial Scholarship—\$4,000 (\$1,000 year for four years to an Engineering School applicant)** Jema Marie Gonzales, daughter of MG Orlando E. Gonzales, Granite City, IL (No AAAA interview; 2nd Teacher's Report used in lieu of the AAAA interview)

**B. Howard Dean Memorial Scholarship \$2,000 (\$1,000 a year for two years)** (Sponsored by the Monmouth Chapter and limited to the sons and daughters of Chapter members) Christine M. Stuppi, daughter of Charles Stuppi, Iselin, NJ (AAAA Interviewer: COL David S. Grieshop).

**Delbert L. Bristol Memorial Scholarship—\$2,000 (\$1,000 a year for two years)** Mark L. Watson, son of Clinton Watson, Florissant, MO. (AAAA Interviewer: LTC James R. Hoefener, Ret.)

**Rudolph Kahl-Winter Memorial Scholarship—\$2,000 (\$1,000 a year for two years)** Paul L. Howe, son of CPT Paul F. Howe, APO NY 09182 (AAAA Interviewer: MAJ Glen A. Panning)

**Jane Phillips Memorial Scholarship—**

**\$2,000 (\$1,000 a year for two years)** Sheila L. Bonnett, daughter of COL William B. Bonnett, Tacoma, WA (A second Teacher's Report utilized.)

**The Monmouth Chapter Scholarship—\$2,000 (\$1,000 a year for two years)** (Sponsored by the Monmouth Chapter and limited to the sons and daughters of Chapter members) Susan P. Duffy, daughter of John P. Duffy, Colts Neck, NJ (AAAA Interviewer: MAJ Stanley R. Chrzanowski)

**Washington, D.C. Chapter Scholarship \$2,000 (\$1,000 a year for two years)** (Sponsored by the Washington, D.C. Chapter and limited to the sons and daughters of Chapter members) Allen P. Born, son of COL Howard P. Born, Burke, Virginia (AAAA Interviewer: COL Pierre V. Brunelle)

**Jack H. Dibrell Memorial Scholarship \$1,000—**Laura A. Schlicht, daughter of SFC Erwin W. Schlicht, Jr., Ft. Campbell, KY (AAAA Interviewer: LTC Richard R. Walker)

**John C. Geary Memorial Scholarship—\$1,000—**Susan C. Baldwin, daughter of CW4 Franklin D. Baldwin, Ret., Troy, MO (AAAA Interviewer: LTC William L. McCabe)

**Billy R. Hawkins Memorial Scholarship \$1,000—**William M. Brandt, son of MAJ William M. Brandt, Natchitoches, LA (A second Teacher's Report was used in lieu of the AAAA interview)

**The Kenneth K. Kelly Memorial Scholarship—\$1,000;** (Sponsored by the Monmouth Chapter and limited to the sons and daughters of Chapter members) Jeanne Marie Burke, daughter of John J. Burke, Neptune, NJ (AAAA Interviewer: Leonard T. Donnelly)

**The Austin F. Epsaro Memorial Award \$1,000—**Ann Marie Griffiths, daughter of Thomas H. Griffiths, Conklin, NY (AAAA Interviewer: Clyde W. Kennedy)





Mary G.  
Herrick



Rebecca L.  
Drake



Lisa M.  
Knudson



Richard  
A. Erich



Jema Marie  
Gonzales



Christine  
M. Stuppi



Mark L.  
Watson



Paul L.  
Howe



Shlela L.  
Bonnett



Susan P.  
Duffy



Allen  
P. Born



Laura A.  
Schlicht



Susan C.  
Baldwin



William  
M. Brandt



Jeanne Marie  
Burke



Ann Marie  
Griffiths

### AAAA SCHOLARSHIPS

Since 1963, some 301 sons and daughters of AAAA members and deceased members have received \$143,725 in direct scholarship aid and merit awards. Over \$40,000 was awarded in 1986 alone.

Next year, a number of new scholarships will be added. The August-September issue of "Army Aviation" will contain an application form and further details regarding the 1987 AAAA National Scholarships.

# Awards and Honors

## AWARDS

### AAAA CHAPTER—SELECTED "AVIATION SOLDIER / NCO OF THE MONTH"

#### MAY 1986 —

##### Aviation Center Chapter

SGT Gary L. Pauley (NCO)

SP4 Arnold W. Weir (Soldier)

##### Hanau Chapter

PFC Matthew T. Adle

##### Taunus Chapter

SSG Eloy Figueroa

## HONORS

### U.S. ARMY AVIATION CENTER FT. RUCKER, ALABAMA

★ Distinguished Graduate

+ Honor Graduate

**MAY 20, 1986 — Guest Speaker:** COL Charles L. Webb, Deputy Commander for Administration, U.S. Army Aeromedical Center, Ft. Rucker, Alabama.

**Warrant Officer Senior Crs Class 86-2:** CW4 Robert A. Heuber, (class leader).

**MAY 21, 1986 — Guest Speaker:** BG Paul E. Funk, Asst. Commandant, U.S. Army Armor School, Ft. Knox, KY.

**Warrant Officer RW Aviator Class 85-43:**  
★ 2LT Grant D. Smith; + 2LTs Scott A. Jacobsen; Ted E. Clemens; Douglas M. Holsworth; Christopher H. White.



◆ **TOPS IN CLASS — Guest speaker** COL John J. Stanko, Jr. (Ret.), AAAA Secretary-Treasurer and Chief, Aviation Division of the NGB talks with Distinguished Graduates at the USAAVNC at Ft. Rucker, AL. They are: (l-r) Air Force 2LT Tom Currie, Jr., 2LT James Edwards, and WO1 Brian Robinson.



◆ **AAAA USAREUR AWARDS — LTC** Chris Sieving and CSM Robert M. Kanardy accept the AAAA USAREUR Region's Aviation Unit of the Year Award for the 501st Aviation Battalion, at the region's annual Awards Banquet held March 22nd at the Abrams Hotel in Garmisch, Germany.

Other unit awardees were: Aviation Support Unit of the Year: B Co, 70th Transportation Battalion (AVIM); and the HHD, 59th ATC Battalion, was awarded the Aviation Detachment of the Year Award.

Individual awardees were: Aviator of

the Year: CW4 Charles L. Pettijohn, B Co, 1st MI Battalion; Aviation Soldier of the Year: SSG Kenneth G. Rich, 503d Aviation Battalion; Aviation Safety Award: CW4 Billy D. Neal, 70th Transportation Battalion (AVIM); Spouse of the Year: Mrs. Anita Fowler, 180th Aviation Company and Department of the Army Civilian of the Year: Juergen Welz, of the 70th Transportation Battalion.

This year's AAAA USAREUR convention, held in the city's Kongresshaus, was the 26th held in Europe and had the largest attendance to date.

## Command & Staff

**Major General Charles F. Drenz**, as Commanding General, U.S. Army Test and Evaluation Command and Aberdeen Proving Ground, Maryland.

**Major General Charles E. Teeter**, to Joint U. S. Military Assistance Group, Philippines, APO S.F.

**Brigadier General John D. Robinson**, as Deputy Commanding General, U.S. Army TRADOC Analysis Center, Ft. Leavenworth, Kansas.

**Brigadier General Richard E. Stephenson**, as Commanding General, U.S. Army Aviation Systems Command, St. Louis, Missouri.

**Brigadier General William H. Forster**, as Deputy Commanding General, U.S. Army Aviation Systems Command, St. Louis, Missouri.

**Colonel Willis R. Bunting**, as School Secretary, U.S. Army Aviation Center, Ft. Rucker, Alabama.

**Colonel J. David Carothers**, as TRADOC Aviation Officer, Hq, TRADOC, Ft. Monroe, Virginia.

**Colonel Terence M. Henry**, as Chief of Staff, 2d Infantry Division, APO S.F.

**Colonel Jack L. Turecek**, as Chief of Staff, 24th Infantry Division, Ft. Stewart, Georgia.



# International

## Military Assistance: U.S. Army Aviation is active in Turkey

ANKARA, TURKEY — Greetings from the Republic of Turkey, the easternmost member of the NATO alliance, and a land of rugged beauty and history. We welcome this opportunity to update the AAAA membership on the important role that Army Aviation is playing in this country so vital to world stability.

In Turkey, Army Aviation provides aircraft support to our missions by way of the C12 and UH-1H. These aircraft fly missions of command and control, staff transport, cargo and occasionally the critical mission of medical evacuation. From the coasts of the Aegean and Black Seas to the rugged mountains of eastern Turkey, and the coast of the Mediterranean they meet the task. But the aircraft are only part of the team; as always the key ingredient that ensures a safe, professional accomplishment of the mission is the crew.

Izmir is the home for the LANDSOUTHEAST (LSE) Aviation Detachment, commanded by LTC Phillip Szymanowicz. Their mission is to provide support to the NATO Headquarters, (LANDSOUTHEAST and 6th ATAF) located in Izmir. The pilots, crewchiefs, and operations personnel of LSE are among the most experienced aviation personnel in the Army today. With their many years of flight experience, both fixed and rotary, as well as their expertise

in the areas of standardization, safety, and maintenance they more than meet the challenge of flying in Turkey and its environment. Army Aviation is well represented on the staff at the NATO Headquarters, where Senior and Master aviators are utilizing their experience and knowledge of aviation to assist in formulating and implementing the plans and policies for the defense of NATO.

On the coast of the Black Sea is where you'll find Sinop AAF, commanded by MAJ Hubert Gibson. The aviation personnel work long and hard hours in support of the INSCOM facility there.



**A Report  
by  
CW4  
Michael  
D.  
McDonald**

Though few in number (two commissioned officers, three Chief Warrant Officers, and seven enlisted personnel) mission requirements are met with tireless dedication and professionalism. Because of Sinop's remoteness and lack of commercial air service, the aviation section provides a lifeline, if you will, to the outside world through the transport of mail, essential parts, and personnel movements.

Here in Ankara, the capital of Turkey, we have the HQ, JUSMMAT (Joint United States Military Mission for Aid to Turkey).

JUSMMAT personnel fly throughout Turkey to carry out their mission of assisting Turkey and also acting as the coordinators of US activities for EUCOM and the Department of Defense. On the staff are two Air Force, one Navy and one Army aviator who fly the C12 as an additional duty.

One of the key programs in the modernization of the Turkish Armed Forces is the UH-1H Co-Assembly Program. Responsibility for this program is a challenge to the knowledge and experience of Major Ken Blase, the program manager. When he is able to take time Major Blase serves the additional duty as a C12 pilot.

As Chief of the Aviation Division, and our only full-time Army aviator, I'm responsible for all flight operations to include scheduling, safety, standardization, and maintenance COR. As the only Flight Examiner in the Ankara area, I'm also responsible for evaluating not only JUSMMAT aviators, but those pilots assigned to the USDAO and TUSLOG as well. This is a unique position that utilizes the many years of flight experience, diversified assignments and the schooling that the AWO receives in his career.

Turkey is an exciting and challenging assignment for the professional Army aviator. The mission we perform is real, it is vital, and it is self-rewarding. Living in Turkey is much more than a duty, it is a privilege.

— CW4 Michael D. McDonald  
Chief, Aviation Division  
HQ, JUSMMAT

# Operations

## Light Infantry Combat Aviation Brigade says: NTC OPFOR Beware!

FORT ORD, CALIF. — The Combat Aviation Brigade, 7th Infantry Division (Light), celebrated its first birthday with a major training success.

A task force organized around the 2nd Squadron (Reconnaissance), 10th Cavalry, supported the Division's Second Brigade during a deployment to the National Training Center at Fort Irwin, California. Task Force Buffalo, named after the Squadron's emblem, was commanded by LTC Joseph J. Currin. The task force consisted of elements from all units in the Combat Aviation Brigade. In addition to learning how to live and fight in desert terrain, the soldiers of the task force also learned many valuable lessons about operating as members of a large combined arms team.

Ground elements under CPT Mark B. Chakwin and air elements commanded by CPT E.J. Sinclair provided highly effective zone and route reconnaissance during the movement to contact. They screened forward during the defensive phases of the exercise.

MAJ John L. Otte, commander of the UH-60 company, kept all of his 15 aircraft flyable throughout the month-long deployment despite harsh desert conditions. His assault helicopters, the air cavalry troop, and an engineer platoon combined to successfully execute a NVG

deep raid achieving total surprise and suffering no "losses." Not only was the OPFOR Regimental TOC attacked, but during movement to and from the objective an OPFOR armor unit as well as the OPFOR trains were located and destroyed.

The deep rapid caused massive confusion in the enemy rear area forcing the OPFOR commander to pull armor and infantry units from defensive positions. This eased the friendly light infantry battalion's problem of attacking an OPFOR strong point.



A Report  
by  
Colonel  
Jerry  
W.  
Childers

Perhaps the most exciting moments came when the air cavalry troop, the attached attack helicopter company commanded by CPT Kristopher L. Andrews, and Air Force A-10s worked together to surprise the OPFOR attackers "killing" 20 armor vehicles at the "cost" of one helicopter.

The task force aviation units, equipped with MILES laser weapons simulation systems, moved onto the desert floor under Night Vision Goggles. Our attack helicopters were in position hours before the OPFOR began their attack. The light fighter aviators began engaging the enemy well forward and brought constant fire to

bear on the enemy as he approached the friendly engagement areas. At daybreak the A-10s joined the fight under CPT Sinclair's direction. The efforts of the task force were highly commended by the National Training Center staff as one of the best uses of aviation at NTC to date.

The 7ID (L) continues to prepare for its final Light Infantry Division certification exercise, Celtic Cross IV, which will take place in August, 1986.

A major exercise involving up to 30,000 soldiers, Celtic Cross IV will be conducted at Ft. Hunter-Liggett and nearby Camp Roberts, California. The TRADOC community will observe all aspects of this division level force on force exercise to validate the design of the Light Division.

The certification process has been ongoing for several months at infantry battalion and brigade level, which has required almost continuous field duty for many Aviation Brigade soldiers.

During Celtic Cross IV the Combat Aviation Brigade will be observed in great detail to determine if its organization, equipment and manning are correct. Upon completion of the exercise TRADOC will adjust the design to fix noted shortfalls. The final design will be used to organize other divisions into the light Configuration.

My next article will report on the outcome of Celtic Cross IV.

—COL Jerry W. Childers  
Cdr, Combat Avn Bde  
7th Infantry Division (Light)



### The 307th Attack Helicopter Battalion studies battle tactics

FT. ORD, CA — The 307th Attack Helicopter Battalion is a recently re-activated unit in the 7th Infantry Division, the Army's first Light Division. The Battalion is comprised of a Headquarters and Service Company and three Attack Helicopter Companies, each consisting of seven AH-1's and four OH-58's.

The Battalion's mission as per FC 71-101 (Light Infantry Division Operations), states:

"The Attack Helicopter Battalion provides three flexible and lethal attack companies to destroy enemy formations and provide fire support to infantry units. Their long-range capabilities and responsiveness provide the division commander with concentrated firepower when and where it is needed."

The Light Division doctrine is semi-defined, still in an emergent stage. The major emphasis has been placed on the *Light Division in a Low Intensity Environment*.

Due to the lack of current aviation doctrine on the employment of the Attack Helicopter Battalion in a low intensity conflict, training within the 307th AHB has been based on the following assumptions derived from attack helicopter operations during the Vietnam era:

- 1) Non-linear battlefield.
- 2) Enemy will not have radar guided anti-aircraft weapons.
- 3) Enemy will have medium and heavy anti-aircraft machine guns, such as the 12.7 mm,

guns, such as the 12.7mm, 14.5mm and 23mm.

4) Enemy will have limited shoulder-fired surface-to-air heat-seeking missiles, such as the SA-7.

5) Most likely areas of operation will be mountainous, heavily vegetated, tropical, or a combination of all the above.

6) Initially, we will have little if any close air support.

7) We will have limited light field artillery support.

In order to survive in this type of environment there are certain guidelines that scout and attack helicopters should follow. The twelve cardinal rules as per FM 1-40, Sept. 1971, have been revised and incorporated in our training doctrine.

- 1) Avoid target overflight.
- 2) Avoid flight in the "dead man's zone" (50-100 feet above ground level).
- 3) Make a high reconnaissance first.
- 4) Avoid flying the 180 wing positions.
- 5) Avoid flying parallel to terrain features.
- 6) Always assume the area is hot.
- 7) Do not fire until troops are positively identified as enemy troops.
- 8) Avoid firing over the heads of friendly troops.
- 9) Conserve ordnance and use it wisely.
- 10) Know the situation.
- 11) Brief every member of your command.
- 12) Take your time.

It's envisioned that attack helicopters will perform three basic missions in the low intensity scenario: close air support,

aerial escort, and reconnaissance and security.

These missions may occasionally be performed concurrently. The attack helicopter commander or fire team leader must be prepared to perform any one of these missions on short notice:

The factors ultimately affecting the employment of attack helicopters are METTF and the established (cardinal) rules. Also, development of Night Vision Goggle tactics and the use of the Spectrolab Night Sun Device (IR), mounted on the OH-58, has greatly enhanced mission success and survivability and increased the capability to defeat the enemy at night.

Local training has proven successful with the Scouts operating below 50 feet AGL and COBRAs at altitude. Diving fire greatly improves the accuracy of rocket and turret fire on enemy locations.

It's not always possible to follow the established rules precisely; however, as with the factors of METTF, these rules must be weighed and then deviated from only when necessary to accomplish the mission.

The 12 established rules are combat-proven guides that enhance mission success and increase survivability in the combat environment.

Please contact us if you have questions, comments, and especially recommendations involving low intensity combat aviation experiences.

— CPT Mark J. McKearn  
CW3 Larry J. Carrillo  
HSC, 307th AHB  
Ft. Ord, California

# Procurement

## AVSCOM: Promoting greater competition in contract bidding

ST. LOUIS, MO. — Major changes have occurred within the last three years in the way the Army Aviation Systems Command (AVSCOM) conducts its acquisition business.

The AMC Spare Parts Review Initiatives (SPRINTs) followed by the Competition in Contracting Act (CICA) of 1984 (Public Law 98-369) are significant drivers of change. As of 1 April 1985, we are required to provide for "full and open" competition among responsible offerors unless a statutory exception permits other than competitive procurement.

For the first time, noncompetitive contracting without authority violates statute. We may not award a noncompetitive contract without technical, requirements, and contracting personnel certifying that the data supporting their noncompetitive justification is accurate and complete and has obtained approval from the Competition Advocate locally and at higher levels in accordance with established dollar thresholds.

The content of sole source justifications is more comprehensive and detailed than ever before. It must provide sufficient detail to constitute a clear and convincing demonstration of the need to contract on other than a full and open competitive basis. But of more importance is the need to describe steps

being taken to achieve competition in future acquisitions of the same or related supplies or services. This future commitment to move to competition is key.

We must document our plans for developing competition. This requires coordinated and in-depth advance acquisition planning to ensure that future procurement actions do not fall victim to being inappropriately executed as noncompetitive contract requirements. There is no question that it is going to be more difficult but, more importantly, it will be more time consuming to justify and obtain approval for noncompetitive procurements.



A Report  
by  
Annamaria  
Przygoda

When these items are not improved for the next buy, time delays again will appear in the requirements execution/contracting cycle. This alone should be the management incentive to compete rather than justify. In order to avoid the noncompetitive contracting and the annual acquisition delays, AVSCOM has placed increased emphasis on its breakout program. Obviously, breakout to competition reaps the benefits of lower prices, but the bottom line is that future procurements can be accomplished expeditiously with less money tied

up in the acquisition pipeline, making more parts available for requisitions by the user.

By tapping the market place through breakout actions, we open up our requirements responsibility to industry. As might be expected from the exclusion of competitive parts from the screening process, items which have been broken out competitively experience shorter administrative leadtime (ALT). What is a surprise, from a sample of parts moved from sole source to competition, is that these parts also experience shorter production leadtime (PLT).

Tapping the market place saves in-house as well as production time, not just money. Saving delivery time between requirement identification and fielding can be a crucial factor in maintaining an excellent Army Aviation readiness posture.

If competition is critical to aviation acquisition, just what are the incentives AVSCOM uses to tap the market place? One such innovation is making every effort to reduce proprietary data and sole source design in the forefront of new development contracts and the initial stockage of parts. If this cannot be avoided, as a minimum, the government will require an agreement that the government will control source design or proprietary data after an agreed upon timeframe.

The contractor will also be required to provide the actual vendor part numbers and manufacturer's code in lieu of (Procurement—Cont. on Page 55)



# Safety

## Taking the long view of Safety in Army Aviation Today ...

FT. RUCKER, AL — To understand where we are in aviation safety today, we need to take a look at where we've been.

For an historical view of Army aviation safety, we go back to the year 1958 — the year we first began recording Armywide aircraft accident data.

For every 100,000 hours flown in 1958, we had 54.3 major accidents. It took a lot of years to get the rate down to 26 and a few more to get below 22.

In 1980, the Army changed its accident classification criteria from major and minor accidents, incidents, forced landings, and precautionary landings to Class A, B, C, D, and E mishaps. This was done to put the Army in compliance with Department of Defense criteria for classifying mishaps and to provide a standard for valid comparison of Army mishap experience with that of the other services.

By 1982, the Class A accident rate was reduced to 3.23. In FY 85, the rate was 3.0, and it was down to 2.65 for the first half of FY 86. The Class A, B, and C rate at the end of the first half was 9.22.

The average cost of a Class A aircraft accident in FY 82 was just under a million dollars. By the end of FY 85, the cost had risen to one and three-quarter million dollars. Today, we are flying aircraft that cost \$5 million a copy, and with the sophisti-

cated APACHE coming on line, the cost of Army aircraft accidents will skyrocket. Every loss due to an aircraft accident directly impacts total Army readiness.

In October of this fiscal year, **Gen. John A. Wickham, Jr.**, Army Chief of Staff, endorsed SafeArmy 1990, a five-year plan for improving Army safety performance, and directed that it be implemented as the keystone of a revitalized Army Safety Program.



**A Report by Colonel Albert E. Hervey**

SafeArmy 1990 establishes a five-percent reduction goal, based on FY 85, in Army aircraft accidents for FY 86 and each of the next four years. This means that the Army must reduce its Class A through C aircraft accidents to 107 by the end of 1990.

The five-percent reduction goal for FY 86 established a ceiling of no more than 136 accidents for the year.

The SafeArmy 1990 goal is for Class A through C accidents rather than Class A accidents alone. Class A through C accident trends are a more valid measure of aviation safety performance since accident prevention programs are targeted at accident causes rather than damage classifications. The causes are generally the same

regardless of classification.

The Army met its SafeArmy 1990 five-percent reduction goal in aviation accidents during the first quarter of this year. The goal was narrowly missed the second quarter, primarily because of an increase in Class C accidents. The ceiling for second quarter accidents was 35; actual accidents totaled 40. Cumulatively for the first half of FY 86, the Army was one one accident over its Class A through C SafeArmy 1990 accident ceiling of 69.

If we continue to meet our SafeArmy 1990 goal through fiscal 90, we will have the lowest Class A through C rate — 4.6 — since 1975, when the rate was 7.1. The first half's success is an indication it can be done. Credit for this success goes to all those in Army Aviation who have enthusiastically accepted the challenge of SafeArmy 1990 and implemented positive prevention programs.

With continued leadership involvement up and down the chain of command, I am confident we can achieve our SafeArmy 1990 aviation safety goal. Certainly this will result in the saving of lives of aircrews and passengers and millions of dollars in equipment — and greatly increase the total combat readiness of the Army.

As **Gen. John Wickham** has said, "If we're serious about readiness, we've got to be serious about safety."

— **COL A.E. Hervey, Jr.**  
*Deputy Director of Army Safety & Commander, U.S. Army Safety Center*

# R & D

## Corps of Engineers: Airland Battlefield Environment Program

VICKSBURG, MS. — When someone mentions the Corps of Engineers people conjure up visions of dams, new housing areas, or mine detection. Another important function is its Army Staff responsibility for Environmental Sciences Research and Development activities. Under this hat the Corps is looking at how the environment affects friendly and threat operations through the Airland Battlefield Environment (ALBE) program directed by the Directorate of Research and Development.

Aviators probably have as much concern as anyone about the interaction between equipment, operations, and the environment. The environment will determine how aviation fights. One of the ALBE program's goals is to develop Tactical Decision Aids (TDA's) that will assist the battlefield commander in employing his weapon systems and operational concepts to maximize their capabilities in light of environmental factors. A second program goal is to provide the R&D community with a capability to assess, through modeling and simulation, environmental effects on developmental systems and operations.

The ALBE program is developing decision aids within five general categories: Ground Mobility, Countermobility, NBC, Weapon System performance, and Army Aviation. Within

Weapon System Performance the affects of terrain, the atmosphere, and natural and manmade obscurants on the effectiveness of infrared and millimeter wave sighting systems and target designators is considered. Under given environmental conditions, a TDA in this category will provide information on the optimum altitude from which to fire and whether to lock-on before or after missile launch to achieve the greatest probability of a hit.



**A Report  
by  
Major  
Robert  
P.  
Petersen**

Similar information can also be determined for threat systems. Having the effectiveness of his opponent's systems under specified environmental conditions readily available will let the commander know how close he can get to a target without himself being acquired as a target. This also has applicability in the R&D environment as we test our developmental concepts and systems against threat capabilities.

One component of the Army Aviation category that has already assisted the R&D community is the Helicopter Mission Survivability (HELMS) model. This helicopter survivability model was used as input for the LHX Trade-Off Analysis (TOA). The model simulates a

helicopter flying a specified route under low-level, contour, or nap-of-earth flight conditions using the specific helicopter flight dynamics with a given threat weapon system laydown. Among the many outputs provided is the number of weapons acquiring the aircraft at any one time, the length of time of acquisition, and the instances where time was sufficient for the weapon to lock-on and fire.

While this ALBE product has played one role already, it is easy to see possible extensions. In the R&D process, the effectiveness of aerial weapons systems at acquiring targets could be examined as could the effectiveness of friendly air defense against threat helicopters. Field commanders could rapidly evaluate flight routes to deep battle targets given threat weapon laydown. At several million dollars a copy, helicopter survivability becomes a big issue!

Now that Army Aviation is established as a maneuver element, aviation commanders will also need to consider factors affecting the ground-based components of their task forces. Therefore consideration must be given ground mobility, countermobility, and NBC in the decision-making process. In all these areas, the Corps of Engineers is trying to make that process more efficient and take maximum advantage of the environment as a combat multiplier in the fight against a numerically superior threat force.

—MAJ Robert P. Petersen  
ALBE R&D Coordinator  
USA Corps of Engineers



---

## Training (Continued)

---

However, in terms of timing and the absolute impact of failure, other training techniques are considerably more cost effective and desirable.

The AH-64 APACHE Combat Mission Simulator (CMS) provides just such a cost effective and desirable training alternative, while maintaining the high level of stress and workload associated with combat.

As you can see, it's a full 14 weeks of training with no slack time, and in this period, we produce the best attack pilots in the world. The course is open to student critiques and suggestions from the school's IP/SIPs.

With Ft. Hood fielding attack helicopter battalions, the feedback from this post will help to improve the institutional training base.

That leads us to the last subject: the "B" model AH-64. The Army is currently working on an Organization and Operation Plan (O&O), plus a Required Operational Capability (ROC) document. The "B" model would incorporate technology advances, such as an integrated cockpit (glass cockpit) and an air-to-air missile system.

We'll close with a quote made by **General Edward C. Meyer**, former Chief of Staff, U.S. Army. At an April, 1986 Aviation Ball at Ft. Rucker, he stated, "If I had to do it again I would do it as an attack pilot and never let anyone get me out of the business." ■■■■

---

## Procurement (Continued)

---

his own part number. This will eliminate many parts from entering the Army inventory in a sole source posture. For older systems another AVSCOM ongoing effort is the "22 cent solution", or as we know it, the Postage Stamp Persuasion Program (PSP). Under this effort, challenges are made to industry in the form of a simple request by letter to contractors, asking them to remove questionable proprietary legends from technical drawings in hopes of creating a favorable breakout posture. We hope and expect industry to cooperate in our supply system need to tap the market place by providing relief and support to us now after many years of sole source awards. It is time to break free the glut of sole source dollars and spread competitive dollars to an expanded industrial base.

Competition is the law. It may be a government applicable statute, but we like to say it's the "Law of the Land". Why? Because the government cannot embrace the long range effect of competition without the complete support and cooperation of industry. Competition is equally applicable to industry as it is to the government if they desire to maintain the government business base. Its intent is to spread our business over a larger industrial base and reap the benefits of dollar savings. That unspent portion of "the pot", saved by letting the market place determine the prices, will allow us to buy more parts that are presently unfunded in our budgets. Readiness will thrive under the improved acquisition cycle processing time as well as benefit from the lower prices ensured by the market place. The law and our AMC/AVSCOM efforts will expand our industrial base and establish a system of checks and balances to ensure the continued improvement to the management of public funds.

— *Annamaria Przygoda, Opns Research Analyst, Competition Advocacy & Spares Management Office*

## Maintenance Test Flight Evaluators

The first Worldwide Maintenance Test Flight Evaluator Seminar was hosted by the U.S. Army Aviation Logistics School on 21-25 April. It provided 101 maintenance test pilots and aviation logisticians (from every major Army command including Europe, Hawaii, Panama, Korea, and Alaska) with the most up-to-date information available concerning test flight manuals, test flight procedures, and the aircraft they operate. The Army's flight standardization program, designed to assist commanders at all levels to improve unit readiness, aviation safety and professionalism through the use of standardization procedures and techniques, was a major focus.

**Joseph P. Cribbins**, from ODCSLOG, emphasized the role of aviation logisticians in supporting the Army's Aviation Modernization Program, while **MG Ellis D. Parker**, CG USAANVC, described the blueprint for Army Aviation in the future, emerging technology, and the importance of innovation, professionalism, and aviation safety.



---

# A MICROCOSM

(CONTINUED FROM PAGE 2)

---

terdependencies that exist between Army Aviation and other key elements of the force readiness equation.

Let me briefly reiterate some of these key linkages, as they must exist between and among Army Aviation, ground forces, modernized systems, quality people, and those who support these programs.

First, the requirements of Air/Land Battle Doctrine make Army Aviation more than just a "partner" on the Combined Arms team. Rather, Army Aviation has become a crucial — indeed, an indispensable element in the Army's ability to go to war as part of a joint force to execute the Air/Land Battle.

Without going into a heavy doctrinal treatment, I would simply remind you that Air/Land Battle Doctrine — which also happens to be the closest thing we have to joint doctrine today — envisions enormously complex, potentially high risk operations executed at high operational tempos on an increasingly non-linear battlefield.

## Careful synchronization

The joint force commander's capability to execute Air/Land Battle hinges on thoroughly trained, properly equipped, carefully synchronized, skillfully led service components—Army, Air Force, and—yes, Navy forces,— that can adhere to and exploit the tenets of initiative, depth, agility, and synchronization. I suggest to you that it is not possible to see deep, attack deep, and achieve the high intensity of repeated operations demanded upon the modern battlefield without the special capabilities of Army Aviation.

Within the heavy corps, Air Cavalry units, because of their greater mobility, can perform reconnaissance and security missions over larger areas in shorter periods of time than can ground troops. Attack helicopter units are essential to provide quick reaction anti-armor firepower and to act as maneuver units in their own right, on both offense and defense.

Combat support aviation units provide a rapid, mobile air assault capability and critical combat service support to move artillery and supplies to forward areas on short notice. In other words, for the heavy corps, the firepower, battlefield mobility,

and combat lift capability of Army Aviation are integral, essential parts of the combined arms and joint operation.

In the light corps, the importance of these Army Aviation functions is magnified manyfold, as a means of compensation for the relative lightness, lack of other battlefield mobility, and austerity of both firepower and sustainment of the ground forces. In short, the successful integration of Army Aviation with ground forces is as vital to the maneuver force commander's capabilities as is the broader requirement for synchronization of service component capabilities in the operations of the joint force commander.

Another important linkage, in the ability of Army Aviation to respond to the requirements of Air/Land Battle, is that it depends heavily on modernized systems and skilled, dedicated people. In regard to people — the officers, warrant officers, soldiers, and civilians who make up the aviation community — the issue of their current skill and dedication is not in doubt.

Let's face it: high quality, dedicated personnel are essential in an activity where the margin for error is small and the consequences of failure are immediate and often fatal — even in peacetime. I can think of no finer examples of what aviation personnel can be than the individual and unit award winners recognized here yesterday and this evening.

## Material modernization

The other part of the Army Aviation equation involves modernization. Your convention displays and discussions these last three days have highlighted the key material aspects of the modernization and expansion program for Army Aviation, involving both the redesign of aviation unit structure and technological improvements of aircraft systems, such as AHIP, CH-47D, APACHE, and BLACK HAWK.

It is clear, on the one hand, that these modernization initiatives involve big bucks. It is also clear, on the other, that these modernization initiatives are absolutely vital. Not only for providing combined arms and joint forces with increased firepower, mobility, and lift, but also for improved command and control, maintainability, and deployability. If the program for expansion and modernization of Army Aviation is permitted to continue essentially on track, without system kills or stretch-outs, the ability of aviation to carry out its



extensive modern battlefield functions will be greatly enhanced.

But the enormous resources required for modernization, and the professional incentives necessary to retain high quality people, will increasingly pose a problem in the era of Gramm-Rudman-Hollings.

That leads me to a third and final linkage that I want to mention tonight. The timely, efficient procurement of modernized equipment and the retention of high-quality aviation personnel depend totally on direct and continuous support for the aviation program, inside and outside the Army. Internally, the Army must create and sustain the kind of environment that not only attracts talented individuals to the ranks of Army Aviation, but also continues to meld together the components of the active, Guard, and Reserve Forces into a truly total Army Aviation force.

From what I have been able to see, to date, the Aviation branch has performed credibly in its relatively new role as a proponent for aviation.

### **Industry support**

Beyond this essential internal climate, however, is the necessity for the kind of external support provided by such organizations as the AAAA and the aerospace industries represented here this evening. I must say that few branches of the Army enjoy the degree of understanding and support from industry that Army Aviation receives from you through this association. I wish the American public could be made to understand that such an association is not only good for this country economically, but absolutely essential if we are to achieve any sort of real industrial preparedness for mobilization.

Finally, in this era of great public concern and congressional debate over defense spending and budget deficits, the external support most essential is that of the Congress in providing resources to fund the President's program, not just for Aviation, but for a modernized, ready defense posture across-the-board.

Now I know that, in the course of this convention, you have already considered the potential impacts of budget and program cuts, and this is not the time nor the place to extend that line of dialogue. But I will leave you my view of what must be done, in any case — by you, by me, by all of us — to sustain the momentum of Army Aviation development and improvement.

**Similar purchase  
more than 12,000  
aviators made in  
15 years?**

unification and jointness, both within the Army and among the services. This is a way — an achievable, effective way — to actually get more "bang" from increasingly limited defense bucks. The Army must continue to take the lead in this efforts — it has the most to gain or lose from success or failure in the push for "greater jointness."

### **Our most precious resource**

Finally, we must work incessantly and with a sense of conviction to maintain the high quality of the Army's and Army Aviation's most precious resources — its people. Through training, through teaching, through leading, and through caring for our people, each and every one of us, military and civilian, must enable our soldiers and their families to realize their fullest potential — to truly be all they can be.

With high quality people, almost anything that is necessary can be done. Without enough good people, very little can be done, either to preserve the Army's near term readiness, or to build towards long term improvements in its capabilities.

I am personally confident that, in the end, the Army and the Congress will pursue a course of wisdom in regard to Army Aviation.

I see a great future for Army Aviation, and the AAAA can — as it always has — play a key role in gaining and maintaining the internal and external support so essential for Army Aviation and the Army to stay the course.

Let me close by thanking you for permitting Jane and me to share in your festivities — festivities, incidentally, that are worthy of the finest traditions of aviators. Thank you very much for a grand evening. IIII

## A MICROCOSM (CONTINUED FROM PAGE 2)

dependencies that exist between Army Aviation and other key elements of the force readiness equation.

Let me briefly reiterate some of these key messages, as they must exist between and among my Aviation, ground forces, modernized systems, quality people, and those who support these programs.

First, the requirements of Air/Land Battle Doctrine make Army Aviation more than just a "partner" on the Combined Arms team. Rather, Army Aviation has become a crucial — indeed, an indispensable element in the Army's ability to

### Maj. Generals

TEETER, Charles E.  
JUSMAG-Phil  
APO SF 96528

### Brig. Generals

ALLEN, David J.  
HHC, 2nd ID, Attn: ADC(S)  
APO SF 96224  
HOOPER, Lynn C.  
Harvard U, 1737 Cambridge St.  
Cambridge, MA 02138  
KNUDSON, Wayne C.  
Hq. USSPACECOM, J5  
Peterson AFB, CO 80914

### Colonels

BROWN, Robert E.  
HHC, TRADOC  
Fort Monroe, VA 23651  
BUNTING, Willis R.  
52 Red Cloud Road  
Fort Rucker, AL 36360  
COUCH, Jacob B. Jr.  
Cdr, 101st Avn Gp (Cbt)  
Fort Campbell, KY 42223  
GOLDING, Willard E.  
12th Avn Group  
APO NY 09457  
HENRY, Terence M.  
Gds Box 372  
APO SF 96301  
HIGGINBOTHAM, James L.  
46 Ripley Drive  
Redstone Arsenal, AL 35808  
PATLA, N.I.  
37 Champagne Drive  
Lake St. Louis, MO 63367

### Lt. Colonels

ALEXANDER, Jimmy D.  
549 Graham  
P1 Sam Houston, TX 78234  
BRANHAM, Terry W.  
9118 Tiffany Part Ct  
Springfield, VA 22152  
CANON, Charles M.  
Hq. USEUCOM, Box 422  
APO NY 09128  
DICK, John H.  
1716 Monticello Drive  
St. Louis, MO 63138  
GEOGHAGAN, Michael S.  
103 Mazak Court  
Fort Bragg, NC 28307

### Lt. Colonels

HARMES, Michael H.  
200 TAMMC Box 137  
APO NY 09052  
HOGAN, Kenneth R.  
4965 Oak Lane  
Gurnee, IL 60031  
HUIZI, Richard A.  
P.O. Box 33421  
Fort Lewis, WA 98433  
SENDER, Theodore T.  
US Mission To NATO  
APO NY 09687  
SIEVING, Chris  
17 Gregg  
Fort Rucker, AL 36362  
WALDRAN, Cook M.  
10 Georgian Terrace  
Midlane City, AL 36350  
WALKER, Eddie G.  
1733-D S.W. 318th Place  
Federal Way, WA 98023

### Majors

BLASE, Kenneth M.  
Hqs JUSMAT, Box 1509  
APO NY 09254  
BOWEN, Thomas W. Jr.  
132 Bailey Drive  
Grafton, VA 23692  
CHRZANOWSKI, Stanley R.  
13703 Southernwood Court  
Fayetteville, VA 22021  
CLOUTIER, Marc G.  
3315 Sacramento St., Ste. 145  
San Francisco, CA 94118  
DONAHUE, Joseph C.  
55th TAMC  
APO NY 09185  
FOWLER, Bradford L.  
16th Avn Det  
APO NY 09028  
GOWER, Daniel W. Jr.  
215 Sandrecre  
Enterprise, AL 36360  
HILLS, S. W.  
HHS 1st MI Bn (AE)  
APO NY 09457  
HOLLIS, Michael P.  
HHC, 63rd Sig Bn  
APO NY 09189  
KROPP, Carl J.  
223 West Hardin  
Findlay, OH 45840  
MARTINEZ, Ruperto R.  
10812 Paynes Church Drive  
Fairfax, VA 22032

### Majors

McELWEE, William  
8951 N. Oracle Road, #216  
Tucson, AZ 85704  
MITCHELL, Bryan D.  
4013 A Ozmun  
Lawton, OK 73506  
REDFERN, John E. III  
25th Avn Co (Corps), PO Box 12  
APO NY 09081  
STUDNICKA, Donald F.  
HHC 11th Avn Gp (Cbt) Box 282  
APO NY 09025  
THOMSON, Robert B.  
Rte 1, Box 4498B, Shroud Road  
Grain Valley, MO 64029  
WHATLEY, Gregory B.  
JUSMAG-Thai, Box 56  
APO SF 96346  
WHITEHEAD, Erwin E.  
201 Froshville Drive  
Wintersville, OH 43952

### Captains

ARCHAMBAULT, Raoul III  
134 New London Avenue  
West Warwick, RI 02893  
ATKINS, Frank G.  
Box 34  
Clarksville, TN 37041  
BARFIELD, Walter R.  
511 E. 52nd Street  
Savannah, GA 31405  
BLACKWELL, Jesse B. Jr.  
Box 301  
Fort Rucker, AL 36362  
BOWMAN, Sherry L.  
2 Steller Parkway  
Chandler, AZ 85224  
CAREY, Steven C.  
314 A Bataan Road  
Fort Lee, VA 23801  
CLEMENSES, Duncan S.  
6407 Forest Road  
Cheverly, MD 20785  
CONRAD, William B.  
3071 Club House Circle  
Coita Mesa, CA 90286  
CORNETT, Timothy R.  
B Co, 2nd Avn Bn  
APO SF 96224  
DELANE, Clark M.  
USDAO-Islamabad, State Dept.  
Washington, DC 20520  
DILLON, Michael S.  
804 Walker Road  
Ozark, AL 36360  
DIXON, Jeffrey L.  
7328 B. Gardner Hills  
Fort Campbell, KY 42223  
DUNCAN, Max B.  
42 Palm Avenue  
San Francisco, CA 94118  
ELLIS, Billy R.  
507 North Hampton Road  
Fayetteville, NC 28303  
FARRIS, John A.  
HHC, 2nd Inf Div, Attn: PAO  
APO SF 96224  
FERRAND, Robert E.  
384-B Hickory Point Blvd.  
Newport News, VA 23602  
FORBES, Alfred R.  
693 Chatham Trail  
Jonesboro, GA 30236  
HABITZREUTHER, Karen L.  
106 Christopher Drive  
Enterprise, AL 36330  
HANSON, Charles K.  
1603 E. Andrews, No. 5D  
Ozark, AL 36360  
HART, Larry A.  
1267 Ironwood Drive  
Columbus, OH 43229  
JOHNSON, Bruce R.  
412-H Rico Street  
Salinas, CA 93907  
JULIAN, Mark D.  
2105 S. Yates Street  
Denver, CO 80219

### Captains

KNIGHT, Earl E.  
14 Olsen Drive  
Fort Rucker, AL 36362  
KONWINSKI, Craig M.  
232 Knoxberry  
Manhattan, KS 66502  
LARGAN, George J.  
HHD, 52nd Avn Bn (Cbt)  
APO SF 96301  
MADDOX, Beth Ann  
PO, Box 3541  
Fort Stewart, GA 31314  
MASON, Bradley J.  
301b 1st Division Road  
Fort Benning, GA 31905  
MAYS, X. L.  
1822 Meadowbrook Drive  
Killeen, TX 76541  
McHALE, Janice F.  
CMR 3, Box 8041, E Co/4th ATB  
Fort Rucker, AL 36362  
McKEARN, Mark J.  
399 Dickman, No. 3  
Monterey, CA 93940  
MORGAN, Henry S.  
1051-14 Gaffney Road  
Fort Wainwright, AK 99703  
MUMM, S. Eric  
Route 1  
Woodlawn, TN 37191  
NELSON, Michael S.  
4th AHC  
APO NY 09457  
OPILLA, Paul M.  
901 Mill Stream Court  
Savannah, GA 31419  
REES, David L.  
1371 Beverly Lane  
Nicholasville, KY 40356  
REINKE, Robert Jr.  
c/o Mass, 300 Woodland Dr., #302  
Covington, RI 02816  
SIEBER, Jerome L.  
205 Washington Avenue  
Enterprise, AL 36330  
SOWELL, Leonard W.  
1605 Yosemite Street  
Seaside, CA 93955  
STEELE, William L.  
HHC, 501st MI Gp, S-3  
APO SF 96301  
STOREY, Allen T.  
HHT, 4-7 Cav  
APO SF 96251  
SUMNER, Gordon Jr.  
PO, Box 69  
APO NY 09669  
TESSINO, Nicholas J.  
1118 B Thompson Circle  
Fort Eustis, VA 23604  
WORSHAM, Michael H.  
PO, Box 774891  
Eagle River, AK 99577

### 1st Lieutenants

BARTEL, Richard C.  
233 Weeks Drive  
Enterprise, AL 36330  
BIOVIN, Bentley  
939 Riverside Dr., H-63  
Clarksville, TN 37040  
BUKARTEK, John V.  
5800 Milgen Road, #54  
Columbus, GA 31907  
BULLINGER, James R.  
207 Heritage Blvd.  
Enterprise, AL 36330  
GREEN, Jesse L.  
1801 Galaxy  
Killeen, TX 76543  
GREENWELL, James C.  
1447 A Wiener Park  
Fort Campbell, KY 42223  
HARTY, Donald M.  
505 Briarwood Dr., Apt. B8  
Enterprise, AL 36330  
HELLER, John J.  
3262 Taylor Road  
Carmel, CA 93923



**Q.** What similar purchase have more than 12,000 Army Aviators made in the past 15 years?

**A.** They've purchased AAAA-endorsed flight pay insurance. As an active duty or or as a Reserve Component Army Aviator, don't you think you owe it to yourself to get the basic facts about this coverage which has returned more than \$2 million in lost flight pay to claimants?

All it costs is a stamp.



**LADD AGENCY, INC.**

1 CRESTWOOD ROAD, WESTPORT, CT 06880

Gentlemen:

Please forward me the pertinent details of the AAAA-endorsed flight pay insurance coverage.

- I am on flying status with a U.S. Army unit.       AAAA member.  
 I am a student pilot undergoing Army flight training.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

ZIP \_\_\_\_\_

MY DATE OF BIRTH IS \_\_\_\_\_

## 1st Lieutenants

**HOLT, Roger B.**  
700 Miller Avenue  
Fayetteville, NC 28304

**KELLY, George G.**  
602 Grand Pine Avenue  
Enterprise, AL 36330

**LAEMMRICH, Gregory**  
HSC 18th AHB, Box 189  
APO NY 09185

**LENT, David**  
3806 Malec Circle  
Sarasota, FL 33583

**PHILLIPS, G. Dexter**  
Box 171, 25th Avn Co  
APO NY 09061

**SOLANO, Frank**  
189th GSAC  
APO NY 09165

## 2d Lieutenants

**ARTERBURN, David R.**  
113 A Menilla Road  
Poughquag, NY 12570

**CASTRILLO, Carlos J.**  
200 E. Patillon  
Kenton, OH 43026

**COLLINS, Gregory C.**  
3611-37th Avenue, NE, #311  
Minneapolis, MN 55421

**DINGAS, Gregory E.**  
155 N. Harris  
Fort Rucker, AL 36362

**EDWARDS, James A.**  
6115 Fitzgibbon Drive  
Columbia, SC 29209

**HIRSCH, Mark**  
222-F Heather Ridge Drive  
Fayetteville, NC 28301

**LANCE, Douglas S.**  
HSC, 8th AHB  
APO NY 09185

**MARTIN, Jeffrey G.**  
1027 Chesnut Street, #6  
Ft. Wainwright, AK 99703

**McFETRIDGE, Jeffrey A.**  
775 Ocean View Blvd  
Pacific Grove, CA 93950

**NEWELL, Peter L.**  
412 Delores Drive  
Savannah, GA 31406

**OGLE, Jack**  
8750 E. Monterey Way  
Scottsdale, AZ 85251

**QUACKENBUSH, Robert B.**  
A Co, 13th AHB  
APO NY 09182

**SANHUEZA, Hugo S.**  
PO, Box 331  
Fort Rucker, AL 36362

**TRACY, Mark A.**  
RR 7, Box 3630  
Ozark, AL 36360

**WATERS, Gregory D.**  
1630 Annett St, Apt. 4  
Boise, ID 83705

**WILLIAMS, David E.**  
Box 110, A Co, 3 AHB  
APO NY 09182

## CW4's

**CLARK, William J.**  
11980 Homeguard Drive  
Woodbridge, VA 22192

**GIEBNER, Robert M.**  
Rt 1, 102 Harrison Drive  
Daleville, AL 36322

**KELLAWAY, William C.**  
RHC, 4th Avn Bde  
APO NY 09185

**MANNING, Michael E.**  
1011 Neptune Avenue  
Akron, OH 44301

**MIYAGAWA, Kenichi**  
A Co, 2nd Avn Bn  
APO SF 96224

**MOONEY, James A.**  
25th Adj Gen Replace Det  
Schofield Barracks, HI 96857

## CW3's

**CARTER, Theodore G.**  
13210 Jefferson Ave, N014  
Newport News, VA 23602

**FISHBURN, Billy W. Jr**  
10409 Swift Road  
Hernon, VA 42236

**GALLUP, Richard A.**  
3605 Tealwood Court  
Vernon Beach, VA 23458

**KEITH, Donald B.**  
HC 79 Box 104-B  
Leesville, LA 71446

**POLLARD, Larry E.**  
PO, Box 164  
Stanley, NC 28164

**SHOEMAKER, James**  
Co C, 503d AHB  
APO NY 09165

**STANLEY, Richard D.**  
12780 Needpoint Drive  
Florisant, MO 63033

**TEDFORD, Jon C.**  
2936A Summerall Circle  
Fort Eustis, VA 23804

## CW2's

**CANTRELL, Michael O.**  
5572-C Carter Street  
Fort Hood, TX 76544

**COLLEY, Buddy**  
3311 Forest Hills  
Killeen, TX 76542

**FORSHEE, Todd C.**  
C Co, 308th AHB  
APO NY 09165

**HARFORD, Jeffrey A.**  
Route 1, Box 801  
Enterprise, AL 36330

**HECK, Jerry A.**  
Route 2, Box 208  
Daleville, AL 36322

**LATIMER, Francis E.**  
Rd 2, Buville Road, Box 475  
Montgomery, AL 36109

**SAMSOE, Walter W.**  
507 Easton Street  
Ranokonka, NY 11779

**STEWART, Kevin E.**  
32 Kirby Street  
Fort Rucker, AL 36362

**WILLIAMS, Ronny G.**  
240th GSAC, 4th Bde  
APO NY 09111

## WO1's

**ALBERICH, Michael M.**  
2012 Wanda  
Copperas Cove, TX 76522

**BAKER, Timothy A.**  
B Co, 8th CAB  
AAS, AZ 85206

**BINNING, Gerald D.**  
1429 B Werner Park  
Fort Campbell, KY 42223

**BOLAND, Kirk W.**  
PO, Box 306  
Paw Creek, NC 28130

**ELLIS, Daniel R.**  
PO, Box 5184  
Fort Hood, TX 76544

**HUTCHESON, Bruce D.**  
A Co, 8th AHB  
APO NY 09185

**OLSON, Michael D.**  
2101 U.S. Grant Drive  
Killeen, TX 76543

**PECKHAM, Jerry L.**  
19211 B Street, E  
Spawney, WA 98387

**WATERS, Mark A.**  
1613 North Main  
Copperas Cove, TX 76522

**WHEELER, Shaun W.**  
3750 Oro Blanco Drive  
Colorado Springs, CO 80917

**WITTGES, Charles E.**  
F Tpt, 2nd Cas, Co, 218  
APO NY 09092

## WOC's

**ALBRECHT, Jeffery L.**  
311-A N. Dove Lane  
Gilbert, AZ 85234

**CURTIS, Scott T.**  
724 NW 35th Street  
Lawton, OK 73505

**GALBRAITH, Gary C.**  
1001 Twin Creek Dr., Apt. 1102  
Killeen, TX 76541

**ZUPPAN, Martin S.**  
6805 Willow Springs Dr.  
Lawton, OK 73505

## Enlisted

**BETHEA, Dwayne SSG**  
HHT, 11th CASIACR, Box 399  
APO NY 09146

**COLWELL, Robert MSG**  
Rt 2, Box 13  
Damascus, AR 72039

**COOPER, Kevin C. E03**  
179th Avn Co  
Fort Carson, CO 80913

**FACKLER, Marvin E. SSG**  
Rt 1, Box 400 Lot 24  
Spring Lake, NC 28390

**GROTE, Karl A. W. E7**  
17 Cottage Lane  
Newport News, VA 23603

**HARRIS, James M. SSG**  
79031 Bowie Loop  
Fort Hood, TX 76544

**HENSLEY, Wendell SP5**  
425 E. Carpenter Drive  
New Carlisle, OH 45344

**HOLLAND, Nathaniel S. SFC**  
191st ATC Co (Fwd)  
Birmingham

**STORY, Robert MSG**  
12200 Nutmeg Court  
Woodbridge, VA 22192

**WHELOCK, Raymond H. SSG**  
Hq Co, USAVANDTA  
Montgomery, AL 36102

**WILLIAMS, Mark A. SP4**  
Post Locator  
Fort Ord, CA 93941

**WILLIS, Roger MSG**  
181 Brandywine Court  
Columbus, GA 31907

## Civilian

**BARTOS, Joseph S.**  
PO, Box 103  
Cumberland, VA 23040

**BROOKS, Terry P.**  
12 Village Circle  
Texarkana, TX 75501

**BROWN, William P./McD Hcptr**  
5000 East McConnell, FC3  
Mea, AZ 85206

**BUMPAS, Kent/Daniela Mfg.**  
11360 Palm Dr. Ste A  
Desert Hot Springs, CA 92240

**COBR, John W.**  
5522 Mossvale Circle  
Huntington Beach, CA 92649

**DEICHLER, Edward**  
86 Wire Road  
Nerrmack, NH 03054

**DOMINICK, Floyd L.**  
4716 West Avenue, L-2  
Quartz Hill, CA 94536

**DUMAS, Theola**  
1000 Allen Street  
Madison, IL 62280

**DWORZAK, Willis A./E-Systems**  
1 Wilson Avenue  
Oakhurst, NJ 07755

**HALL, Alan R./Garrett Alesresearch**  
130 Lombardy Lane  
Orinda, CA 94563

**WYLES, Lisa M.**  
One Independence Place, #409  
Colorado Springs, CO 80910

**HERTZBERG, Steven H.**  
1008 10th Street, No 341  
Sacramento, CA 95814

**HOMAS, Michael W.**  
229 W. Stanford Avenue  
Gilbert, AZ 85234

**KERN, Daniel R.**  
2902-B Coppercreek Dr.  
St. Louis, MO 63136

**KNOUS, Kirk/BM Nat'l Mktg.**  
10195 Crescent Hill Lane  
Roswell, GA 30076

**KOVACS, Richard M.**  
Hq USAMC Europe, Box 331  
APO NY 09333

**LEWIS, Richard B./ITT Space**  
500 Washington Avenue  
Huthey, NJ 07110

**LORDI, George/Eaton All.**  
1500 Wilson Blvd, Ste 400  
Arlington, VA 22209

**LOVE, Miller L.**  
Route 1, Box 16B  
Conway, SC 29525

**RATCLIFFE, Montie T./McD Dgls**  
700 Royal Oaks, PO 6005  
Monrovia, CA 91016

**SILL, Brian E.**  
Rd 2, Box 41D, Carlin Rd.  
Conklyn, NY 03244

**SINGLEY, Geo. T. III**  
9912 Shady Slope Court  
Fairfax Station, VA 22039

**STUTH, Jerry R.**  
18 Courrier Way  
Cheshire, CT 06410

**SUMMERS, Terry R.**  
2017 Hidden Lake  
Corpus Christi, TX 78412

**TITUS, Karl A.**  
RD 4, Oakhill Road, Box B1-A1  
Birmingham, NY 13901

**VANDENHOEK, John J./Grim**  
PO, Box 67  
Medford, NJ 08055

**VARNER, Vel/McD Dgls Hcptr**  
5000 E. McDonnell Road  
Chesham, VA 23040

**WALKER, Robert W./Senders**  
3311 BobWallace Ave, St 103  
Huntsville, AL 35805

## Retired

**BONIFACIO, Robert A. COL**  
PO, Box R  
APO NY 09038

**BURCH, Alvin F. LTC**  
2713 N.W. Denver  
Lawton, OK 73502

**DAYWOOD, William G.**  
4306 Zuni Drive  
Austin, TX 78759

**FURNEY, Robert M. COL**  
369 Lighthouse Avenue  
Purdy, IN 46365

**HOWZE, Hamilton H. GEN**  
37510 Shavano Drive, E-3  
Gunnison, CO 81230

**JOYCE, Warren C. LTC**  
213 Bridgewater Drive  
Newport News, VA 23603

**KOSLOW, Norman**  
5701 Sun Lake Drive  
St. Charles, MO 63301

**LALICKER, Laurence LTC**  
537 Covered Bridge Road  
Cherry Hill, NJ 08034

**LEMING, Joe A. MAJ**  
377 De Shazor Drive  
Newport News, VA 23602

**LILLEY, Aaron L. Jr. MG**  
6583 Zoylia Court  
Alexandria, VA 22312

**MERTEL, Kenneth D. COL**  
Route 2, Box 220 (Ft. Meade)  
Smithfield, VA 23430

**SHAVER, Thomas J. LTC**  
HHC, 64th Avn Bn  
APO NY 09712

**WOLIVER, Clarence H. COL**  
319 Cleveland Court  
San Antonio, TX 78209



**Special Message  
to Army and Air Force National  
Guard and Reserve Officers:**  
You are now eligible to join Army Mutual while on Active Duty of any  
duration. For details, call 800/336-4538.



# What will their life look like when you're out of the picture?

Without you, your family's life will change instantly in countless ways. Because no one can give them what you yourself can. That's why the Army Mutual Aid Association is uniquely valuable. We have an intimate understanding of your needs and those of your family.

We know the importance of prompt response. For over 100 years we've stepped in during the hour of need — not days or weeks later.

We also understand your desire to prepare for the future as quickly and efficiently as possible. So we've streamlined the

procedure for your joining the Army Mutual Aid Association and obtaining the services you need.

Simply call us toll-free at 800/336-4538 (703/522-3060 in Virginia).

Or drop us a line today at our address. We'll be happy to fill you in on the details.



## Army Mutual Aid Association

Fort Myer Virginia 22211  
Serving the Army Since 1879  
Serving the Air Force, too!

## Briefs

**New Chapter Officers:** The Mt. Rainier (Ft. Lewis) Chapter elected the following as new '86-'88 officers: **COL Dean M. Owen** (Pres)\*, **COL Tommy C. Stiner** (SrVP), **CPT Gerald G. Howard** (Trea), **CW4 Charles J. Bos** (VP, Prog), **CW2 Robert C. Hunter** (VP, Publ), **LTC William B. Penzel** (VP, Activ), and **MAJ Pete Peltier** (VP, Res Aff).

New AAAAA officers at the Ft. Bragg Chapter include **COL Harold E. Culley, Jr.** (Pres)\*, (Sr-VP to be elected), **CPT Mark W. Hayes** (Sec), **CPT Michael L. Bell** (Trea), **CPT Michael C. Flowers** (VP, Memb), and **CPT Tommy L. Marks** (VP, Prog). \*New members of the AAAAA National Executive Board.



MG Ellis D. Parker, a featured speaker at the 1986 Electronics Symposium at Asbury Park, NJ (See right)

## Support

During the May-August period of each membership year AAAAA Chapter activities "back and fill" by electing new officers to fill the vacancies in their staggered-term slates.

These elections are conducted at membership meetings, or by mail ballots disseminated by the National Office. In the latter instance, Chapters should know that due to the huge Ass'n-wide postage costs that would ensue, the Ass'n cannot provide mail ballots if a "single slate" is presented to the membership.

These "one candidate" slates are not a true "contest", and do not require a formal ballot. An election by voice vote should be conducted at the next membership meeting.



## AAAA Overview

### ■ ■ Dates change for the '86 AAAAA-ASE Symposium

The Fourth Annual Aircraft Survivability Equipment (ASE) Symposium will now be held during November 4-5, 1986, at the Northrop Defense Systems Division plant in Rolling Hills, Ill. The Symposium is open to all interested AAAAA members who possess the appropriate level clearance; the classification level will be determined after a DA review and classification of the final paper selections.

Unclassified abstracts of a presentation may be mailed on or before July 1, 1986, to: *Commander, USAAVSCOM; ATTN: AMCPM-ASE (CPT Messex); 4300 Goodfellow Boulevard, St. Louis, MO 63120.* Registration and housing information may be obtained from Lynn Coakley, AAAAA Nat'l Office, at (203) 226-8184.

**Darwin P. Gerard**, the Association's fourth National President during 1962-1963, died May 20 at his home in Alexandria, Va., of a heart attack. One of the first four Army Aviators to receive formal R/W training, Gerard served earlier in WW II as a Liaison Pilot. After his retirement as a Lieutenant Colonel, he joined the Washington, D.C. office of the Grumman Corporation. An innovator, he supported the concept of a worldwide Association scholarship program. As a Life Member, the AAAAA will establish a 1987 Memorial Scholarship in his name. He is survived by his widow, Laura, of 5624 Bradley Boulevard, Alexandria, Va., 22311.



### ■ ■ 1986 Electronics Symposium draws a crowd

Sponsored by AAAAA's Monmouth Chapter, the *Fifth Army Aviation Electronics Symposium* drew several hundred attendees to the Berkeley Carteret Hotel in Asbury Park, N.J., during May 5-7.

The two-day gathering covered *Operational Requirements; Avionics Acquisition & Support Strategies; Software Management, Development, and Support; New Technology Thrusts; Command, Control, & Communications; and Environmental Factors.* Attendees included (l-r), **Terry Coakley**, AAAAA National Office, **Vince O'Donnell**, Monmouth Chapter Secretary, **COL David S. Grieshop**, AVRADA Commander, **Under Secretary of the Army James R. Ambrose**, **MG Orlando E. Gonzales**, AVSCOM Commander, and **"Sherrin" DuBois**, Monmouth Chapter President.







## AAAA National Board slate elected for 1986-1987



**MAJOR General George W. Putnam, Jr.** of Falls Church, Va., was re-elected as AAAA's 16th National President during the course of the Association's recent national convention in Atlanta, Ga.

ALSO elected were **Major General Story C. Stevens**, Hilton Head Island, S.C., as Senior Vice President, and **John J. Stanko, Jr.**, of Aberdeen Proving Grounds, Md., as Secretary-Treasurer.

THE Association's 1986-1987 National Vice Presidents include **Major General Richard D. Kenyon**, and **Major General Robert F. Molinelli**, both of Ft. Myer, Va.; **Brigadier General James M. Hesson**, Vienna, Va.; **CW4 David M. Helton**, **Joseph P. Cribbins**, and **Colonel Leslie H. Gilbert**, all of Alexandria, Va.; and **William Pollard**, Alexandria, Va.

IN a post-convention action, **President Putnam** appointed twelve members as National Members-at-Large to serve on the '86-'87 Board. They are **Lt. General**

**James H. Merryman**, Springfield, Va.; **Lt. General John J. Tolson, III**, Raleigh, N.C.; **Major General Ellis D. Parker**, Ft. Rucker, Ala.; **Colonel Sylvester C. Berdux, Jr.**, Alexandria, Va.; and **Colonel Norman M. Bissell**, of Fairfax, Va.

THE President also appointed **Colonel Harry W. Townsend**, Silver Spring, Md.; **Lt. Colonel Billy H. Pearson**, Fairfax, Va.; **Captain Joseph F. McKeon**, Hayes, Va.; **Command Sergeant Major Tilden R. Kirkland**, Ft. Rucker, Ala.; and **Gary L. Smith**, of St. Louis, Mo.

THE Association's Executive Vice President, **Arthur H. Kesten**, of Westport, Conn., serves under a five-year appointment.

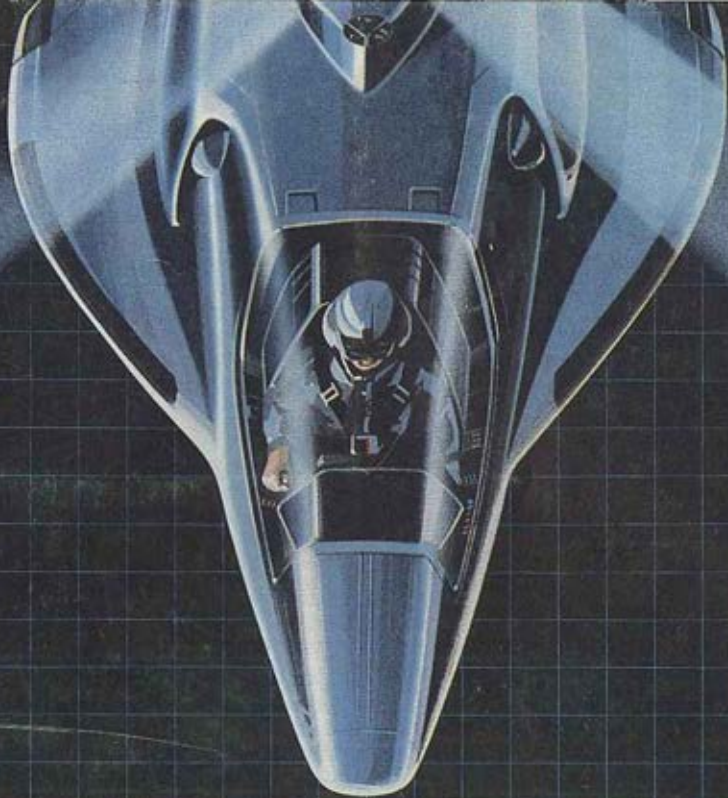
THE USAREUR Regional President, **Colonel Marvin E. Mitchiner, Jr.**, and 27 Chapter Presidents with 150 or more members are elected locally and, together with 11 Past (National) Presidents, complete the 62-member AAAA National Executive Board. ■■■■



**William R. Jones**, right, V.P. of Customer Support and Business Development for the Boeing Vertol Company, presents a \$10,000 contribution from Boeing to the President of the Army Aviation Museum Foundation, **Major General George S. Beatty, Jr., Ret.**, during the Membership Luncheon at AAAA's Atlanta Convention. ♦

♦ **MG William H. Harrison**, right, CG, 7th Infantry Division (Light), Ft. Ord, Cal., presents an AAAA Certificate of Achievement to **CPT Karl D. Gustafson**, Commander of the 206th Assault Helicopter Company, in recognition of his unit being selected as the Monterey Bay Chapter 1985 Aviation Unit of the Year. **CW4 Craig R. Dixon** was cited as the Chapter's 1986 Aviator of the Year while **SGT Wan Napper** was recognized as the Chapter Aviation Soldier of the Year.





## A team of giants takes the LHX challenge.

Two familiar names. One superior team. No limits to the technology.

McDonnell Douglas and Bell Helicopter Textron have taken the U.S. Army's LHX challenge. Now, the world's most experienced fighting helicopter and crew-station development people will work together.

*SuperTeam* will join a heritage of leadership with the best minds in the business: McDonnell Aircraft Company will lead the mission equipment integration supported by Honeywell, Hughes Aircraft Company, Sperry, and Texas Instruments.

Watch for the exciting reality: LHX — from a team of aviation leaders.



MCDONNELL DOUGLAS HELICOPTER

**SUPERTEAM**

BELL HELICOPTER TEXTRON