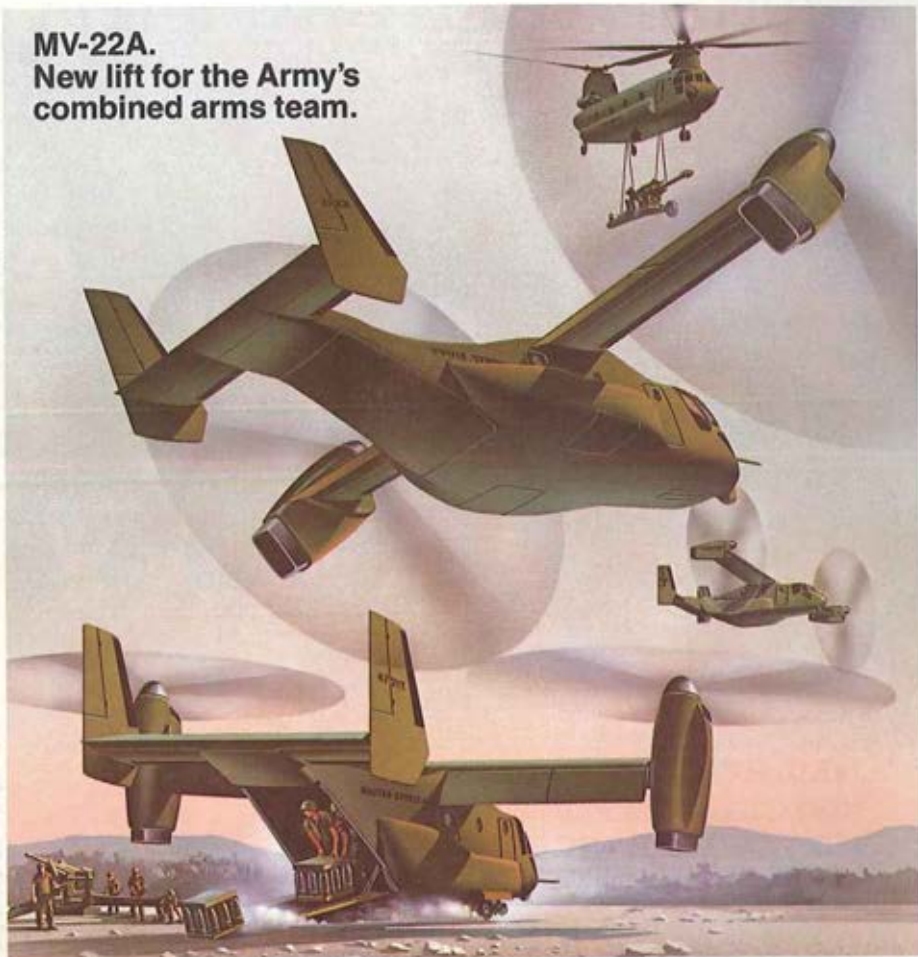


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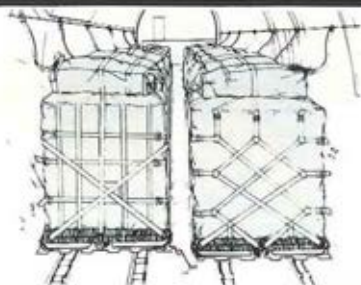
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# Army Aviation: Challenges for the Next Decade

by General M.R. Thurman  
Vice Chief of Staff,  
U.S. Army

*Excerpts of an address given at the AAAA Awards Banquet, April 11, 1987, in Ft. Worth, TX.*

**T**HIS is a special occasion for Army Aviation — with the fourth anniversary of the creation of your Branch tomorrow — April 12, 1987.

Army Aviation has had great success in its first four years. That success is a credit to the aviation team — both its' military and industry members.

Like Army Aviation, the Total Army is in superb condition today.

## Quality People

The Army is first and foremost, people. Quality people are the foundation of our Army today. We have the best troops in 30 years.

In 1980, when I was the recruiting chief, we recruited only one-quarter of our soldiers from the upper half of mental categories — that is, from the quality market. Last year, this quality market provided nearly two-thirds of our recruits, and this year it is providing nearly three-fourths of our soldiers. Ninety-three percent of entering soldiers are high school graduates. Quality young Americans are presenting themselves for service in our Army in record numbers.

What does this increasing quality mean for your Branch? Critical helicopter specialties are attracting recruits well above the high Army quality standard. The Recruiting Command has

met or exceeded over 99% of the quality goals for Aviation skills. The result is that in your Army and your Branch — **quality begets quality**, and the proof is in the change in the Army this decade.

## Quality Equipment

The second element in the readiness equation is the quality equipment that is being produced by industry for our outstanding soldiers. Each industry that is part of the Aviation Team should take particular pride in the quality equipment being produced by thousands of dedicated workers all over America. We in the Army appreciate their efforts.

We are presently in the middle of modernizing the big five systems in the close battle maneuver suite — ABRAMS, BRADLEY, MLRS, APACHE, and BLACK HAWK — which will enable us to win the critical close engagements of a battle. Aviation plays a key role in winning that battle. We've much more to learn about the full use of these new aviation capabilities, such as the APACHE.

Tomorrow's equipment suite for deep attack forces is in research and development today. As we look to the future, however, the investment strategy for the Army has to be based on fiscal  
(Challenges — Cont. on Page 62)

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July 31, 1987—A General News Issue which includes "The Aviation Officer" Directory of AAAA's Company Grade Officer members.

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October 1987 — The 1987 "DAC PACK" Directory — AAAA's Dept. of the Army Civilian members.

#### FRONT COVER

An artist's conception of the MV-22A, being developed by Boeing Vertol.

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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.



## APW T800 engine is first to complete maintainability demo.

The Avco Lycoming/Pratt & Whitney T800 engine has successfully completed the U.S. Army's first T800 maintainability demonstration at P&W's facility in West Palm Beach, FL.

Putting MANPRINT in action, an eight-member team of soldiers from Ft. Eustis, VA, and Ft. Rucker, Alabama, demonstrated a variety of maintenance tasks well within prescribed time limits on the T800-APW-800 engine. These tasks involved removing and replacing line

replacement units and the accessory gearbox and inlet particle separator modules using one wrench size. These maintenance actions were also completed while the team wore arctic and protective NBC gear.

Maintenance experts from the Army's Aviation Systems Command supervised while the Training and Doctrine Command observed these tests. Their recommendations will be incorporated into additional reliability and maintainability features on APW's LHX engine.



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# Going the Extra Mile

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

I am extremely proud that the 268th Attack Helicopter Battalion, Ft. Lewis, WA, was selected as the 1986 recipient of the Brigadier General Carl I. Hutton Safety Award which is sponsored by the Daedalian Foundation.

The 268th was chosen from a field of 39 well qualified nominees, which in turn, was narrowed to ten finalists. All candidates are to be congratulated for their impressive safety records. Also to be congratulated are the men and women of our branch such as the aircraft mechanics, crew chiefs, air traffic controllers, and flight crews who performed so admirably in making 1986 one of the best years in Army Aviation in regard to aviation safety.

Though we are certainly proud of our excellent safety record, and the above award is an indication of our achievements and efforts in aviation safety, it is imperative we not rest on our laurels but continue to work to maintain our exemplary safety record and to make it even better. I am confident that will be done by the men and women of our branch.

## Update on the AARS

In last month's ARMY AVIATION MAGAZINE, I mentioned briefly the implementation of the Army Aviation Regimental System (AARS). At this time I want to expand further on the AARS and its importance to our mission, unit cohesion, morale, and our historical awareness.

Our AARS plan calls for the activation of 24 TOE and seven training base (TB) regiments no later than the first quarter of FY91. We presently have three regiments activated with five more scheduled for activation by the end of this fiscal year. As a unit makes the transition to the regimental system, it will assume the historical lineage of the unit to which it is being designated. The unit's prior Army of Excellence (AOE)

designation will then be deactivated. Some units' AOE designations will be deactivated and later activated as a regiment. Our aviation units will be reorganized or redesignated under an existing regiment as aviation brigades expand to include projected Compo 4 units, which are units scheduled for activation but not yet placed on the TOE chart.

## AARS Details

Both active Army and USAR units have been incorporated into the AARS plan, and where applicable, CONUS based divisional and corps aviation brigades have been paired with OCONUS aviation brigades.

However, due to the diverse composition of aviation unit CONUS/OCONUS pairings have not always been feasible. Aviation units organic to CONUS will provide the regimental bases and regimental headquarters where applicable.

Where there is no pairing with a CONUS unit, an OCONUS regiment will serve as the regimental headquarters. The rotation scenarios for Army Aviation organizations will include both package and individual replacement rotations with homebasing. The regimental affiliation of aviation soldiers will allow them the opportunity for long-term identification with aviation regiments and selected cavalry units having assigned aviation units.

Our soldiers affiliating with a TOE aviation regiment will do so consistent with their primary military occupation specialty (PMOS) or specialty code (SC) and special qualification identifiers/additional skill identifiers (SQI/ASI) except for training base units. However, any aviation soldier, regardless of PMOS, SC, SQI/ASI, may affiliate with a TB regiment. This means of identification will enhance greatly the soldiers' pride in their unit and training. To be noted is the fact that both

aviation and armor branch soldiers will be allowed to affiliate with the 9th Cavalry Regiment. Aviation and armor soldiers will also be allowed to affiliate with the 1st, 4th, 7th and 9th Cavalry Regiments, the Second Armored Cavalry Regiment (ACR), the 3rd ACR, or the 11th ACR because of the armor/aviation mix.

## Linking Past, Present & Future

Each aviation regiment will have an Honorary Colonel, Honorary Sergeant Major, Honorary Chief Warrant Officer, and Distinguished Members. The first three positions will be filled by retired members of the armed forces who have served with the designated regiment or have been affiliated with the regiment through historical lineage.

Distinguished members may be active duty, retired or civilian (nonretirees) who have had some previous affiliation with the regiment. The Honorary and Distinguished Members of the regiment will serve as an historical link for today's soldiers, thereby perpetuating the history and

traditions of the regiment and enhancing unit morale and esprit.

We will talk further about the aviation regimental system in later editions; however, we are quite pleased as to what has taken place concerning the activation and fielding of these regiments. I believe that under the Army of Excellence, Army Aviation will be able to better serve in the Combined Arms arena and meet any challenges that might affect our mission.

It has been a while since I last discussed what our newest directorate, the Air Traffic Control Activity (USAATCA) has been doing. COL Melvin McLemore and the men and women of his directorate have been working long and hard to keep our ATC system responsive to the Army's unique tactical and fixed base worldwide requirements for both active and Reserve Components, and at the same time, being an integral, functional part of the national and host country airspace system.

In order to maintain the above capabilities, the

(Extra Mile — Cont. on Page 65)

## Major General Robert F. Molinelli (1934-1987)

An Army Aviation veteran and the holder of the Distinguished Flying Cross with seven Oak Leaf Clusters, Major General Robert F. Molinelli died May 4 at Palo Alto, CA, while undergoing treatment at Stanford University.

A highly decorated Master Army Aviator who flew more than 2,000 hours in armed helicopters and had the Air Medal with "V" device and 62 Oak Leaf Clusters, Molinelli was cited by the AAAA as its "1970 Aviator of the Year" for his actions in Vietnam.

Born in Pocatello, Idaho in June, 1934, Molinelli received a BS Degree from Idaho State University in 1956 and later received a Master of Science Degree in Communication from Shippensburg State College.

A cavalryman first, last, and always, he held a wide variety of command and staff positions throughout his long Army career, to include command of the 2/17 and the 6th ACCB.

His later DA assignments included tours within ODCSRDA, ODCSOPS, and OSD, where at one point he served as the Deputy Director of Requirements and Army Aviation



Officer in ODCS-OPS, DA.

He subsequently served in the dual role of Commander, Readiness and Mobilization Region I, and the DCG, First U.S. Army, Ft. Devens, MA. His last assignment was as Director, Combat Support Systems, ODCSRDA.

A Past President of the AAAA's Ft. Hood (now Phantom Corps) Chapter, Molinelli was a Vice President on the Association's National Executive Board at the time of his death.

He was buried with full military honors at Arlington National Cemetery on May 8, and is survived by his wife, Donna Ann Hale Molinelli, and two sons, Robert and David. The latter is an Army Aviator assigned to the 2d CAS, 2d ACR, APO New York.

A memorial scholarship in memory of General Molinelli has been established at Idaho State University. Donations to the General Molinelli Memorial Fund should be mailed to Idaho State University, P.O. Box 8050, Pocatello, ID, 83209.



# IRONHORSE POWER

179th Chinook Ds make the IRONHORSE more powerful than ever.



The U.S. Army's IV Division — the IRONHORSE — is more powerful with delivery of advanced CH-47D helicopters to the 179th Aviation Company at Fort Carson, Colorado. It's the seventh consecutive on-time delivery of CH-47Ds to the Army. The new Chinooks dramatically increase mobility, extending

the Division's ability to swiftly move troops, cargo and weapons systems over long distances and with around-the-clock mission readiness. Now, as always, the IRONHORSE lives up to its motto: steadfast and loyal. And with more horsepower to do its job. **BOEING**



**F**ielding of the modernized CH-47 CHINOOK helicopter has entered its final CONUS phase with the acceptance of the first D-model at Ft. Hood, TX, during ceremonies this past May. Six FORSCOM installations within CONUS including Ft. Campbell, KY, Ft. Stewart, GA, Ft. Bragg, NC, Ft. Lewis, WA, Ft. Sill, OK, and Ft. Carson, CO, previously received the improved version of the Army's only medium lift helicopter.

Since initial fielding at Ft. Campbell in February, 1983, this aircraft has continued to establish increased standards of

reliability, availability and maintainability where it counts — in the field. Units have increased operational capabilities with the D-model and have exploited these capabilities in practical situations, such as self-deployment to Honduras.

During actual deployments, aircraft arrive on site ready to begin support missions with minimum turnaround time. Austere field conditions have not reduced the improved capabilities of this aircraft; it performs

effectively under the most adverse conditions.

Approximately 130 D-models will be stationed throughout CONUS including Ft. Hood's complement of 16 aircraft. The next major fielding effort will be USAREUR with more than 60 CHINOOKs being shipped to Europe via Roll On/Roll Off (RORO) ships to the Port of Rotterdam, The Netherlands, then via RORO barges to Mannheim, Federal Republic of Germany,

## **Special Report: The CH-47D/Army V-22 Programs**

# **An Overview**

**by Colonel Michael Howe, project manager**





JUNE 30, 1987

ARMY AVIATION 13

**"The CH-47 Modernization/Army V-22 Aircraft Programs Office will remain busy and actively involved in fielding the Army's only medium lift helicopter while simultaneously preparing to assist in the development and fielding of one of aviation's most unique aircraft, the V-22 OSPREY."**

over a 24 month period beginning in the 1st Quarter, FY88.

Several innovative techniques will be employed during the shipment of D-models which have been tested, but not used previously for a major shipment of Army aircraft. Each aircraft will be fully encased and protected during shipment by a tough, plastic material commonly called heat shrink. During the latter part of 1986, two AH-64 APACHE helicopters were shipped to USAREUR to test the RORO ship, RORO barge and heat shrink methods. These tests were considered to be successful.

Fielding of USAREUR will be completed during the 3rd Quarter, FY89, and for the remaining Army commands by FY92. As the CH-47D Program nears completion, the V-22 OSPREY side of the Project Manager's office will continue to gear up its activities in fielding the Army V-22 tiltrotor aircraft.

#### **The OSPREY Program**

The OSPREY program comes under the executive service leadership of the U.S. Navy; however, it is a joint services program with the Navy, Marine Corps, Air Force and Army procuring a total of 913

aircraft, with 231 scheduled for The Army inventory. Thus far the program has accomplished a number of major milestones and entered Full-Scale Development (FSD) following the Defense Systems Acquisition Review Council (DSARC) III on April 17, 1986. Fixed price incentive award contracts for the 7-year FSD phase were signed on May 2, 1986, with the first flight test scheduled for June, 1988.

#### **Army Program Objectives**

In September, 1986, the Commander, Army Materiel Command (AMC), designated the duty of Project Manager (PM) for the Army V-22 Program to the PM for CH-47D Modernization. Army program objectives are to monitor aircraft development, qualification, joint participation in FSD testing and the development of an integrated logistics support package. First Army V-22s are scheduled for delivery in late 1993, with the last of the 231 aircraft buy arriving in 2001.

An Army V-22 Liaison office has been established and co-located with NAVAIR personnel in Crystal City, VA, outside Washington, D.C. Three Army aviators staff the office with the responsibility to coordinate key V-22 issues with NAVAIR per-

sonnel. They will ensure that Army concerns, including configuration matters, will be surfaced and resolved during the development phase.

Later this year, an engineering test pilot and two flight test engineers will be assigned to the V-22 Multi-Service Test Team (MTT) and will become part of the MTT at the Naval Air Test Center, Patuxent River, MD, for involvement in the four-year Developmental Test Phase. Flight test hardware is being manufactured, training concepts finalized, test plans written and plans for production developed. The Army's challenge is to develop plans for fielding a supportable aircraft system for the next aircraft system to be fielded in the Army.

The CH-47 Modernization/Army V-22 Aircraft Programs Office will remain busy and actively involved in fielding the Army's only medium lift helicopter while simultaneously preparing to assist in the development and fielding of one of aviation's most unique aircraft, the V-22 OSPREY. The personnel of this office are dedicated to providing Army units with the safest, most efficient aircraft possible during the remainder of this century and into the 21st century. IIII



# The CH-47D

## The Decisive Edge in Fielding

by Gary Nenninger

**T**he CH-47D Project Manager's Office (PMO) established the standard for successful aircraft fielding in February 1983, when 100% of required logistics support items was prepositioned at Ft. Campbell, KY, prior to delivery of the first CH-47D to the 101st Airborne Division (Air Assault).

At this time, an examination of the CH-47D PMO fielding method is appropriate as one major command nears completion and another begins. Although aircraft will continue to be distributed to Ft. Hood, TX, throughout the summer, the handoff in May marked the last scheduled fielding of an active duty unit within CONUS. Fielding to Europe will begin this fall.

### The Fielding Philosophy

The goal of any materiel fielding is to provide the gaining unit with a supportable end item. Four key elements are required in order to achieve this: parts, tools, training and publications. CH-47D publications have been available through the standard pinpoint distribution system since FUE, so this office has concentrated on the remaining elements. Development and implementation of a logistics support package requires teamwork. The cornerstone of the CH-47 method of fielding is the crea-

tion of a team which includes the prime contractor, Boeing Vertol, U.S. Army Aviation Systems Command (AVSCOM), and the gaining unit. This team ensures an orderly and supportable handoff by utilizing a detailed milestone schedule developed by this office as follows:

- Initial CH-47D Distribution (T)
- Fact Finding Visit (T-360)
- Liaison Visit (T-300)
- New Materiel Introductory Briefing Team (T-270)
- Mission Support Plan (T-270)
- Support List to Unit (T-240)
- Finalize Support List (T-210)
- Support Package Requisitioned (T-180)
- Liaison Visit - GSE (T-180)
- Materiel Fielding Visit (T-120)
- Materiel Fielding Team Survey (T-90)
- Package Release (T-90 to T-60)
- ILSMT On-Site (T-80)
- Chief and ILS Representative, Materiel Fielding Team On-Site (T-60)
- Staging of Package (T-60 to T-45)
- Materiel Fielding Team On-Site (T-30)
- Logistic Support in Place (T-30)
- New Equipment Training Team (T+60)

### Fielding to FORSCOM

Fielding begins one year prior to aircraft distribution. A team from the PMO, AVSCOM New Equipment Training (NET) office and Boeing visits the unit to initiate the planning effort. During this and a subsequent visit, key points of contact are made within the unit, the intermediate support activity, and the command's force development office. A survey of local supply and maintenance procedures and projected personnel fill is conducted. Experience has emphasized the importance of these early visits. They allow adequate time to resolve any potential or actual problems which might impact the fielding effort.

The New Materiel Introductory Briefing (NMIB) occurs approximately nine months prior to fielding. The briefing is presented by the Project Manager, Boeing's CH-47 Project Manager, CH-47 Logistics Chief and the Chief of AVSCOM NET. The target audience includes commanders and senior staff, as well as operations maintenance officers, and other key unit representatives supporting the aircraft. The NMIB is often combined with two other milestones which are scheduled at a later date. The parts support list (recommended PLL/ASL) and Ground Support Equipment liaison visits are

conducted concurrent with the NMIB for the same reason the initial visits are held. An early start allows more time to unravel systemic problems. Upon completion of these milestones, the unit knows which parts and tools the PMO feels are required for support.

At this point the Total Package Unit Materiel Fielding (TP/UMF) Division, AVSCOM, becomes directly involved with the user. A TP/UMF representative accompanies the PMO to the gaining command for finalization of the support list. This occurs eight to nine months before fielding. Three of the four USAREUR CH-47D fieldings are systems fielding; the fourth company is a unit activation and will be discussed later.

### Systems Fielding

As a systems fielding, the unit will receive PLL/ASL, tools, and publications required for the CH-47D which are not common to the CH-47C helicopter currently being supported in USAREUR. The final support lists will then be requisitioned by AVSCOM for consolidation in a depot package point. Six months prior to aircraft arrival, the parts and tools have been requisitioned and key people for the Materiel Fielding Team (MFT) have been identified.

Unlike other aviation programs, the CH-47D fielding team chief works for the Logistics Chief, except in Europe where he works directly for the Project Manager. This allows a direct chain for resolution of support problems. The core MFT consists of a chief and three contractor representatives supported by the AVSCOM and Communications/Electronics Command (CECOM) Logistics Assistance

Representative (LAR). Other personnel are available as necessary. The Team Chief, after several preliminary visits, moves in with the unit full-time two months prior to aircraft delivery; the entire team is on-site one month before aircraft delivery. This allows the MFT to participate in the TP/UMF package handoff.

Between package handoff and first aircraft delivery, the PMO and unit participate in a predeployment assessment. The unit and its headquarters review the fill level of the support package, and delivery status of aircraft, and make the call forward decision. NET occurs immediately following the receipt of the first two or three D-models. The MFT remains on station to support the unit for two months after last aircraft arrival. The success the CH-47D has experienced in fielding is attributable to the basic concept of teamwork. The creation of a team including AVSCOM, Boeing Vertol, and the unit has proven successful throughout the FORSCOM fielding effort.

### Paving the Way to Europe

The CH-47D movement to Europe is part of a major aviation force modernization program. Over 500 aircraft of various types will be involved. The logistics challenge for a transportation requirement of this magnitude is enormous. A new method of movement was required. The more traditional methods such as USAF C-5 and above-deck surface shipment are labor intensive and potentially hazardous to the equipment. In March 1986, representatives from DA DCSOPS, the PMO, and Boeing Vertol conducted a study in Europe along with USAREUR DCSOPS and the

200th Theater Army Materiel Management Command (TAM-MC). Another key player was the Military Traffic Management Command-Europe. Several transportation alternatives were investigated, a variety of facilities surveyed, and a primary alternative was selected. CH-47D helicopters will be delivered by Roll-on/Roll-off (RORO) ship to Port of Rotterdam, The Netherlands. There they will be transferred to RORO barge, proceed up the Rhine River and off-load at a NATO ramp on the Rhine River within five kilometers of Coleman Barracks. The aircraft will be towed there for final deprocessing by the 70th Transportation Battalion.

### Detailed Planning

This move requires innovation and extensive detailed planning. The result will be less expensive as well as less hazardous. More traditional materiel fielding challenges must also be met. All of the fielding milestones were adapted to a quarterly In-Process Review (IPR) schedule. This allowed the PMO to retain an atmosphere of teamwork and cooperation.

Substantial planning is underway to develop an AVIM component overhaul capability significantly larger than any established in FORSCOM. This is necessary due to the greater density being supported, as well as the extended logistics pipeline. Europe is also the site of the only CH-47D TP/UMF unit activation. AVSCOM will be responsible for fielding all TOE equipment to this company not available in Europe as excess to existing units. Even though unit equipped date is not scheduled for two years, preparations are already underway. ■■■■



# Tailor-made for the task.

Shorts 330 turbo-props operated by the U.S. Army from Kwajalein Island are ideally suited to the transport task required in this remote area. Rugged and extremely reliable, these high capacity, STOL aircraft are a very cost-effective answer to short haul personnel or cargo transport needs.

The 330 is built by Short Brothers of Belfast, Northern Ireland, the oldest and one of the most respected aerospace manufacturers in the world. In civilian use, Shorts aircraft are leaders among regional/commuter airliners with 20 seats or more. They have achieved this record based on low cost of operation and an unmatched 99% dispatch reliability.

Other military utilization of the Shorts 330 is in the Sherpa, C-23A STOL cargo version for the U.S. Air Force in Europe. In this role it helped the 10th MAS in



Zweibrücken, West Germany, win an award for the outstanding Military Air Command Support Squadron for 1985-86.

Shorts also are world leaders in surface-to-air missile systems with combat-proven, man-portable missiles. Shorts technology is an awesome element in a close air defense system.

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# SHORTS





**B**oeing Vertol was awarded a full-scale engineering development contract in 1976 for CHINOOK modernization. The CH-47D modernization program is recognized as a model program. The program has been an unqualified success extending fleet life 20 years, lowering fleet operating costs 25%, increasing fleet operating capabilities 52%, improving the compatibility of the CHINOOK fleet and other military helicopters, reducing maintenance requirements and improving fleet safety and survivability.

In addition, this model program has saved the U.S. Army

and ultimately the U.S. taxpayer about \$5 million per airframe. This savings is in comparison to the purchase of a new CH-47D CHINOOK. Since the Army plans to procure 472 advanced CH-47D CHINOOKs, American taxpayers figure to come out ahead by more than \$2 billion. The CH-47D program is a model of how the system is supposed to work: a thoughtful request by the Army, a prudent decision by Congress, and an intelligent response from a skilled contractor with extensive business know-how.

The Boeing Vertol CH-47

CHINOOK is designed and qualified for use in combat support operations worldwide, and is the U.S. Army's standard medium-lift helicopter.

Boeing Vertol began CH-47D production in 1980 and the D-model production rate increased to and stabilized at four aircraft per month in April 1985. To date



by William P. Jones

## Boeing CH-47D:

166 CH-47D CHINOOKs have been delivered to operational and training units of the U.S. Army. Current Army plans are to modernize 472 CHINOOKs in a program expected to continue through 1993. Boeing Vertol is presently under contract to bring 328 CH-47s up to D-

model standards, with 240 of these helicopters covered by a multiyear-procurement (MYP) contract. This five-year, \$1.17 billion MYP award saves taxpayers \$123 million, or enough to provide the Army with 32 CH-47Ds at no extra cost.

First flight of a production CH-47D came on February 26, 1982, and delivery of the first production CH-47D to the 101st

Airborne Division (Air Assault), Ft. Campbell, KY, occurred on February 28, 1983. The first CH-47D unit, the 159th Aviation Assault Battalion, reached its initial operational capability on February 28, 1984. A breakthrough was made in Army Aviation fielding the unit with 100% PLL/ASL, verified skill performance aid format publications, 100% TMDE, GSE and trained pilots and mechanics. The CH-47D joined the ranks of the Army's most modern technology aircraft.

The 101st Airborne's 159th Aviation Assault Battalion operates 48 CH-47Ds. With more than 20,000 flying hours to its credit, it is the Army's most experienced D-model operator — and the most inventive, too. It pioneered use of (Heritage — Cont. on P. 58)



# Helicopter With Heritage

# AMERICA NEEDS LHX.

HIND, HIP and HAVOC attack helicopters plus HOKUM, which has air-to-air capability; recent Soviet advances in ZSU-23-4 and ZSU-X ground-based air defense weapons.

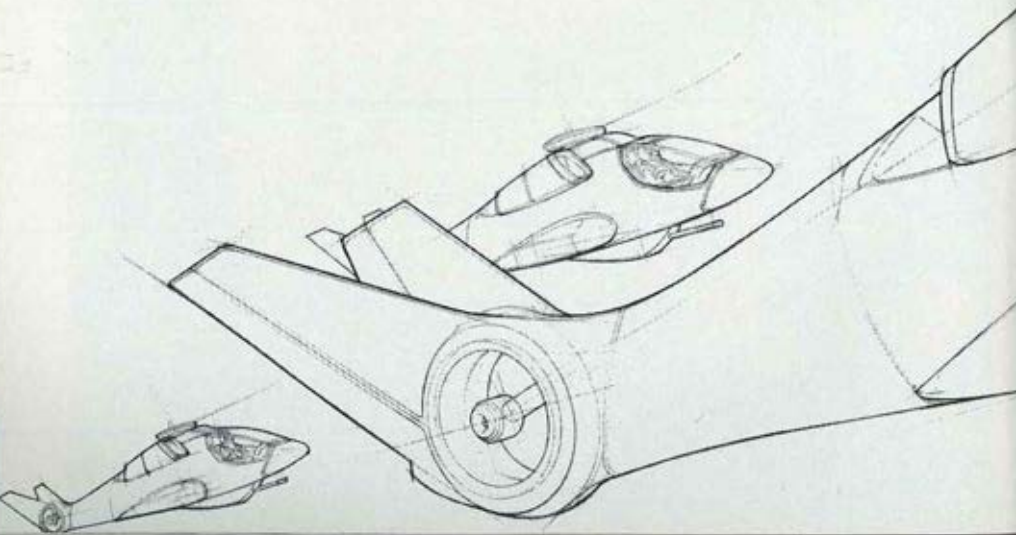
Facing this challenge is a Vietnam-era light helicopter fleet which is growing obsolete against the Soviet threat.



Figures include forces in place in Europe plus rapidly deployable forces. Source: *Soviet Military Power 1987*, U.S. Dept. of Defense.

The threats are real: a nearly 2:1 Warsaw Pact advantage over NATO in main battle tanks and artillery/mortar; a substantial advantage in armored personnel carriers; major Soviet investments in

The Army's goal is to replace this aging fleet with LHX: a more cost-effective multimission light helicopter family that can fight and sur-





vive on an increasingly lethal and complex battlefield.

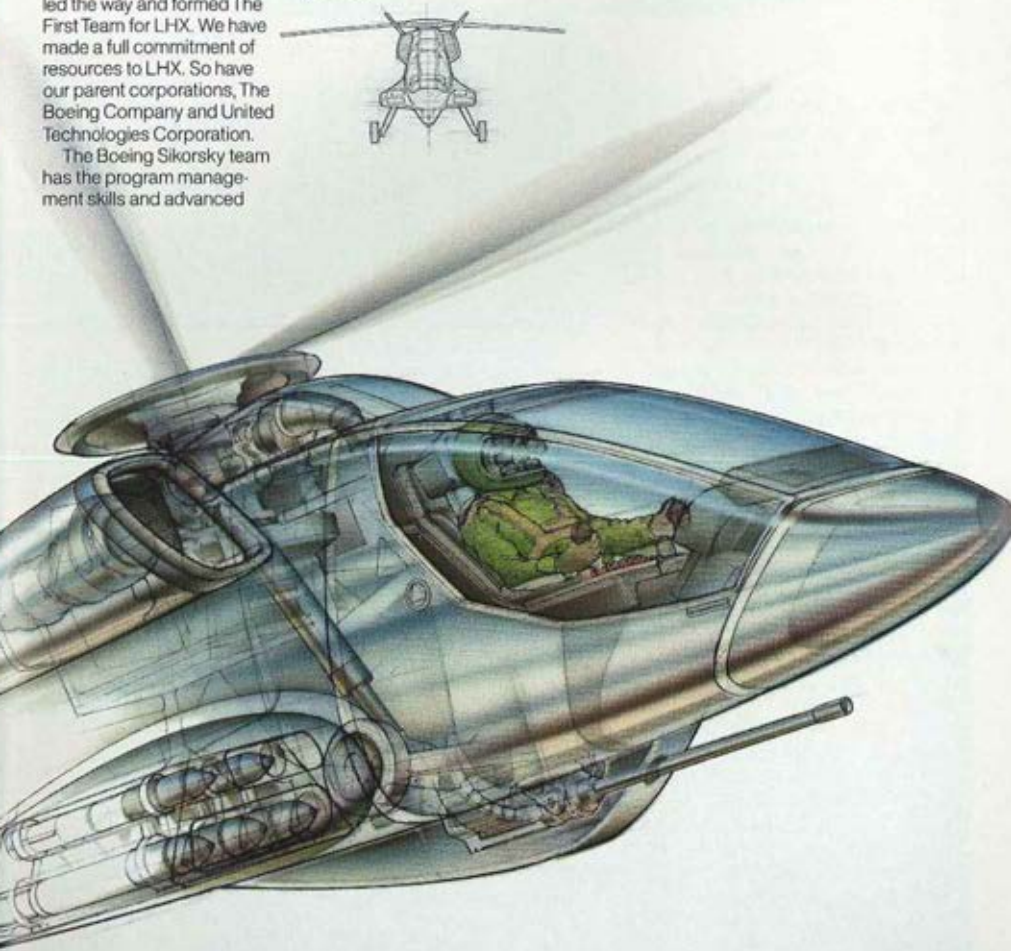
The Boeing Sikorsky LHX team, comprising 16 of the nation's most capable defense contractors, is uniquely qualified to make this goal a reality.

Two years ago, Boeing Vertol and Sikorsky Aircraft led the way and formed The First Team for LHX. We have made a full commitment of resources to LHX. So have our parent corporations, The Boeing Company and United Technologies Corporation.

The Boeing Sikorsky team has the program management skills and advanced

technology solutions needed to deliver LHX.

In short, there's a clear need for a new, more capable, affordable light helicopter that can fight and survive on the battlefield of the 21st century. The Boeing Sikorsky team is ready to achieve that goal now.



**BOEING SIKORSKY**  
THE FIRST TEAM FOR LHX

# CH-47D Flight

by Dan Grossman

Since the first heavy sling load was lifted by an Army helicopter at sea level and repositioned to a significantly higher elevation, a requirement has existed for a means to rapidly and accurately predict the aircraft's performance.

In the past the operator's manual was the only means to evaluate hover performance; however, when temperatures, elevations and load weights change frequently, this manual method has proven to be too slow and cumbersome in providing the flight crew with critically needed information on a real time basis.

Accuracy of calculation also depends on the flight crew's ability to interpret performance data charts. Additionally, it is extremely difficult for the flight crew to perform this function while in flight.

The U.S. Army Aviation Systems Command (AVSCOM), St. Louis, MO, and U.S. Army Aviation Center (USAAVNC), Ft. Rucker, AL, studied Grenada After Action Reports and agreed that an onboard Flight Management Computer (FMC) was needed for cargo carrying helicopters. For the CH-47D this computer, which will be known as the Weight and Torque Ad-

visor System (WTAS), would need the capability to read direct cargo hook load weights, compute weight and balance information, monitor fuel quantity and usage, and advise the cockpit crew of engine torque available at various altitudes and temperatures.

This requirement was included as a Product Improvement Proposal (PIP), titled Cargo Hook Load Indicator, and was submitted during the 3rd quarter, FY 84, for approval and funding. The subsequent annual Department of the Army (DA)/Army Materiel



# Management Program



Command (AMC)/Training and Doctrine Command (TRADOC) review of PIPs resulted in an approval of the cited PIP, but funding was not available due to higher priority needs at DA level.

Simultaneously with the PIP process, a DA policy committee recognized the need for hand held computers to be used for flight management procedures in Army aircraft to increase safety. Accordingly DA issued a directive to AVSCOM for the development of software packages using a hand held programmable computer for the CH-47D and UH-60A helicopters.

The software package was to include capabilities of perfor-

mance planning, weight and balance computations, navigation calculations and fuel management. The directive also stated that additional aircraft systems would be programmed according to a priority listing established by the user community. The procurement objective was to be on contract by end of FY86.

Meanwhile, USAAVNC was preparing the Operational and Organizational (O&O) plan and the Required Operational Capability (ROC) for an FMC. During staffing of the O&O plan and ROC, difficulties were encountered and the process failed to come to fruition. Efforts are continuing as these documents are needed to revise the TDA/TOEs so accountability can be afforded these items. This did not stop the directed procurement action as AVSCOM proceeded under the rules applicable for special tools. Either as a special tool or **(Computer — Cont. on P. 58)**



"The Joint-Service Developmental Test Memorandum of Understanding allows the Army to place one engineering test pilot and two flight test engineers on the multi-service team beginning in January 1988."

# V-22 Prototype

## First Flight Only One Year Away

by Major James C. O'Connor

**T**he Army V-22 OSPREY Program activities continue to accelerate throughout the user and materiel developer communities. Several recent events need to be highlighted.

The program office welcomes to the V-22 team, LTC Walt Hinman, the V-22 TRADOC Systems Manager (TSM). Effective April 1, 1987, the TSM will provide the program with a single office for the collection and coordination of user requirements.

The Cost and Operational Effectiveness Analysis (COEA) got underway in April 1987 with the first COEA Joint Working Group (JWG) meeting. The JWG rewrote the V-22 Study Plan to more clearly state our posture in the joint program, and the unique characteristics of the V-22 tiltrotor aircraft. The final report is due June 1988, with an update final report August 1989, to support the December 1989 production decision.

The Aeromedical Evacuation System development, started in January 1987, continues to move ahead. System requirements, milestones, and funding have been identified by a JWG

chaired by the Medical Research and Development community. The system will contain medevac life support requirements not presently planned for development by the Navy.

MOU allows the Army to place one engineering test pilot and two flight test engineers on the multi-service test team beginning in January 1988. The selection of individuals is being finalized.



With first flight only a year away, the level of activity at all the contractor sites remains high. Earlier this year Boeing Vertol started to assemble the fuselage for the first prototype. A total of six flyable and three nonflyable test articles will be manufactured during Full Scale Development (FSD).

The Army is gearing up for the flight test phase with the signing of a Joint-Service Developmental Test Memorandum of Understanding (MOU). The

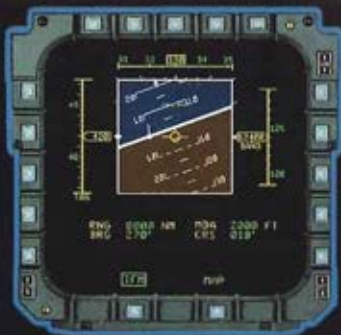
The first T406-AD-400 engine entered test in November 1986. Two engines are now in test with over 300 hours of run time. The FSD program contains 7,300 hours of engine testing and over 10,000 hours of component testing. The development program is scheduled to achieve preliminary flight rating testing in January 1988 with first flight test in June 1988. Limited and Final production qualification are scheduled for September 1989 (Prototype — Cont. on P. 57)



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*Technologies*

# Bendix

# V-22 OSPREY:

## Logistics for a Multi-Service Aircraft

by Joe Hudson

**T**he tiltrotor V-22 OSPREY is in Full-Scale Development (FSD) and Army participation in the V-22 program is moving along rapidly in the logistics area.

We already have Army representation at each of the Resident Integrated Logistics Support Detachment (RILSD) sites; Bell, Boeing, and Allison.

The Navy is the executive lead service for this multi-service program, and the RILSD serves as the APM for Logistics' on-site representative for all matters relating to logistics support and maintenance engineering requirements at the contractor's facilities.

That encompasses a lot, but the function that most of us associate with the RILSD, is review and evaluation of Logistics Support Analysis and Records (LSAR).

Current guidance for the Army V-22 program is to buy the Marine Corps version of the V-22. For Army logistics managers our job is to imple-

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Mr. Hudson was recently selected as chief, Logistics Management Division, CH-47D/Army V-22 Aircraft Programs Project Manager's office.



U.S. Army

**"The challenge is to work in the multi-service environment, to save defense dollars, while delivering a supportable aircraft to the Army."**



U.S. Air Force

ment this policy as best we can to ensure that the Army is able to support the aircraft.

With that goal in mind, the first Army Logistics Review was held in St. Louis, MO, in January 1987. The Army Logistics Review is the equivalent of an Army Integrated Logistic Support Management Team (ILSMT), but is so named to prevent confusion with the

U.S. Navy



U.S. Marine Corps

multi-service ILSMTs in which the Army is a participant. Participating in the Army Logistics Review were representatives from the Army staff, Training and Doctrine Command (TRADOC),



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### LAV-25

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- conserves AT assets
- direct-fire support to dismounted assault units
- helps protect embarked personnel, ammo and supplies
- 25mm with strap-on TOW scheduled for tests

### LAV-AT

- mounts M901 TOW launcher now in inventory
- defeats all known armor at long ranges
- stows up to 14 TOW II ATGM's per mission

Baseline Reliability*	Purchase Description Requirements	LAV-25 Initial - Productive Test (IPT) RAM-2 Results
Mean miles between mission failure	1250	5700
Maintenance Ratio (Organizational) (intermediate)	.30 .08	.17 .01
Mean Time to Repair (Organizational)	1.3 hours	.81 hours
Tasks above organizational level	< 20%	1%
Availability	90%	96%
Operating cost-per-mile Automotive Subsystem excluding weapon stations	not stated	\$1.92

\*Calculations by General Motors based on RAM-2 data for LAV-25 baseline vehicle. Details available on request.



LAV-AT

### LAV Air Transportability

C5A	
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representatives from the logistics community along with the major V-22 contractors (Bell/Boeing and Allison) and the Navy Program Manager's Office. During the review, working groups were established for each of the logistics elements (i.e., maintenance, training, LSA/LSAR) and a chairperson was assigned for each working group. The work group chairperson and key members will represent the Army on the multi-service work groups organized by the overall V-22 Program Manager (Navy).

#### **Studies and Analysis**

Since the Army Logistics Review, our work groups have started work on studies and analyses to compare the Navy/Marine Corps logistics system to the Army's, because if we buy the Marine Corps version of the V-22 we are also buying their support equipment and procedures.

Our work groups are being tasked to tell us how and if this will work in the Army system. The work groups may make recommendations for changes required by the Army. If this involves a cost, the changes must be justified by support or operational requirements. Any and all of our changes will be done through the Navy FSD contract and will require contract modification, funded by the Army for our unique requirements,

but our goal is to keep changes to a minimum which will save money.

The Ground Support Equipment and Automatic Test Equipment (GSE/ATE) work group held a conference within weeks of the Army Logistics Review. Participants included MAJ Georghiou, USMC, who manages V-22 support equipment, and representatives from the Army's Office of the Project Manager for Test Measurement and Diagnostic Equipment (PM TMDE).

Much of the discussion centered on the Army's In-ard Test Equipment (IFTE) and whether it can be utilized on the V-22. The Navy will be using as much of its common test equipment as possible on the V-22, and current plans are to use an electronic test set utilized on the AV-8 Harrier.

#### **Common Test Equipment**

In cases such as this, we will look for an equivalent piece of support equipment common to the Army, such as IFTE. If the cost of the Test Program Sets (TPSs) required to test the V-22 on IFTE are reasonable, it will be less expensive to use this system than it would be to introduce a new piece of test equipment into the Army system. We plan to continue this approach throughout development of the V-22.

Training and training equipment are areas where cost sav-

ings could be realized through joint training and joint use of training devices. Pilot and aircrew training holds the most promise for joint services training at one location. Joint maintenance training is also possible, but will require resolution of some of the differences between Army and Navy training practices. In each case the Interservice Training Review Organization (ITRO) is looking at the V-22 and will make recommendations on joint training for both pilot/aircrew and maintenance training.

#### **Modular Training Program**

Whatever the recommendation, the Navy is developing a modularized training program for the V-22 so that it can be easily modified or restructured to meet unique service requirements. We are also trying to utilize the same training devices, as much as possible, to save on development costs and to take advantage of larger production lot orders.

The V-22 is a whole new breed of aircraft; part helicopter and part turbo-prop (fixed wing) airplane. It presents a unique opportunity and challenge for the Army. The opportunity is having this revolutionary new aircraft in the hands of Army users. The challenge is to work in the multi-service environment, to save defense dollars, while delivering a supportable aircraft to the Army. ■■■■



*OH-58 scores direct hit with Air-to-Air Stinger.*

## Air-to-Air Stinger Shifts the Balance in Air-to-Air Combat

Air-to-Air Stinger, a "fire and forget" weapon system based on the proven Stinger missile, gives helicopters a new ability to defend themselves against air-to-air threats.

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ATAS also exceeded user system reliability requirements.

Now, this operationally proven weapon, designed to increase helicopter survivability, betters the odds in unfriendly skies.

**GENERAL DYNAMICS**  
*Valley Systems Division*

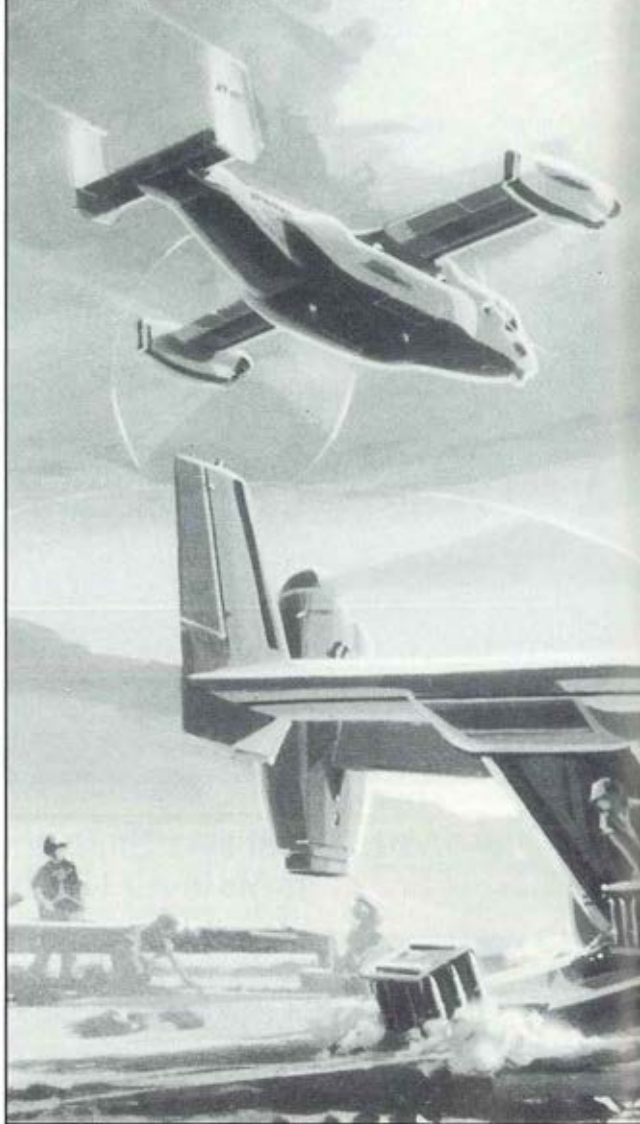


**A**t corps headquarters, the message was clear: Reinforcements were needed to assist the 3d Brigade, 48th Infantry Division (ID) in preventing the enemy's breakthrough at point "Charlie". With the lead division already heavily committed, the corps commander needed to move a reserve infantry battalion in place within two hours in order to prevent the impending breakthrough. With the insertion point 160 kilometers from the reserve battalion assembly area, the corps commander had to call on the 38th Aviation Battalion, V-22, to accomplish this critical mission.

Following two 30-minute lifts, the fighting elements of the reserve battalion were inserted, and in less than two hours, the battalion was in place ready to meet the challenge ahead.

The 38th Aviation Battalion was further tasked to continue the combat resupply of forward elements throughout the battle. As a result, an enemy breakthrough at "Charlie" did not occur and friendly forces repulsed the enemy assault. Clearly, timely reinforcement and resupply were critical elements in this victory. If current helicopter assets had been used instead of the V-22s, the reinforcement would have required twice the time and at least one refueling. This would not have allowed our forces adequate time to prevent the breakthrough. Enemy forces would then have been in an excellent position to disrupt rear area operations and resupply capability. Not only did the V-22's speed and range serve our needs well, but the aircraft's enhanced navigation, flight management and night vision systems made the mission ac-

## V-22: A Valuable



# Asset

by Captain Andra Strauss



complishment under the cover of darkness and low visibility far easier for the aviators of the 38th Aviation Battalion. With the successful outcome of this mission and battle, there was no doubt in the mind of the corps commander as to the value of his newest aviation asset and was another example of Army Aviation's essential role as a member of the combined arms team.

The unprecedented capabilities of the V-22 will give Army Aviation the ability to support combat operations across the full spectrum of conflict and the entire depth of the battlefield. As a corps and theater asset, the V-22's four primary missions include: special operations; medevac; air assault/troop insertion; and combat resupply, recovery, and reconstitution.

The V-22 will be a key element in the Army's ability to effectively insert, sustain, and extract its special operations forces (SOF). As a complement to our existing and planned rotary wing SOF assets, V-22s will provide theater SOF aviation commanders with significant additional capability and flexibility in accomplishing the SOF vertical combat mission. Because of its increased speed, maneuverability, and enhanced survivability, the V-22 will significantly decrease the probability of successful SOF operations. With speed and range so critical to the success of SOF aviation missions, the V-22 and follow-on tiltrotors may very well represent the future of SOF aviation.

The medevac V-22s will be configured to transport and (Asset — Cont. on Page 58)

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# Army Supports Tiltrotor Development

by Clyde Skeen and C.W. Ellis

The joint services V-22 OSPREY tiltrotor aircraft will solve much of the Army's vertical airlift shortfall. Why, you may ask?



Because it's a revolutionary aircraft based on evolutionary, proven technology that gives the V-22 the speed, distance and combat worthiness needed to support the Combined Arms team.

Currently in full-scale development by the Bell Boeing Tiltrotor Team, the V-22 will make its first flight next year. First deliveries will begin in late 1991 to the Marine Corps with the first Army delivery expected to be in late 1993.

The Army plans to use the V-22 in a variety of combat roles as set forth in its Operational and Organizational Plan. The plan states the need for an extensive increase in supply, personnel and equipment transport as well as medical evacuation. And that's exactly what the OSPREY is designed to do. The number being built fulfills the Army's needs. The V-22 will be a force multiplier. It can go twice as fast, twice as far and at less cost than existing rotary wing assets currently in the Army's transport inventory.

At least 231 aircraft are set for purchase by the Army and will be used for combat troop and logistical support, combat search and rescue, aeromedical evacuation and support of special operations forces.

In specifying exactly what it needs, the Army laid down some pretty specific wants. They are:

- Survive on the battlefield;
- Transport 24 troops or 12 first-aid litters;
- Provide unprecedented mission flexibility;
- Recover critical equipment;
- Facilitate movement of ammunition in combat;
- Lift 10,000 pounds using two external hooks or 15,000 pounds

# "Tiltrotor technology...has evolved and been proven for three decades."

using a tandem hook;

- Operate effectively in the field environment;
- Augment UH-60's and CH-47's in combat/combat support;
- Enhance night fighting capabilities;
- Cruise at 250 knots and dash to 300 knots;
- Adapt easily to technological advancements;
- Self-deploy worldwide.

With these capabilities, the V-22 will give battlefield commanders the ability to move troops, weapons and supplies anywhere on the battlefield rapidly and to be able to set them down vertically, either on, behind or ahead of the FLOT.

## Technology has evolved

Tiltrotor technology is not a new technology, but one that has evolved and been proven for three decades. And, it's been the Army who has helped sponsor its development and refinement.

The Army first became involved in tiltrotor technology nearly 30 years ago when the Army and the Air Force asked Bell Helicopter Textron Inc. to develop a flyable tiltrotor aircraft. The result of that effort was the XV-3, the first aircraft that proved that tiltrotors can really fly.

In fact, the XV-3 flew for seven years including 250

flights, 110 of which were full conversions from helicopter to airplane and back to helicopter modes.

The Army has also played a significant role in the follow-on XV-15 program. Extensive demonstrations, including shipboard, nap of the earth flight, slope landing, external load pickup and overwater rescue evaluations proved, without doubt, that a tiltrotor truly could provide the best of what both helicopters and turboprop aircraft have to offer in military missions.

Three days of sea trials and more than 50 take-offs and landings showed that a tiltrotor aircraft is shipboard compatible. Numerous NOE tests proved that tiltrotors are extremely responsive, and by tilting rotors, provides the pilot with maximum adaptability to the terrain conditions. Slope landing tests proved that a tiltrotor can land easily on a sloped surface because the pilot can vector the thrust in any direction. Over water rescues can be accomplished much easier because tiltrotors actually calm the water below due to the unique downwash pattern.

## Program reduces risk

The V-22 program, besides being technically verified and proven in tiltrotor technology demonstrations, also offers cer-

tain programmatic advantages, risk reduction and cost control. The Army took the early lead during concept formulation and helped set the acquisition strategy.

Reducing risk has been the name of the game. The acquisition strategy was designed from the start to minimize such risk. The preliminary design phase of nearly two-and-a-half-years identified and reduced the technical, schedule and cost risks of the follow-on Full Scale Development and production programs.

## Program controls cost

The acquisition strategy also controls the program's cost from beginning to the end. The Full-Scale Development contract is a fixed price incentive-type contract and the first 240 aircraft will be produced on not-to-exceed cost options. Bell and Boeing also guarantee reliability and maintainability, thereby paring costs of operation and support.

Yes, tiltrotors are designed, built and tested tough, and the V-22 will provide the Army with the flexibility it needs to perform its important combat missions.

IIII

Clyde Skeen and C.W. Ellis are Director and Deputy Director, respectively, of the Bell Boeing V-22 Joint Project Office.

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Manager  
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**Lt. Colonel  
Jess  
Rawls  
Assistant PM  
for CH-47D  
x1440**



**Fred  
Koch  
Actg. Chief, Technical  
Management  
Division  
x1418**



**Joe  
Hudson  
Chief, Logistics  
Management  
Division  
x1440**



# CH-47D/Army V-22 Aircraft Programs



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Assistant PM  
for Army V-22  
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**Lt. Colonel  
Richard Diamond**  
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**Captain  
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Avionics:

## AVRADA Reorganizes

by Bobbi C. Campbell



**FT. MONMOUTH, NJ** — An AVSCOM Avionics Work Group was chartered in November 1986 to review Avionics Management, to recommend a course of action and to negotiate a new CECOM/AVSCOM Memorandum of Agreement (MOA). A study of aviation problems resulted in the proposed establishment of an Aviation Electronics Management Office (AEMO), a new Directorate for Aviation Electronics, and the reorganization of AVRADA.

Under the reorganization, AVRADA will focus on avionic systems support to aircraft PMs as opposed to the historical emphasis on "black box" develop-

Mrs. Campbell is in the Plans and Resource Management Division of AVRADA.

ment. This is a direct result of the evolution of avionics into highly integrated subsystems which are fine tuned to meet specialized mission needs. Avionics system integration and installation support will be provided to aviation system managers during advanced and full scale engineering development, production, postproduction and product improvement phases.

In addition, AVRADA will continue to be responsible for selected Army aviation electronics programs from 6.1 thru 6.4 in navigation; aviation command, control and communications; and electronic integration.

The AEMO's mission will include the establishment and control of policy for all aviation

related electronics, Army Tri Service Representation, and Life Cycle management of multiapplication aviation electronics. This concept is based on the need for an organization which is dedicated to planning and management. The AEMO operational concept is predicated on a clear separation of management and door functions.

The AVRADA Commander's position will be transferred to the AEMO in St. Louis, with AVRADA's Command now restructured for a civilian Director. Assuming the post is David Gaggin, previously Deputy of AVRADA. Gaggin, a native of Pittsburgh, PA, came to Ft. Monmouth in 1985 from Boeing Vertol in Philadelphia, PA. He holds a BS in mathematics from St. Lawrence University, a BS in Electrical Engineering from Penn State and a Masters degree in Electrical Engineering from Villanova University. Gaggin and his wife Judy, live in Lincroft with their two daughters, Julie and Christine.

IIII

## AVSCOM DCG Spot Open; BG John Stanford leaves for MTMC

**ST. LOUIS, MO** — AAAA Lindbergh Chapter President BG John H. Stanford has been chosen to command the Military Traffic Management Command (MTMC) in Washington, D.C. Stanford served as MTMC commander on the west coast before he was selected as Deputy Commanding General of the U.S. Army Aviation Systems Command (AVSCOM) in St. Louis, MO in September 1986. Serving as AVSCOM DCG less than a year, Stanford's reporting date is June 29, 1987. Stanford's replacement was not known at press time.

*(Editor's Note: Highly respected for his vitality and leadership, ARMY AVIATION MAGAZINE wishes BG John Stanford well in his new post, but will miss his involvement in the Army Aviation community.)*





Research and Development:

## Air-to-Air Combat Test Presents Challenges

by Jerry Irvine

**PATUXENT RIVER, MD** — Aerial battles between helicopters of the Army's Air-to-Air Combat Test (AACT) program are again taking place in the sky over the Naval Air Test Center (NATC), Patuxent River, MD.

The program now in phase four is being conducted by the U.S. Army Aviation Research and Technology Activity's (ARTA) Aviation Applied Technology Directorate (AATD), Ft. Eustis, VA. The results from AACT IV will assist in establishing a data base for evaluating actual air-to-air engagements and will also aid in establishing agility and maneuverability requirements needed in our current and future combat helicopters.

AACT IV aircraft involves Aerospatiale's SA-365N-1 DAUPHIN, McDonnell Douglas' AH-64A APACHE, and Bell Helicopter's Model 406 Combat Scout and AH-1S COBRA.

Pulse Code Modulation (PCM) data acquisition systems with on-board recording and telemetry capability to the Real-Time Telemetry Process Station (RTPS) at the NATC, were provided by Bell Helicopter Textron for the Model 406, and by the McDonnell Douglas Helicopter Company for the AH-64A. The RTPS is an automated, real-time data collection and processing system which provides project

personnel with computed data, both graphical and tabular, while the test flight is in progress.

AATD personnel developed structural and performance PCM airborne instrumentation packages for the AH-1s and the SA-365N-1 aircraft. Both performance and structural data will be recorded on-board the aircraft with performance and selected critical parameters telemetered to the RTPS, and subsequently recorded for post-process analysis.

The technical challenges of designing and installing the PCM instrumentation packages on the two aircraft were formidable and required the close teamwork of a dozen AATD electronics and mechanical technicians.

"Everything has been a learning experience on AACT IV," said John Hayth, AATD's senior electronics design technician,

who worked for two years on the preparation of the test.

"We did not have enough room inside the COBRA to hold the instrumentation package," said Hayth. "The configuration of the aircraft had to be changed to provide more storage space."

Early in the program, Bell Helicopter Textron had reworked the front-end of the COBRA as a solution to the space problem, but found that the actual re-shaping of the nose would be too costly.

"We could have the same effect," said Hayth. "If we evaluated the structural strength of the doors and bubbled them."

Two surplus COBRA door panels were located for the modifications.

The doors were re-shaped by Frank Riesbeck, aircraft metal mechanic, who cut out the centers and fabricated by hand the fiberglass bubbles for each panel.

**(AACT — Cont. on Page 55)**

**BELOW:** John Hayth, AATD's senior electronics design technician, installs data detection channel circuit boards in the modified doors of the AH-1S COBRA helicopter.



Gerald Irvine is the Public Affairs contact for US Army Aviation Research and Technology Activity (AVSCOM).

Intelligence:

## Tactical Intelligence and Team Spirit '87

by Lt. Colonel John D. Thomas, Jr.



### CAMP HUMPHREYS, KOREA-

The 3rd Military Intelligence Battalion (Aerial Exploitation), stationed at Camp Humphreys, Korea, is unique among the five Aerial Exploitation Battalions (AEB) in the US Army. The AEB is normally assigned to a US Corps, but due to force structure in Korea, the 3rd MI Bn is assigned to the 501st Military Intelligence Brigade, an Intelligence and Security Command Unit that is in direct support of the US Forces Korea. This command relationship requires the 3rd MI Bn (AE) to provide aerial intelligence collection support to a theater headquarters and three Field Armies consisting of both US and Republic of Korea forces.

Although the 3rd MI Bn (AE) conducts intelligence collection operations on a daily basis and is an important part of the Korean intelligence system, the most realistic training for its wartime mission is the annual Team Spirit exercise. Team Spirit 87 was conducted in early April and saw the 3rd MI Bn (AE) performing all its wartime missions in support of two Field Armies, four Corps, and six plus Divisions.

During Team Spirit 87, the Battalion conducted round the clock flight and maintenance operations from its base at Camp Humphreys and from a deployed location where a company team

conducted continuous servicing, maintenance, intelligence, and flight operations. Close coordination with the US Seventh Air Force ensured that Airspace Command and Control was well coordinated and flights were conducted over the ground maneuver area under both IFR and VFR conditions.

The emphasis for our operations was to get valuable combat intelligence to the tactical commanders in near real time. Side Looking Airborne Radar (SLAR) provided indications of the movement of armor and mechanized forces. Information was relayed from the OV-1D aircraft directly to tactical operations centers by the enlisted technical observer (96H). The 96H would, in turn, receive requests for changes in flight tracks or radar coverage. The OV-1Ds also flew numerous photo reconnaissance missions. As an example, the Combined Aviation Force, (CAF), which is made up of elements of the 17th Combat Aviation Group

and Republic of Korea Army Aviation, requested reconnaissance of several targets. The mission was flown, the photos developed and analyzed by the 3rd MI Bn (AE) and the results air dropped to the CAF Headquarters. Team Spirit again demonstrated the value of the photo capability of the OV-1D.

The Guardrail System, flown on the RU-21H, provided tactical forces indications of planned tactical activities and the locations of many command posts and deployed forces. The Tactical Commanders Terminals (TCT) which are down links for the Guardrail System provided secure reliable record communications from the 3rd MI Bn (AE) to tactical headquarters. The Guardrail System had great success in exploiting the communications associated with several major river crossings.

The RV-1D Quicklook System was able to identify and locate air defense equipment in the exercise area. The identification and location of these Surface-to-Air Missile and AAA systems were quickly passed to ground commanders greatly assisting maneuver planning and execution.

Although the focus of the 3rd MI Bn (AE) participation was in-

**3rd MI — Cont. on Page 55)**

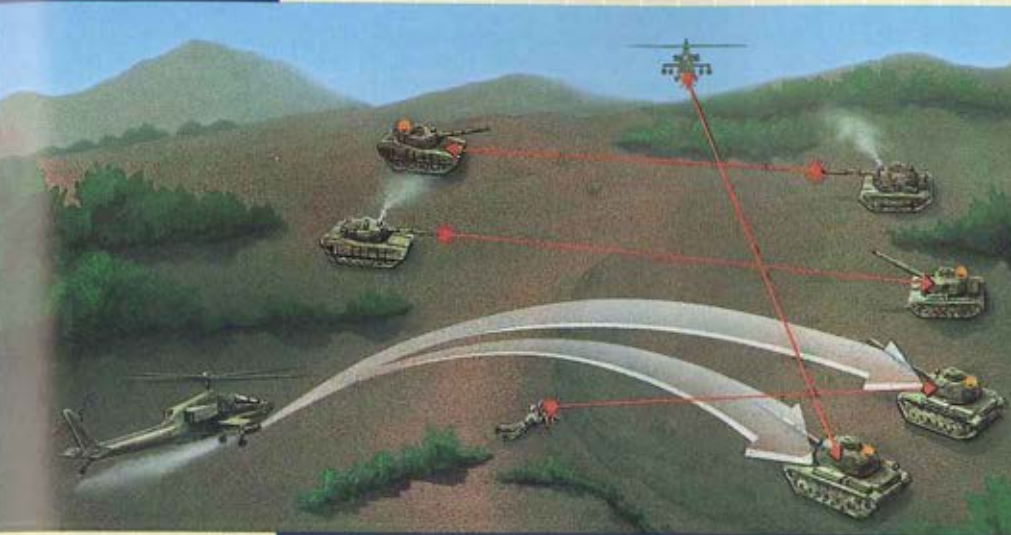
**GEN William Livsey, Commander in Chief, Combined Forces Command, Korea, affixes the Army Superior Unit Award streamer to the colors of the 3rd MI Bn, as CSM Clifford Hall looks on.**



LTC Thomas is Commander, 3rd Military Intelligence Battalion (Aerial Exploitation), 501st MI Bn, Camp Humphreys, Korea.



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International:

## The Future of Italian Army Aviation

by Major General Sergio De Ros



**ROME, ITALY** — Many years have passed since 1950 when a small group of officers, back from the US qualified on the glorious "PIPER", founded the nucleus of the new Italian Army Light Aviation (ALE).

Since then, the emphasis, imposed by rapid technological advances and harsher operational requirements, has been to improve its capability both in terms of quality and quantity.

The evolution of the ALE has been geared solely to giving the land forces integral Airmobility, considered a prime factor in achieving success on the battlefield.

**Actual Structure:** The ALE is currently formed into four types of units: liaison and observation (SM1019 fixed wing aircraft and A109 IRUNDO Helicopters), reconnaissance and armed reconnaissance (AB206 and A109 in advanced observation configuration), light tactical transport (multi-role line AB 205/212) and medium transport (CH47). This organization, however, does not seem fully in harmony with the requirements of the Land Units. The main shortcomings include:

- a lack of attack helicopters able to fight against the enemy armored threat, with a real capability to survive on the battlefield;
- a shortage of really effective on-board weapons, capable

of destroying substantial targets;

- limited avionic, electronic, radar and target acquisition systems, which severely curtail the carrying out of tactical missions during night or poor weather conditions, especially if carried out in terrain flight (i.e. NOE);

• inappropriate facilities and organization within utility aviation units which restricts the helitransport capacity of the Army Corps.

**The ALE in the 2000's:** Looking at the near future, the ALE is determined to set up a modern, sophisticated and flexible force, both qualitatively and quantitatively, in harmony with the Army of the 21st century.

It will have the following large scale improvements at its disposal:

- combat light helicopters in three configurations:

- \* anti-tank (attack) with four to eight TOW missiles and 81mm rockets with different types of warhead;

- \* scout (support and armed reconnaissance) with air-to-air missiles, small cannon or gun and hypervelocity missiles of advanced design;

- \* utility (battle-field support) with suitable armament, giving an overall capability to undertake a variety of utility roles;

- tactical transport helicopters (eight-nine ton) able to carry 15-18 fully armed troops;

- medium transport helicopters (12-14 ton) able to carry

25-30 fully armed troops.

ALE is shortly to acquire a number of combat light helicopters (A129 family) which will be formed into dedicated Attack Units which, when harmonized within the three types (anti tank-scout-utility) should make an effective counter to enemy armored threats.

Planned improvements to the capabilities of Tactical Transport Units and the increased load capacity of the new helicopters (NH90) will significantly increase the helitransport capacity of Units.

The acquisition of new medium transport helicopters (EH101) (which greatly enhance the existing CH47 fleet which is to be upgraded through improved turbines, transmission system and blades) will give an increase in maneuver capability either of mobile reserves or a Rapid Intervention Force (FIR).

Finally, to be effective on the modern battlefield, the ALE is to have access to an efficient command and control system, which will enable the aircraft to move and fight in close coordination with Land Units and tactical air forces in direct support.

**Conclusions:** The improvements that are planned for the ALE represent a significant "quantum leap" in both quality and quantity and will give it a capability for airmobile operations comparable to most other NATO armies.

All this will require a very strong effort, over the coming years, to modify organizations, training and logistics. ALE is currently a specialization within the Italian Army. ALE's concept of operations demands dedicated, full time personnel within an autonomous branch to be fully effective in a future war. ■■■■

MG De Ros has been Director of Italian Army Aviation since December 1985.

Legislation:

## FY88 Army Aviation Budget Request

by Major General Richard D. Kenyon



**WASHINGTON, DC** — In my previous report, I outlined the President's Fiscal Year 1988 budget request for our aviation programs by the areas of research and development and procurement. As you might recall, the requests reflected some reduction from previous Army plans for this area. The specific numbers in the fiscal year 1988 request were 67 AH-64 APACHES, 61 UH-60 BLACK HAWKS, and no OH-58D AHIPs. Concurrently, the request would require modification to the Congressionally-approved three-year multi-year procurement for UH-60 and terminate AH-64 APACHES and OH-58D AHIP procurement short of previously acknowledged procurement objectives.

Neither the House nor Senate Armed Services Committee have been willing to accept these pro-

gram reductions. As of this writing, neither the House nor the Senate Authorization Bill is complete. However, initial reports are very encouraging. In the House Armed Services Committee, all of the Army's major aviation procurement programs are fully funded. In addition, the Committee added 10 AH-64s, 11 UH-60s and sufficient funds to modify 36 AHIPs to the President's budget request. The Senate Armed Services Committee responded similarly to the Army's FY88 aviation budget request — all major programs are fully funded, plus the Committee added 23 AH-64s, and 11 additional UH-60s. The Committee also added \$36 million to accelerate procurement of ANVS-6 night vision goggles. Of course, differences between House and Senate Committee positions will be ironed out in Joint Authorization Conference; however, at this point, aviation procurement authorizations are expected to exceed the requested amount.

Aviation fared less favorably in the Research and Development account. Our budget request included \$135 million for continued development of the T-800 engine and \$267 million to begin full scale engineering development of the LHX airframe. It appears that sufficient funding to continue engine development will be authorized. However, it is extremely doubtful whether the LHX airframe will receive sufficient funding to progress in FY88 as planned. As a matter of fact, the House Armed Services Committee authorized only \$10 million while the Senate Committee authorized \$170 million. These drastic cuts are a response to the perceived lack of program stability and disagreement with certain of the program goals. At best, the program will take a somewhat slower pace by entering a demonstration/validation phase in FY88. At worst, the LHX will be delayed for a year.

For those in the Aviation community who have not heard it through the grapevine, this will be my last report to you as the Chief of Legislative Liaison. I am retiring on June 30 and moving to Wiregrass country in Alabama — right outside a place called Ft. Rucker. Drop in the next time you come through. ■■■■

MG Kenyon, Chief of Legislative Liaison, OCLL, Ft. Meyer, VA, will be retiring June 30 and moving to Ft. Rucker, AL.

## A NOTE FROM THE EDITOR

Preliminary tallies of the Editorial Surveys indicate that our readers would like to see more "Letters to the Editor" on issues impacting the Army Aviation community. No unsigned letters will be published and telephone numbers must be provided, but names will be deleted on request. We reserve the right to shorten letters. Let us hear from you.

**WRITE TO:** Mailbox, Army Aviation Magazine, 1 Crestwood Road, Westport, CT 06880.



Hardware:

## Advanced APACHE in Development

by E.F. Schuman and J.B. Rorke (left to right)



**MESA, AZ** — The AH-64A APACHE attack helicopter, now being fielded at Ft. Hood, is performing beyond expectations. It is proving that nighttime, adverse weather combat operations and deep attack missions are a reality. The helicopter is also demonstrating that it is reliable and maintainable as well as survivable.

**Changing Requirements:** In recent years, however, significant changes have occurred in the

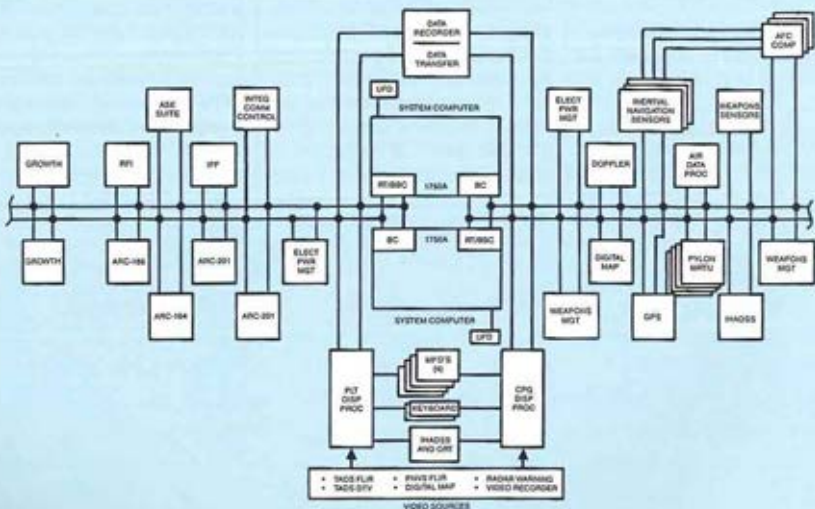
E.F. Schuman is the Program Manager and J.B. Rorke is the Chief Project Engineer for the Advanced APACHE program, McDonnell Douglas Helicopter Co.

Army's battle doctrine, in the Soviet threat, and in the maturity of technologies available to implement the new doctrine and counter the new threat. In addition, the Army and McDonnell Douglas Helicopter Company (MDHC) have learned from the APACHE's operating experience that some changes and improvements are necessary to enhance current and future performance. As a result, the Army community and MDHC performed several studies to focus on capabilities and technologies which will maintain and enhance APACHE superiority into the 21st

century. Chief among these are:

- Air-to-air capability through updating fire control for 30mm and 70mm weapons, improved crew visibility, and integration of an air to air missile;
- Advanced crewstation to automate cockpit data and controls and thus allow more crew concentration on mission objectives with more eyes-out-of-cockpit time;
- Integrated aircraft survivability equipment and system redundancy for better survivability;
- Advanced flight controls to eliminate the current mechanical (APACHE — Cont. on Page 56)

## Expandable Architecture





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Maintenance:

## Corpus Christi Army Depot Moves Forward

by Colonel William J. Blair



**CORPUS CHRISTI, TX** — Corpus Christi Army Depot continues to move forward with new technology, facilities and programs.

The induction of the depot's first UH-60 BLACK HAWK marked the addition of the first complete Army system to the depot's workload in 15 years.

CCAD had been gearing up for this new workload for some time by installing new equipment and training personnel. New equipment installed includes test stands for the transmission and gearboxes of the BLACK HAWK; computer assisted test stands for the fuel controls and the erection of the helicopter blade test facility.

The blade test facility, commonly referred to as the "whirl tower", was transferred to Corpus Christi Army Depot from New Cumberland Army Depot, PA, along with the mission for repairing the CH-47 CHINOOK. The whirl tower will be used for the dynamic testing of the blades for the CHINOOK and the BLACK HAWK after modification.

Adjacent to the whirl tower is a two-story, 47,850 square-foot environmentally controlled masonry building that will house the various blade repair operations formerly scattered throughout the 180-acre depot complex.

Although the depot has been repairing the General Electric

T-700 engine used in the BLACK HAWK since 1985, the program for warranty repair on the engines was just recently assigned to CCAD.

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**"The induction of the depot's first UH-60 BLACK HAWK marked the addition of the first complete Army system to the depot's workload in 15 years."**

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Other state-of-the-art equipment that has been added at CCAD includes a robotic metal spray system for replacing metal that has eroded from various aircraft parts, a laser cutter and a laser marker. Tools and equipment used by employees of the depot are identified by use of the laser marker, and the laser cutter facilitates the repair and fabrication of aircraft parts.

An automated guided vehicle system in the depot's supply directorate augments the roles of

the forklift operator and material expeditor. The system consists of ten tractors, automatic load and unloading turntables, plus powered roller conveyors which move the material to the turntables.

Scheduled for immediate construction are three new buildings. A two-story 20,000 square-foot masonry building will provide space for power train overhaul for the depot's existing workload and allow space for overhauling new weapon systems components scheduled to begin in this fiscal year. This building will also provide additional support to the projected BLACK HAWK, APACHE and OH-58D power train workloads.

A composite panel preparation facility will be an addition to the depot's existing glass and plastic shop. It will house equipment and accessories required by new chemical process lines. The facility will improve the operation for preparing titanium and aluminum panels prior to bonding. Time needed for preparation of the panels will be reduced from about 105 minutes per item to about 18 minutes. In addition, utilization of the new repair processes will increase the life span of the bonded panel from an average of 2.5 years per panel to 15 years for titanium and 20 years for aluminum.

A new aircraft analysis and process facility will provide aircraft overhaul and pre-shop analysis space, allow consolidation of functions and shorten parts routing for repair.

With anticipated new workloads and additional new facilities and equipment in its future, Corpus Christi Army Depot continues to be a leader and center of technical excellence for helicopter repair. ■■■

COL Blair is Commander, Corpus Christi Army Depot, Corpus Christi, TX.



Maintenance:

## Supporting V Corps in USAREUR

by Lt. Colonel Thomas E. Johnson



**HANAU, GERMANY** — The primary mission of the 205th Aviation Battalion (AVIM) is to provide direct and back-up AVIM supply and maintenance support to all aviation units in V corps. The 205th is one of eight battalions assigned to the 3rd Support Command, the logistical arm of V Corps. Our direct mission support extends from the front line of defense in Fulda with the 11th ACR, back to the 12th Combat Aviation Group and the 1st MI BN (AEB) in Wiesbaden.

AVIM support of the 1st MI Battalion is handled by a 30 man detachment stationed at Wiesbaden. Additionally, we back-up both the 3rd AD in Hanau, as well as the 8th ID in Mainz. We also provide direct AVIM support to two platoons of the 421st Medical Company, in Darmstadt and Schweinfurt, as well as out of sector backup support to the 2nd AD (FWD) in Bremen.

It is a big job which is stretched over hundreds of miles and encompasses more than 430 fixed and rotary wing aircraft.

The big news in non-divisional AVIM support in USAREUR is conversion to the "L" series TO&E. This will reorganize both V and VII Corps AVIMs into an HHD and two separate, independent AVIM companies which will be dispersed in two locations. This will allow the Corps AVIM to

better support our customers since this move will put us closer to many of them.

For the 205th, it means that we will displace one of these companies to Wiesbaden Air Base in order to better support both the 8th ID and the 12th CAG and their soon to be deployed AH-64 Attack Battalions. The other company, as well as the Battalion Headquarters, will remain in Hanau.

Our maintenance philosophy is to go to the customer, whenever possible, in the form of contact teams. On any given day up to 50 of our folks will be on site at both customer and major training area locations. The extensive use of contact teams is of benefit to all concerned because it provides the customer unit the most responsive support possible and it eliminates the detractors to production normally found in garrison.

Although our mission is primarily intermediate level maintenance, we also perform back-up unit level maintenance when our customers get in a bind. In 1986 alone we performed almost 40 phase maintenance inspections in support of our customers.

When we determine that a customer aircraft will take more than 30 days to repair we will request approval to float them an aircraft from our Operational Readiness Float (ORF) account. This way the customer loses no down time and is able to perform

its mission without interruption. In 1986 we floated 15 aircraft to our customers, which boosted both individual unit and Corps operational readiness rates.

A great percentage of the maintenance manhours expended go into the repair of aviation components, such as communication and navigational "black boxes", armament sub-systems, engines, hubs, and batteries. We have an average of 500 work orders on hand on any given day which are being worked on by eight separate shops.

The supply of aviation class IX repair parts is an extremely large part of our mission, and, of course, as any operator in the field will tell you, "The supply system is broke". That's not really true, especially when you consider the magnitude, in both size and dollars, of the aviation repair parts business. We stock more than 5,000 lines of ASL in addition to being the Corps supply point for all AIMI items.

All in all, it's a big mission and an important one. The dedication and professionalism of our 600 soldiers is the key element in our ability to support the V Corps aviation fleet. The Battalion has enjoyed a great year which culminated recently with the award of the USAREUR Aviation Support Unit of the Year for 1986. We are proud of that achievement and look forward to providing even better support to V Corps in the future. IIII

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LTC Johnson is Commander, 205th Transportation Battalion (AVIM), V Corps, APO New York.



Operations:

## **CAB, 6th ID: A Year Old & Going Strong**

by COL P. Wayne Gaskins & MAJ Charles D. Shelton

**FT. WAINWRIGHT, AK** — The Combat Aviation Brigade (CAB) of the 6th Infantry Division (Light) can be identified by a single adjective — dynamic. From April 1986 to April 1987, a period of vigorous transition, the brigade has been completely reorganized, received expanded missions and intensified its training program, while providing continuous aviation support to the Army's newest light division.

The CAB's evolution began with the unit's activation April 16, 1986, replacing the 222nd Aviation Battalion (Skymasters), which was inactivated. Beginning with the assets of a battalion, augmented with attached echelon above division (EAD) elements, the brigade, headquartered at Ft. Wainwright, rapidly evolved into an aviation fighting force capable of supporting worldwide contingencies.

LTC Christopher Calhoun released command of the CAB on July 16, 1986. Since then, reorganization has affected the entire command. Under the leadership of CPT David W. Shaffer, the brigade's Headquarters and Headquarters Co. retained six OH-58 KIOWA helicopters, which are ski and float equipped, to provide observation support to the division.

The Air Cavalry Troop was reorganized on March 16, 1987 as the 4th Squadron, 9th

Cavalry, under the command of LTC James W. Beauchamp. The squadron has two troops with AH-1S COBRA and OH-58 KIOWA helicopters at Ft. Wainwright and A Troop, a US Army Reserve ground cavalry troop, without any helicopters, located in Minnesota in support of the 205th Infantry Brigade. The 205th is the roundout brigade for the 6th Infantry Division (Light).

The bulk of the CAB's UH-1H IROQUOIS helicopters are now assigned to the 120th Combat Aviation Co. (CAC) (Arctic Knights) at Ft. Richardson, commanded by MAJ John F. Bithos, and a provisional unit, the 187th CAC (Crusaders), activated March 16, 1987, at Ft. Wainwright, commanded by MAJ James E. Diamond. The companies are expecting to receive 15 UH-60 BLACK HAWK helicopters in FY89.

The two CACs, like the 6th Attack Helicopter Battalion (AHB), a USAR unit in Minnesota, are scheduled to become regimentally affiliated with the 123rd in September. The 120th CAC will become G, 123rd; 187th will become F, 123rd; and the 6th AHB will become the 2nd Battalion, 123rd.

The CH-47 CHINOOK helicopters unit designation is changing also. The 242nd Transportation Co. (Medium Helicopter) (Sugarbears) in September will be regimentally affiliated as C, 228th Regiment. The 242nd is commanded by

MAJ David H. Schock.

And finally, there is the 2nd Platoon, 57th Air Traffic Control (ATC) Co. at Ft. Wainwright. The platoon is a FORSCOM unit which supports the division by providing accident-free flights from a mobile tower, flight coordination center and ground control approach radar, during the division's many field training exercises. The platoon is commanded by CPT Wilfred T. Hebert.

The CAB's loss became a Division Support Command (DISCOM) gain when the 568th Transportation Aircraft Maintenance Co. (TAMC), (Old Dukes), was transferred April 16, 1987. The TAMC, scheduled to be reorganized under light infantry division doctrine as an Aviation Intermediate Maintenance Company (AVIM), is commanded by MAJ Walter F. Coulter. Also transferred to the DISCOM in April was the 283rd Medical Detachment (Helicopter Ambulance) (Life Savers) commanded by MAJ Donald L. Berry.

Mission changes have been the brigade's driving force in reorganization and training. Tasked with the expanded mission of worldwide deployability, in addition to the defense of Alaska, training has intensified and now focuses on Emergency Deployment Readiness Exercises (EDRE) and expanded contingency operations.

Since activation, the brigade has flown 19,000 hours and averaged a minimum of one brigade level field exercise quarterly while participating in numerous brigade, division, joint and EDRE training exercises. Additionally, 4-9 Cavalry participates routinely in Joint Air Attack Training (JAAT) exercises (6th ID — Cont. on Page 56)

COL Gaskins is Commander of the CAB; and MAJ Shelton is the CAB S-4.

Operations:

## Activation of 4th Squadron, 3rd ACR

by Major (P) Michael Whittenberg



**FT. BLISS, TX** — Fiscal year 1986 brought many changes to the 3d Armored Cavalry Regiment. Those changes included transition to the J-series modified table of organization and equipment (MTOE) in the three armored cavalry squadrons, activation of the Support Squadron, and the beginning of three years of modernization of equipment and requisite retraining.

The implementation plan called for aviation within the Regiment to remain in the H-series MTOE structure until Fiscal Year 1989. Many problems were foreseen in training a partially restructured and equipped Regiment in 1986-1988 and then retraining again with the newly formed Regimental Aviation Squadron in 1989. In October 1985, the Regimental Commander made a decision that solved the training dilemma and also paved the way to a smooth activation of the Regimental Aviation Squadron.

Under the H-series MTOE, the Regiment's aviation was organized into an H-series Air Cavalry Troop and Support Aviation sections in the Regimental Headquarters Troop. Total assets were 15 OH-58, nine AH-1P, 19 UH-1H aircraft, and 273 personnel.

The Regimental Commander's plan focused on the task reorganization of the existing assets into the 1989 Regimental

Aviation Squadron structure.

Each air cavalry troop (ACT) was short one AH-1P, one OH-58, and the crews to man them. The Assault Helicopter Troop (AHT) was formed full strength but with UH-1H rather than UH-60 aircraft. The attack helicopter troops (ATKHT) were not formed. The Command Aviation Platoon in HHT was formed with four UH-1H rather than three UH-60 and one OH-58. The CEWI Platoon was not formed. The AVUM Troop was organized at full strength. The task organized 4th Squadron was activated on December 13, 1985 into the interim structure.

Training in the new structure began immediately. Key personnel in the old structure were placed in leadership positions in the new troops. Training of the squadron staff progressed slowly with less experienced personnel filling key positions.

Training of the staff improved in the Spring of 1986 with the assignment of an S-3 and a squadron executive officer. Habitual training relationships were established between the ACTs and the three armored cavalry squadrons and between the AHT and the Support Squadron. Simultaneously, work began in developing Standard Operating Procedures (SOP) for the new organization.

Roles, missions, and coordination between the line troops and the AVUM Troop were difficult to establish. Almost a full

year was required for these relationships to operate smoothly and in accordance with doctrine. The net result has been an increase in maintenance productivity, availability, and tactical flexibility.

The dual-hat role of the AVUM troop commander as the quality control officer has had the effect of significantly improving the quality of maintenance throughout the Squadron. Attaching technical inspectors to the troops has improved maintenance management and maintenance records while maintaining their tie to the AVUM Troop.

During 1986, the squadron participated in numerous field exercises, deployment exercises, Level 1 tactical gunnery, and conducted an external evaluation of each of the line troops. Additionally, the squadron was a key player in the Air-to-Air Stinger test, Pedestal Mounted Stinger test, and the M1A1 Tank New Equipment Training. The squadron successfully completed its first externally evaluated ARTEP in February and the FORSCOM Aviation Resources Management Survey in May 1987. The 4th Squadron in 18 short months has become a full member of the regimental combined arms team and is fully combat ready.

Future events for the 4th Squadron include a training rotation at the National Training Center with the Regiment in October 1987. An AVIM detachment will augment the Squadron from III Corps along with two attack helicopter troops from the 278th ACR (ARNG). That will be the first opportunity the 3d ACR has to maneuver a fully manned and equipped Regimental Aviation Squadron. In 1988, an additional (3rd ACR — Cont. on Page 57)

MAJ Whittenberg is Commander, 3rd Regimental Combat Aviation Squadron, III Corps, Ft. Bliss, TX.



Personnel:

## Updating Your Personal/Personnel File

by Lt. Colonel Robert N. Seigle



**ALEXANDRIA, VA** — This update is as old as the hills...you have heard it all before...but your Branch is going to continue to repeat it until we all get it right:

**Every aviator needs to keep a personal/personnel file that includes the latest photo, officer record brief (ORB), and performance microfiche.**

You have all heard how important it is for each of you to be your own career manager because no one else is better qualified to manage your career, right? Right! I know you've heard that — now I'm going to tell you why that's true.

Aviators are known throughout the world as individuals teeming with flair, charisma and incalculable charm, all of which are desirable characteristics that translate directly into beautiful spouses, fantastic imaginations, and equally unbelievable but wildly interesting stories of flying bravado. Unfortunately, none of those white scarf, leather helmet remembrances of years gone by in our business make it into DA selection board proceedings and, because more and more selections are being made by DA centralized board procedures, you need to know what counts.

Before every DA Selection Board — CPT, CVI, MAJ, CGSC, LTC, 05 CMD, SSC, 06 CMD, PM, and others — a simple file

folder is put together with your official DA photo on the left and your last ORB and performance fiche on the right. That's how you appear before a board...no charm, no flair, no delightful personality...just a plain manila folder, a 10"x 4" B/W glossy, a xerox'd paper, and a couple of plastic microfiche cards...and even though Aviation Branch goes into high gear about four months prior to the board to put those pieces together, we still need your help. Feedback from board presidents indicates that aviation photos are missing, ORB entries are either wrong, out-of-date or full of aviator acronyms, and microfiche files are usually in good shape unless someone else's OER or letter of reprimand has been misfiled in your file.

Here's what you can do to help us present you to each board in the most positive light — build yourself exactly the file that each board will review: PHOTO - ORB - FICHE. The payoff to you is direct and immediate because you will then review each of those documents with a critical eye. The payoff to the Branch is just as high. Your critical review helps us keep your file up to date because you have positive control over each of the documents. Specifically:

- **PHOTO** — good quality, black and white, DA standard every three years — the newer the better — review the actual photo before it goes to Branch

(have a friend look at it, too) — no tricks — wear Aviation Branch insignia — no moustaches (hypocritical? Yes. Do it. Grow it back, later!) — if it looks funny, strange, unusual, etc. to you, your friend, or your commander ... take it over — do not let your photo lab send it in until you've seen it — keep one copy — send Branch two. Photos get lost everywhere — wait a month and call for confirmation.

- **ORB** — annual check of this is critical — acronyms should read in plain text so that your Infantry Branch buddy can clearly understand your title — correct all wrong data — assure your corrections are coded into SIDPERS for update — Branch can fix one copy as an emergency before a board, but your MILPO SIDPERS tape will override on the next issue (that means your bad information comes back on the ORB).

- **MICROFICHE** — check annually by getting your copy — new copy only printed after an OER — orders for awards are held until receipt of next OER, then filmed — make corrections immediately — if you wait to 30 days before a board to eliminate a misfiled OER or to appeal an OER or other data entry, that microfiche entry merely gets blackened over before it goes to the board — avoid blackened smudges on your performance fiche by making corrections early — preclude microfiche problems by staying involved in the OER process (support form completion through senior rater signature) — OERs are dramatically better where the officer is on station to sign the one that goes to MILPERCEN.

Remember, you have your hands on each of these  
**(File — Cont. on Page 57)**

LTC Seigle is Branch Chief, US Army Military Center, Aviation Branch, OPMD, Alexandria, VA.



Personnel:

## Warrant Officer Corps: MILPERCEN Update

by Colonel Joel H. Hinson



**ALEXANDRIA, VA** — The Warrant Officer Corps of the 1980s is in a period of evolution. Changes have and are occurring in the way we access and train warrant officers, the organizations they fill, the tactics and doctrine they use, the equipment they maintain and operate, and the way they are managed. MILPERCEN's primary focus is scheduling their professional development schools and assigning them to meet worldwide Army requirements. Highlighted here are some of the things we are doing to assist us in achieving the proverbial "round peg in a round hole".

First, we now have much more capability in meeting the individual warrant officers military school needs than in the past. For the first time ever, we have modest funds to send someone to the advance or senior course without waiting until that individual is in a PCS status.

In the past many warrant officers at crucial junctures for such schools could not attend simply because they were not in a move status. Some officers had to forego lucrative jobs requiring overseas extensions because they needed professional schooling, only available in a move status, to remain competitive.

The desired method of sending warrant officers to their advance courses and the senior

course remains in an en route status. But for those whose move eligibility does not support school attendance at the most opportune times, DA funds are now available to support them.

We all know the problems our military occupational specialty (MOS) codes have caused in identifying requirements of a position and skills of an individual. Even with special qualification identifiers (SQI) and additional skill identifiers (ASI), the system was frequently nondescriptive and always cumbersome.

We have now completed conversion of our data base to reflect the new MOS codes contained in AR 611-112. These codes describe better than ever the precise aircraft qualifications of the almost seven thousand aviation warrant officers. With the unchanged SQI and ASI we can now better match the requirements of the field and the skills of the individual in making assignments. You can expect all the authorization documents to reflect the new MOS codes within the next year.

Supportive of the effort to better match skills with duty requirements is the position coding effort generated by the Total Warrant Officer Study (TWOS). Authorization documents now simply call for a warrant officer with a certain skill. Certainly warrant officers gain expertise through experience and training. The position coding effort was a

monumental task for which the TWOS implementation team, ODCSPER and proponents deserve accolades. They have recoded every warrant officer position in the Army to require a warrant officer (WO1-CW2), senior warrant officer (CW3-CW4), or master warrant officer (designated CW4 or CW5 when approved). By early 1988 authorization documents should reflect these requirements. Beginning for FY 89, an officer distribution plan will be constructed using these requirements against which MILPERCEN will make assignments.

You will also see changes in the Warrant Officer Training System (WOTS). In 1988, TRADOC will replace the advance course as we know it with a Senior Warrant Officer Training course. Also, the current Senior Course will go away and be replaced by a Master Warrant Officer Training course that will have a common core and functionally oriented training. A board will meet in early Fall 1987 to select the first designated CW4 Master Warrant Officers. A key change to selection for SWO or MWO training is that the individual must be selected for SWO or MWO to attend the courses. In practice, that means the target population for SWO training will be promotable CW2 and CW3 and for MWO those selected by the MWO selection board.

The aviation warrant officer carries a tremendous part of the load in supporting the Army in the field and the introduction of new equipment such as APACHE, BLACK HAWK, CHINOOK D models, and AHIP. The environment in which their (Warrant — Cont. on Page 57)

COL Hinson is Chief, Warrant Officer Division, US Army Military Personnel Center, Alexandria, VA.

Hardware:

## LHX: An Approved Acquisition Strategy

by Lt. Colonel Sandy Weand



**ST. LOUIS, MO** — In April 1987, the Army formulated and approved a Light Helicopter Family (LHX) Research Development Test and Evaluation competition strategy that transitions concept exploration efforts into a 56-month Demonstration/Validation (DEM/VAL) phase beginning in January 1988. This report covers the acquisition strategy for the conduct of this DEM/VAL phase.

The focus of the DEM/VAL

LTC Weand is a member of the staff of the LHX Project Manager's Office, USAVSCOM, St. Louis, MO. The author wishes to thank Bill Redmond of the Light Helicopter Family's Programs Division for his extensive help.

phase is on reduction of technical, supportability, producibility, cost and schedule risk. Reduction of risk in these areas will ensure the LHX system transitions successfully to Full Scale Development (FSD) and production. DEM/VAL efforts will include design and engineering, prototype fabrication and test, essential total system planning and the trade-offs necessary to provide the best solution to the requirement.

This current DEM/VAL Program Structure includes:

- Four SCAT Two Seat Flight Prototypes Per Team;
- Core Mission Equipment

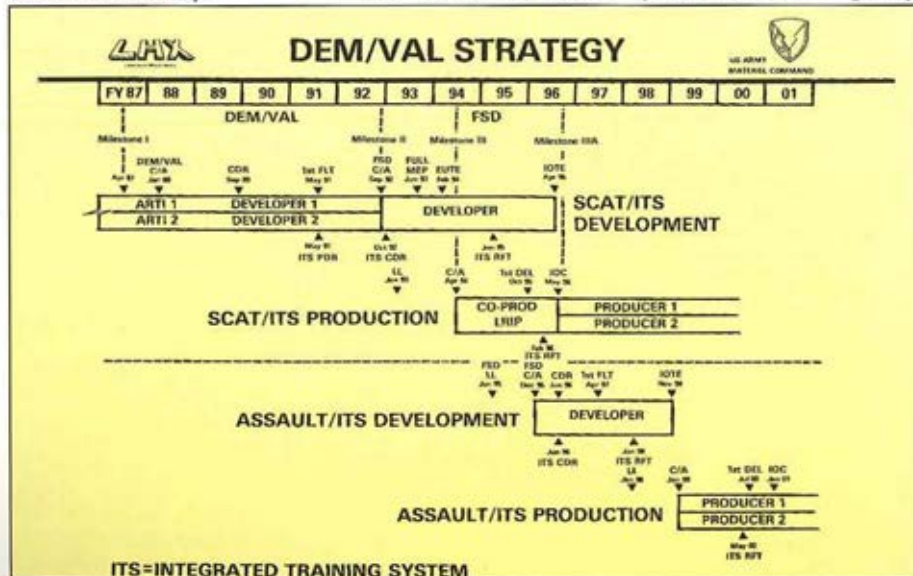
Package (MEP) on Flight Prototypes;

- Full MEP on Ground Based Avionics Prototype;
- MEP Evaluation on Surrogate Aircraft;
- Integrated Training System Preliminary Design;
- Engineering Simulation;
- Contractor and Government Test;

- Selection of Winning Team;

The program structure results in: SCAT first flight in May 1991; FSD contract award in September 1992; Low Rate Initial Production (LRIP) contract award in April 1994; and an Initial Operational Capability (IOC) date of May 1996.

The 35-month FSD effort for the Assault will commence in December 1995, and result in first flight in April 1997; production contract award January 1999; first production delivery July 2000; and an IOC of January (LHX — Cont. on Page 57)





Reserve Components:

## Yesteryear and Tomorrow

by Colonel Geary D. Martin



**FT. GILLEM, GA** — It was only yesteryear that our reserve component aviation forces were training on second line equipment in units that were part of the mobilization effort, but certainly not great combat force multipliers nor high on the priority list. That was yesteryear.

Today we are seeing those same units being reorganized, restructured, reequipped and in a period of transition to Army of Excellence TOE design with first line equipment and increased combat structure. And we are doing all of this at a fairly swift pace! These types of activities cause turmoil and great gnashing of teeth. However, the reserve components are handling this activity in stride and are doing a commendable job.

Second US Army (Headquarters at Ft. Gillem just south of Atlanta) is leading the modernization effort in numbers of combat units and receipt of first line equipment. Kentucky ARNG has the first reserve component unit to convert to the Combat Support Aviation Company (CSAC) structure and to receive UH-60 BLACK HAWKS. North Carolina ARNG is planning and training up for receipt of the first AH-64s assigned to reserve components. They accept delivery of their first APACHE this June and will undergo cadre training at Ft. Hood this summer. They will have their full author-

ization of 18 APACHES by December 87 (before the nearly 82nd Airborne Division receives its first one). South Carolina ARNG will activate the second reserve component APACHE unit in FY88 and Florida ARNG in FY89. These units will also be equipped with UH-60 BLACK HAWKS.

The USAR aviation elements in Second Army will undergo a drastic facelift. The current aviation force structure consists of an aviation company (EW) with RU-21s, five medical detachments (Air Amb), an AVIM company, six OSA aviation sections, two ASA aviation sections and two engineer group aviation sections. Not a very exciting structure nor warfighting capability. The Second Army structure of the future is as follows:

The 33rd Aviation Group and the 136th Aviation Battalion will be activated later this year (4th Qtr, FY87). The 282nd Aviation Company at Ft. Rucker is in transition, switching out their 23 UH-1s for 15 UH-60s. The third CSAC in the 136th Aviation Battalion will be an active component unit forward deployed in Europe.

The 376th AVIM Company at Ft. Rucker will convert to a Corp Aviation Maintenance Company in FY88 and be redesignated 259th Avn Maint Co.

In alignment with the Army direction to centralize control of OSA support, we are forming a theater aviation company (TAC)

by consolidating OSA from five locations to two. The headquarters will be located at Pell City, AL, (four FW, three RW) with a detachment at Columbia, SC, (two FW, two RW). Although the fixed wing fleet is mostly comprised of confiscated (drug bust) U-8 equivalent aircraft, we hope to standardize the fleet with U-21s in the future.

To supplement our organization, we have established a Memorandum of Understanding with the TRADOC flight detachment at Ft. Knox whereby they will provide OSA support to our USAR units in Kentucky and Tennessee (the Total Army concept in practice).

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### **"The USAR aviation elements in Second Army will undergo a drastic facelift."**

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We are consolidating our air ambulance detachments from five locations to three, placing two detachments at each location (we will activate the sixth air ambulance detachment 4th Qtr, FY87). This action will allow us to close our aviation support facilities at Louisville, Vicksburg and Miami and aligns our units for conversion to the air ambulance structure of the future — air ambulance companies (15 UH-60). The air ambulance units will not be part of the aviation group, but will remain assigned to medical battalions.

The force structure for our Second Army USAR and ARNG aviation units is combat oriented, the equipment is first line, the action is dynamic and the future is bright. As part of the total reorganization/restationing package, we have included a military construction program to bring all facilities up to standard.

COL Martin is Aviation Officer, Second US Army, Ft. Gillem, GA.



Training:

## The AH-1 Flight and Weapons Simulator

by Lt. Colonel Michael F. McGaugh



**ORLANDO, FL** — The Army is on the verge of delivering the most exciting training capability the aviation community has ever seen — the new Synthetic Flight Training System with the Army's Tactical Digital Image Generation (ATACDIG) visual system.

During the first half of 1988, the National Guard units at Marana, AZ, Indiantown Gap, PA, and the Aviation Center at Ft. Rucker, AL will receive AH-1 Flight and Weapons Simulators with a computer generated imagery of a 1,200 square kilometer textured, visual gaming area populated with cultural objects, valleys, plateaus, rivers, battle positions, and hill tops.

The gaming area also contains 99 target sites with 80 moving target pathways providing quite a diversity of targets to

engage during weapons system training. The threat vehicles will be capable of engaging the crew and shooting them down or disabling onboard systems. This ownership and threat interaction is a capability of the ATACDIG and has performed successfully on the AH-64 Combat Mission Simulator, but total implementation to the degree of combat mission simulation is not currently possible because of main computational system limitations. The new AH1FWS will provide a significantly new dimension to flight and weapons training for COBRA pilots. Most of you will recall that previously delivered AH1FWS incorporated either the Laser Image Generation (LIG) systems or the Low-Light-Level Camera System — both based on model board technology. These earlier systems will be upgraded starting this winter with

an improved Telescopic Sight Unit (TSU) visual scene provided by a new video disc system.

With this upgrade, gunners will be able to view from any of 26 battle positions actual images of the terrain model board and computer generated targets that will move through the scene. The upgrade program will also incorporate the C-NITE subsystem on a schedule ahead of the actual aircraft modification and the retrofit of all devices with blue-green lighting to make the flight stations compatible with night vision goggles.

Lastly, PM AVD is planning with AVSCOM the upgrade of all AH1FWS with a new main computational system and modifications approved for the COBRA helicopter fleet. In the future, improvements such as SINCGARS avionics, aircraft survivability equipment, and new weapons are being planned.

With the emphasis of combat skills training in today's Army, we at PM AVD are striving to keep the valuable flight simulator inventory abreast of the need — We will continue to meet the challenge to "Provide Soldiers the Decisive Edge".

IIII

LTC McGaugh is the Product Manager, Aviation Training Devices, Orlando, FL.

## AATD Develops Aircraft Combat Maintenance and Battle Damage Repair System Training Aids

The US Army Aviation Research and Technology Activity's (ARTA) Aviation Applied Technology Directorate (AATD), Ft. Eustis, VA, ballistically damages non-serviceable helicopters to provide realistic training aids for the Aircraft Combat Maintenance/Battle Damage Repair (ACM/BDR) system.

These training aids will support the US Army Aviation Logistics School's (USAALS) ACM/BDR damage assessor training program. The USAALS provided an AH-1S COBRA and a UH-60A prototype aircraft for the training aids. Future plans include an OH-58D (AHIP) and

an AH-64A APACHE.

The ACM/BDR system is the result of 1982 Army Aviation Mission Area Analysis findings that aviation units would be flying at a substantially higher rate during combat than at peacetime. Maintenance units, geared toward peacetime maintenance, would be rapidly overwhelmed. The system consists of kits and manuals which will be used during combat to provide expedient damage repair tools, parts and procedures.

Fielding and training of the ACM/BDR system is scheduled to begin FY87.

## **AACT - Cont. from Page 39**

"This modification provided about 400 square inches of additional space inside each panel," explained Hayth. "It gave us a space of six-inches deep by 30-inches wide by 12-inches high. We gained a lot of area, and we are using all of it."

AATD awarded contracts to Bell Helicopter Textron and Aerospatiale to install handling qualities performance packages and associated structural sensors on the AH-1S and the SA-365N-1 aircraft.

"The installation of the sensors was brought to a tie-point and calibrated," said Hayth. "It is at this point on the helicopter that the AATD and contractor instrumentation systems were connected."

Special equipment added for the test included a Thompson CSF/Hamilton Standard head-up display (HUD), Polhemus Navigation Sciences and Ferranti helmet mounted system (HMS) aiming devices, flight test noseblooms, external and internal video cameras, television monitors, and the Giravions Dorand laser weapon simulators (LWS) in fixed and turret mounts.

The LWS is used to evaluate accurately the effects of firing weapons against real moving targets fitted with optical reflectors by means of a harmless laser transmission/reflection/detection system and computer. The LWS provides a quantitative evaluation tool for measuring engagement ranges, hit probabilities, aiming accuracies, and platform and weapon axis stability.

"The contractual requirements for the LWS included that all data would interface with the standard

RS232 computer format," said Hayth. "Considerable contract negotiations with the companies on this effort had to be completed before we could get to the instrumentation packages."

Hayth designed and NASA built the signal conditioning systems and data detection channel circuit boards for the test. The Boards provide 160 data detection channels for the AH-1S and 56 for the SA-365N-1 aircraft.

"Signals are transmitted through the LWS to the aiming devices," Hayth explained. "Each aircraft is fitted with laser reflectors. We are using eye-safe lasers, and we need a good energy return."

The LWS acts like radar and positions the target, only with more accuracy.

"Once the LWS locates the target, the on-board computer simulates a 'fired' ballistic round," said Hayth. "That information is transmitted to the main computer on the ground, along with the handling qualities, structural and performance data."

The tests will require approximately 30 flight hours flown in fifteen flights.

"We have proved that we can do this type of work at AATD," said Hayth. "If there is an AACT V, the talent has been developed." ■■■■

## **3rd MI - Cont. from P. 40**

telligence support, several other activities allowed the Battalion to prepare for war. Along with Air Force and Marine aircraft RU-21 and OV-10 aircraft participated in a highway landing exercise, demonstrating the use of a portion of the Seoul-Pusan Expressway as a contingency land-

ing area. Additionally, pilots and enlisted crew members participated in an Air Force Search and Rescue exercise practicing survival, escape, resistance, evasion, and extraction skills.

The highlight of Team Spirit 87 was the awarding of the Superior Unit Award to the 3rd MI Bn (AE) by General William J. Livsey, Commander-in-Chief, Combined Forces Command. The Award, approved by the Chief of Staff of the Army, for the period April 1, 1985 to March 31, 1986 recognized superior performance of a uniquely difficult and challenging mission. It is a great honor to command one of the first Military Intelligence or Aviation Battalions to receive this award.

The almost 500 US and Korean soldiers and civilians assigned to the 3rd MI Bn (AE) take great pride in providing the best possible intelligence support to US Forces Korea and living up to its motto — Winged Vigilance. ■■■■

## **LTC Thomas R. Smith (deceased) Pilot, US Army**

Did you serve with my father in Korea (1951-52), Ft. Sill (1952-54 and 1960-65), Ft. Rucker (1954-57), Ft. Kobie CZ (1957-59, An Khe Viet Nam (1966-67), or Ft. Monroe (1967-70)?

As his only son, I seek any information on his military years.

**R.E. Smith**  
2724 Bluegrass Drive,  
Ft. Collins, CO 80526-1321  
(303) 221-4080



## APACHE - Cont. from P. 44

system and improve the precision of flight path control and navigation;

- A modular avionics architecture using standardized MIL-STD-1750A processors with extremely fast throughput and substantial memory capacity programmed in ADA language.

- A modular environmental control and pressurized air system for more crew comfort, better avionics cooling, and easier adaptation to biological and chemical requirements.

**Industry Funded Development:** The developmental effort for an Advanced APACHE with the new capabilities above is currently being funded by MDHC and its team of industry partners. Along with the added capabilities, program goals are to increase crew effectiveness, increase reliability and survivability and reduce operational and support costs. A key objective is built-in growth capability for upcoming advanced systems which cannot be incorporated into the existing APACHE design. The effort, underway since mid-1985, will include a flight and firing program in 1987 to evaluate air-to-air weapons, and will result in a flying prototype of the new design in late 1989.

**Current Status:** MDHC and its team have made significant progress to date.

The core architecture design has been completed. It features distributed processing in MIL-STD-1750A computers connected by dual redundant MIL-STD-1553B data buses. Also the crewstation configuration containing a non-paging control and display approach has been defined. Other key ac-

complishments are:

- A co-pilot gunner simulation facility is integrated and operating. It will begin full system testing this summer.

- A "hot bench" to integrate actual systems and hardware has been completed. Testing on prototypes of new equipment has started.

- Executive and navigation software routines have been programmed in Ada and are operating on laboratory MIL-STD-1750A computers.

- A preliminary design of expanded avionics bays has been completed with provisions for current and future equipment.

- Evaluation of air to air requirements, tactics and potential weapons effectiveness has begun.

The industry investment by MDHC and its team is leading to an Advanced APACHE design which is structured for integrated, yet modular addition of future capabilities, and is ready for production incorporation. The end result to the Army will be an APACHE with improved combat effectiveness in a multi-mission role. IIII

## 6th ID - Cont. from P. 48

with A-10 Thunderbolts from the 18th Tactical Fighter Wing Stationed at Eielson AFB, AK. High Altitude Rescue Team (HART) training recently took a CH-47C of the 242nd to altitudes in excess of 20,000 feet with landings on Mt. McKinley as high as 19,500 feet in preparation for the Northern Warfare Training Center (NWTC) summer mountain/glacier training and possible US Park Service rescue support. Joint Readiness Exercise Brim

Frost '87 in January found the brigade's assets spread throughout Alaska's harsh arctic and varied terrain. The brigade flew in excess of 1,200 incident-free hours while operating from nine separate locations. With an area of operations from Kodiak Island, in the south, to the oil-rich "North Slope," the brigade was dispersed over an area analogous to that from Dallas to Chicago to Nashville and back to Dallas.

In addition to the training considered normal for an aviation brigade, field training is supplemented by specialized aviator arctic skills qualifications. The future calls for self-deployment training to the periphery of Alaska, joint deployment to the Aleutian Island chain, and quite possibly, further. This winter's field training exercises and external evaluations of subordinate units brought the brigade to a readiness level that fully integrates aviation into light division doctrine in the arctic.

Above all, the brigade continues the enviable three-year record of zero Class A incidents begun by the 22nd Aviation Battalion.

In reorganization, mission and training the brigade stood "Arctic" ready on its first birthday. Since receiving the colors, COL Gaskins and CSM Jack Mentzer have led the brigade's growth, reorganization and training at a rapid pace — maintaining the unit's proud motto: "Above the line." IIII

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## **Prototype - Cont. from P. 24**

and September 1990, respectively. The first production engines will be delivered in January 1991.

The Army's first operational tiltrotor aircraft is also the next aircraft to be fielded by the Army. The materiel developer and user are working together to ensure we field a total aircraft system and is supportable in our environment. **III**

## **3rd ACR - Cont. from P. 49**

17 AH-1P and 12 OH-58 aircraft will be added to the squadron to bring its ACTs to full strength and activate the two ATKHTs. Early in 1989, the capabilities of the Squadron will be further enhanced with the issue of 18 UH-60 and three EH-60 aircraft.

Activation of and training the 4th Squadron has been an extremely challenging and rewarding experience for each of its 325 troopers. The greatest reward that I have had as its commander is to observe the steady development of teamwork and cohesiveness among its members. The new force structure of the 4th Squadron is a total success as it takes its place beside its armored cavalry brothers in the Regiment of Mounted Riflemen. **III**

## **File - Cont. from P. 50**

documents and can directly influence their accuracy. The Aviation files get better every day in MILPERCEN and all aviators bask collectively in the positive light in which DA Selection Boards will see the Branch. Keep up the good work and do well in all your assignments.

Don't worry about not being close to MILPERCEN to review your Branch file — it doesn't go before any board; we just use it to talk to you about Army needs and your professional development. Develop your own personal file — PHOTO — ORB — FICHE — and we'll all get better together. **III**

## **Warrant - Cont. from P. 51**

personnel managers operate is increasingly complex and the demands are great. Modernization of the way we do business, as indicated above, will hopefully permit us to achieve our goal — providing the field commanders with qualified aviation warrant officers on time, on target. **III**

## **LHX - Cont. from P. 52**

2001. The winning contractor team will build three pilot production prototypes during Assault FSD.

The core MEP incorporated in the DEM/VAL SCAT flight prototypes shall consist of the integrated cockpit, advanced flight control system, Tri-Service common Very High Speed Integrated Circuit (VHSIC) based architecture, Integrated Communication, Navigation, and Identification Avionics (ICNIA), Helmet Mounted Display (HMD), weapons integration, and core software.

The DEM/VAL ground based avionics prototype will evaluate core software and all MEP functions on a hot bench; demonstrate built-in test and reconfigurability; and evaluate subsystems, to include Aircraft Survivability Equipment. Surrogate aircraft will be used to

demonstrate the Night Vision Pilotage System (NVPS), targeting acquisition system, targeting processor, and targeting algorithms.

Identification, isolation, and correction of system technical risk unknowns by hardware demonstration and system architecture integration during DEM/VAL will increase confidence in meeting schedule and program goals. The LHX MEP architecture and common avionics modules will be developed for interchangeability with the Air Force Advanced Tactical Fighter and the Navy Advanced Technology Aircraft. This will include the Tri-Service developed ICNIA. Two additional SCAT pilot production prototypes will be built during FSD by the winning contractor team. Full MEP will be installed and tested on the six SCAT prototypes during FSD. The LHX system design will incorporate built-in margin for excess processing capability within the mission equipment architecture. Technological improvement, future mission scenarios and the changing threat will be accommodated without major system redesign.

Preplanned Product Improvement considerations include a multi-mode radar, an advanced technology anti-tank guided missile, and a noncooperative Identification Friend or Foe (IFF) system.

Two competitive DEM/VAL contracts, one to each contractor team, will be equally funded, firm fixed price contracts. This will ensure the Government does not affect the results of the competition through funding inequity.

The Request for Proposal (LHX — Cont. on Page 65)

## Heritage - Cont. from P. 19

"Fat Cow" CHINOOKs, which employ Army-installed internal fuel tanks to tanker fuel to distant landing zones, thereby extending the range of other division helicopters and giving them added time on target.

CHINOOKs selected for modernization are inducted into the CH-47D production line at Boeing Vertol's suburban Philadelphia, PA, manufacturing facilities. The rebuilding process involves removing the rotors, engines, transmissions, and other assemblies, stripping the airframe down to bare skin and ribs, and inspecting virtually every square inch.

The modernized CH-47D's mechanical systems are a contemporary design with those of the U.S. Army's newest production helicopters, the BLACK HAWK and APACHE. A number of new or improved components and systems enhance the CH-47D's capabilities and lower its operating and support costs. Chief among them are:

- Avco Lycoming T55-L712 turboshaft engines
- Improved transmissions with integral lubrication and cooling and a 7500-shp rating
- New-design fiberglass rotor blades
- Redundant and increased capacity (double) electrical systems
- New automatic flight-control systems
- Modularized hydraulic systems
- Triple cargo-hook system
- Improved T-62T-2B auxiliary-power unit
- Improved avionics
- Night-vision-goggle cockpit
- Aircraft survivability equip't

- Single-point pressure refueling system

The increased lifting capacity of modernized CHINOOKs combined with their much faster external-load capabilities give them the lowest cost per ton nautical mile of any Army helicopter.

During the first half of 1987, CHINOOKs were delivered to units of III Corps Artillery, Ft. Sill, OK, and the 4th Infantry Div. (Mechanized), Ft. Carson, CO. Current plans call for shipments of CH-47Ds to support the 1st Cavalry Div. and 2nd Armored Div. and 6th Cavalry (Air Combat) Brigade of III Corps, Ft. Hood, TX, in June 1987, and to units located in Germany later in the year.

IIII

Mr. Jones is Vice President, Boeing Vertol Company, Philadelphia, PA.

## Computer - Cont. from P. 23

as a TDA/TOE item, FMCs will be issued on a basis of one per aircraft upon approval and production.

At the direction of DA, a contract was awarded to Horizons Technology Inc., San Diego, CA, to develop computerized flight management programs for CH-47D and UH-60A helicopters. The program will utilize performance equations of generic helicopters, therefore reducing FMC program development efforts for other helicopters. The contract requires FMC programs to be used in conjunction with a hand held computer to solve weight and balance, helicopter performance and mission planning problems.

Development of the FMC programs is underway according to the following schedule: Contract Award, SEP 86; Preliminary Design Review, DEC 86; Critical

Design Review, FEB 87; Prototype Delivery, MAY 87; Demonstration/Validation Test, JUN 87; IPR for Contract Compliance, JUL 87.

The contract objective was to convert the performance, weight and balance and limitations sections of the operator's manuals into computer formats that observe caution and warning instructions associated with each particular aircraft type. The FMC, which can be used either in the office or the field, will use familiar terms and be user friendly.

During the program design and review process many options required field expertise to ensure that the most useable computer program would be produced. Ft. Campbell, KY, Ft. Rucker, AL, and U.S. Army Engineering Flight Activity (AEFA), Edwards Air Force Base, CA, provided personnel that were versed in all aspects of helicopter flight operations and had a demonstrated capability in the use of hand held, in-flight computers. The Ft. Rucker representative gained knowledge during this review process which could be used by USAA/VNC personnel for the development of an FMC instructional course to be taught at the Aviation Center.

## FMC operations

A brief description of FMC operations follows: There are three major functions: balance, flight performance and flight planning functions. All weight and balance functions are implemented on one overlay, while flight performance and flight planning functions are implemented on the Flight Performance overlay.

The weight and balance overlay allows the pilot to adjust,



review and clear all weight and balance data or subsets of weight and balance data as he chooses. The limitations key (LIMIT key, Figure 1) allows the pilot to review data required for DD Form 365-4, Weight and Balance Clearance Form F. This data can be read on the FMC and recorded on the required Form F.



Figure 1: Weight and Balance

Another feature for tracking weight and balance computations is the provision to categorize weight into "Airland" and "Airdrop." Airland data is weight with which the helicopter will take off and land. Airdrop data is weight which will be unloaded or dropped before landing and is not included in the landing weight and balance calculations. Airdrop does not apply to fuel as the estimated landing fuel quantity is extended under the fuel subset.

The Takeoff (T/O key, Figure 1) and Landing (LND key, Figure 1) Center of Gravity keys allow the cockpit crew to review the sums of weight and balance arms to determine the gross weight and center of

gravity for take off and landing.

The Flight Performance overlay allows the pilot to access the software to determine the conditions for takeoff, climb, cruise, descent, hover and emergency power, torque required, fuel burn, distance, time, gross weight and optimum airspeed as a function of altitude, wind, temperature and time. The pilot can review data required for the DA Form 4887-R, Performance Planning Card (PPC), by pressing the PPC key (Figure 2). This data can be read on the FMC and recorded on the PPC.

The calculation of the data for the PPC is required before each flight. The navigation subset will allow computation of course and distance based on latitude and longitude either by rhumb line or great circle equations.



Figure 2: Performance

This subset will also provide ground speed and heading given wind direction, wind speed, course and true airspeed. The three navigation functions have been centralized under one key (NAV key, Figure 2). The FMC will auto-

matically compute best range speeds and altitudes for deployment missions and will simplify "What if" decisions for cockpit crews.

Contingent on the In Progress Review results in July, 1987, an option on the Horizons Technology Inc., contract will be exercised to procure FMC for CH-47D use on the basis of one per aircraft. It will be procured as part of the WTAS PIP.

Mr. Grossman is an electronics engineer with the CH-47D/Army V-22 Aircraft Programs Project Manager's Office.

## Asset - Cont. from P. 31

provide enroute medical care to 12-18 litter patients per lift. This represents a significant increase over the capabilities of current medevac assets. With its capability to rapidly evacuate patients and casualties, the V-22 will be used as the principal air medevac platform within the corps support area for movement of patients out of the division to corps, and when situation dictates, to some theater medical facilities. V-22 will also play a vital role in the medevac support for the deep attack and areas where the corps is extremely large.

In the Middle East where the distance from the corps support area to division rear medical facilities is as great as 192 nautical miles, a V-22 will transport an entire surgical team and 2,000 pounds of whole blood in one-half the time it would take two conventional utility helicopters and require almost one-half the fuel.

Anticipating the fluidity of the future battlefield, rapid concen-



## BRIEFINGS

**CWO Jonathan L. Gregory** received the Army Aviation Broken Wing Award for his successful effort in safely landing a disabled U-21 aircraft in October 1986 from **MG Charles F. Drenz**, commander, USA Test & Evaluation Command, APG, MD. Others pictured, from l. to r., are **MAJ Timothy Sprouse**, **COL Robert W. Haubrich**, **LTC Fielding L. Tyler**, and **CWO John Pink**, co-pilot. The aircraft's gear retract mechanism failed on departure. Gregory was able to land the aircraft with no injuries and with minimal damage to the aircraft.



A six-member team of Army mechanics successfully completed the required Phase I Maintainability Demonstration on the LHTEC LHX T800 engine, a joint venture of the **Allison Gas Turbine Division** and the **Garrett Turbine Engine Company**.

**Charles R. Rudning**, senior v.p., Gov't Business, Bell Helicopter Textron, announced the promotion of **Jack D. Floyd** to deputy director, LHX "Superteam". Floyd replaces **Walter Sonneborn**, who was named deputy for Design Engineering.

**ITT Avionics** dedicated a new advanced production facility in Clifton, NJ, in May which will be used to produce the company's self-protection and radar jamming systems.

The Joint Technical Coordinating Group on Aircraft Survivability (JTCS/AS) and the Center for Naval Analyses (CNA) are sponsoring an **Air Combat Survivability Symposium**, December 8-10, 1987, in Monterey, CA. Contact: **RADM Robert K. Ghormley**, USN, Ret., The Oceanus Company, P. O. Box 7069, Menlo Park, CA 94026. (415) 854-8155.

A badly injured mountain climber, **Stanley Darke**, was rescued from a steep slope on Mt. McKinley in early May by an Army CH-47 helicopter from Fort Wainwright's 242nd Combat Aviation Company. On board were pilot **CWO Scott C. Nichols**, co-pilot **CWO Kirk W. Brown**, flight engineers **SGTs James D. Matheney** and **Bruce L. Wood**, **Ranger Ralph Moore** and two Air Force pararescuemen, **SGTs Danny Lake** and **Eric Johnson**. Darke was in critical condition having fallen at the 15,000 foot level of the mountain.

## AVIATION COMMAND CHANGES

The following changes were provided from MILPERCEN and are subject to change:

**LTC (P) Robert D. Kerr** — Student, Naval War College. To become Commander, 82d Combat Aviation Brigade, Ft. Bragg, NC. Effective May 1987.

**LTC (P) David R. Forville** — Staff Officer, Office of the Deputy Chief of Staff for Research, Development, and Acquisition (ODCSRDA), Washington, D.C. To become Chief, Aviation & Missile Systems Division, HQ, AMC, Washington, D.C. Effective July 1987.

**LTC (P) Ronald N. Williams** — Department of the Army System Coordinator (DASC), ODCSRDA, Washington, D.C. To become Deputy Director for Engineering, U.S. Army Aviation Systems Command (AVSCOM), St. Louis, MO. Effective August 1987.

**COL John E. (Jack) Kempster** — Commander, U.S. Army Materiel Laboratory (MTL), Watertown, MA. To become Commander/Director, U.S. Army Aviation Applied Technology Directorate (AATD), Ft. Eustis, VA. Effective June 1987.

**LTC (P) William D. Loftin** — Student Air War College, Montgomery, AL. To become Special Assistant to the Commanding General, Ft. Campbell, KY. Effective August 1987.

**LTC (P) Alfred G. Snelgrove, Jr.** — Student, Air War College, Montgomery, AL. To become Commander, Combat Aviation Brigade, 10th MTN Division, Ft. Drum, NY. Effective October 1987.

# BRIEFINGS

**E. George Riedel** has been named vice president and director of business/government relations for **ITT Defense Technology Corporation** in Washington, D.C.



**Chan Morse**, McDonnell Douglas Helicopter Company experimental test pilot for the NOTAR shows **MAJ Waldo F. Carmona**, US Army AATD, Ft. Eustis, VA experimental test pilot, how the NOTAR uses a low pressure air circulation system to provide directional control.

**TRW Inc.** sold **Hartzell Propeller Inc.** to the Cleveland-based, privately-held gear manufacturer **Lakeside Company**.

**Tri-Tech Electronics** has been awarded a \$750,000 contract for producing special cable assemblies for the TADS/PNVS system being developed by **Martin Marietta** under contract to the U.S. Army.

Prompted by the **Sacramento Army Depot** Suggestion Program, employee **Vince Dorio** saved taxpayers over \$1M by developing a hoist for maintenance of the Army's OH-58D helicopter. The depot will build 100 hoists under an AVSCOM contract. Dorio received an \$8,450 cash award.

A U.S. Coast Guard pilot and crew stationed at Kodiak Air Station, AK, won the **Aviation/Space Writers Association (AWA)** Helicopter Heroism Award. The award, co-sponsored by **Avco Lycoming Textron**, was given to **LCDR Tom Walters**, pilot, **LT John Filipowicz**, co-pilot, and crew members, **Tony Juan**, **Don Nolan**, and **John Holcomb** for their dramatic rescue of two fishermen whose boat was sinking.

**AiResearch Manufacturing Company**, division of **Garrett Corporation**, has changed its name to **Garrett AiResearch**.

**Howmet Turbine Components Corporation** will change its name to **Howmet Corporation** effective September 1, 1987.

**George G. Houser** has been named President of the **Singer Link Flight Simulation Division**. He succeeds **William D. Turner** who was previously promoted to group vice president of Singer's Training Systems Group.

Australia's Minister for Defense announced the Australian Army will acquire an additional 25 S-70A-9 **BLACK HAWK** helicopters from **Sikorsky Aircraft**, bringing the contract value in excess of \$200M.

**Texas Instruments** has teamed with **Canadair Limited** of Montreal to offer remotely piloted vehicle (RPV) systems for military, civil, and commercial applications. The team will provide total system integration, tactical payloads, and support equipment for the CL-227 "Sentinel" RPV developed by Canadair. The CL-227 is a rotary wing design that provides vertical takeoff and landing and in-flight hovering capability. A three-phase evaluation, sponsored jointly by the US DoD and the Canadian Department of National Defense, is planned to begin in October 1987.



**Ferranti** has teamed with **Teledyne Controls** to joint produce acoustic sensor systems for the U.S. market. Ferranti's **PICKET** system has been extensively tested and proven, achieving passive detection and identification of helicopter targets. Operation is not constrained by line-of-sight, helicopter flight mode, or the weather. Unlike radar or infra-red, **PICKET** cannot be defeated by counter measures.

Ground was broken in May for a \$4M ordnance assembly and test center being built at the **McDonnell Douglas Helicopter Company** Mesa, AZ headquarters.



## Challenges (Continued from Page 4)

reality and the need for balance in our modernization process.

### Army funding priorities

The Army's investment strategy is driven by the top line funding that we are given by the Secretary of Defense. Within that funding constraint, the Army leadership establishes a priority of funding to operate the Army:

**First** — We must take care of our people. With a level end strength of 781,000 active soldiers and a modest growth in the size of the National Guard and Army Reserve, this account is essentially flat.

**Second** — We must fund the structure and the operational side of the force. Our operations and maintenance account will increase by 2.5% for FY88. But this is a result of the pace of modernization and the flow of new equipment from the FY85 and FY86 budgets, which will be in the hands of troops during the next year. We don't get rid of equipment. Rather, the displaced systems from the Active Army flow into the National Guard and Army Reserve. Our operational tempo will remain constant at 850 miles per annum for vehicles and 16 hours per month for aircraft. We will build eventually to 20 hours per month for aircraft.

**Third** — Military construction for housing, barracks, and motor parks has no growth. We need a decent place for our people to live and work, and are keeping a viable construction program.

**Fourth** — We are committed to the Total Army and are modernizing the Reserve Components. The Reserves are a good news story.

- They have increased by 250,000 soldiers this decade and next year will be larger than the Active Component. That is good for readiness and for the Nation.

- We will complete the Reserve Component Aviation Modernization by 1992 with a force composed of AH-1Ss, AH-64s, and UH-60s. We are all aware that the future modernization of the National Guard and Army Reserve in the year 2000 lies in the LHX Program.

- Reserve Component Overseas Training is robust — it has increased in seven years from 1,900 to 55,000 soldiers participating. Reserve Aviators are involved in exercises around the

world this year at Team Spirit, Bright Star, and Blazing Trails. That's the **Total Army** at work!

### Balancing Act

These priorities leave the investment accounts as the balancing act for the budget. They have paid the price — from our FY88 budget, \$15 billion from research, development and acquisition was cut during the development of the program, and for the period FY85-92, \$83 billion was cut from these funds.

Within the investment account, we have to maintain an adequate Research, Development, Test and Evaluation element to leave mission-threat related equipment for those who follow us a decade from now. Tactical programs are the heart of our research and development effort, and aviation is receiving a growing share of this effort.

To give you a perspective on our procurement account, you should remember that the Air Force research and development effort is larger than our procurement account — which is about \$16 billion.

Procurement first pays for the combat support, spares and ammunition that is so necessary for readiness. That leaves us about \$11 billion a year to balance among the combat equipment functional areas to develop the most effective combined arms team. The top 20 systems — of which five are aviation systems — take up 70% of our procurement budget.

We must separate today's production from research and development for the future. The Army modernization situation today is based on affordability. If we had the additional funding, we would continue to procure the additional equipment so necessary for our national defense. Aviation is a critical element in that modernization.

**A reminder** — One does not want to invest in today's product to the exclusion of the research and development for tomorrow's necessity — particularly in the field of armaments. The price will be too high, particularly in our most precious asset — people. Some folks actually think that LHX Research and Development should be sacrificed for 1970's technology. All of us know better — because we understand the threats that lie ahead in the year 2000.

American industry is ready to produce more equipment — we just need added procurement funding — on **top** of our modest Research and Development funding.



## Challenges in the last 4 years

The Army leadership has given the aviation community a number of challenges during the last four years. You have responded to these challenges.

- **To Make Safety a Primary Concern.** You have established the best safety record of 1.98 Class A accidents per 100,000 hours in Army Aviation history and within DOD for FY86. The key to this success is a confluence of a variety of initiatives, better mission planning, standardization aircrew briefings and briefbacks, critical parts program with industry, written pilot-in-command selection, better leader to led structure at battalion and brigade level, and greater safety awareness in standdown days. This has been and will continue to be a visible, open-ended challenge for you and for the Army leadership to continue this momentum. You have responded to the challenge.

- **To Modernize the Medium Lift Helicopter Fleet.** The CH-47D Modernization Program is meeting or exceeding scheduling, cost, and performance goals. This has saved research, development, test and evaluation, and start-up costs, and transformed a 1960s era aircraft into a system for the future. You have responded to the challenge.

- **To Field the APACHE Fleet by Unit at Ft. Hood.** The single station fielding program at Ft. Hood is an Army-Industry initiative that has provided efficiency in organizing, training, and deploying APACHE battalions in unit sets. APACHE will be in Europe this fall on Reforger, and the first battalion will deploy to Europe in early 1988. The support structure will be in place to make that battalion operate with distinction. You have responded to the challenge.

- **To Develop a Viable Spare Parts Program.** We needed to establish a spare parts war reserve in CONUS, another reserve located OCONUS, and a contingency parts pool. We must manage this program so that we plan for the peacetime parts necessary for daily operations and also plan for the wartime parts that are essential to win on the battlefield. This program is in being — the parts are accumulating. You have responded to the challenge.

- **To Develop a Competitive, Modern Follow-on to Our Aging Scout and Utility Fleet.** The LHX program demonstrates the best in Army-Industry cooperation. The Industry Teams are meeting the system specs and are achieving cost savings. It proves that you can have a thin Request For Proposal for a robust program and make it work. The program and the Cost and Operational Effectiveness Analysis are on track. You have responded to the challenge.

- **To Create the Standards, Structure, and Vision for the Aviation Branch.** I challenged you to produce tactically and technically competent Army Aviation leaders by having Instructor Pilot qualified brigade and battalion commanders. That is happening today. You are also preparing for the future with the Aviation Master Plan and the Complementary Army Aviation Personnel plan to grow the future structure and leaders for the Branch. You have responded to the challenge.

Army Aviation is in superb condition because the Army-Industry team responded to the needs of Army Aviation with vigor, initiative, and innovation.

## Continuing challenges

There are, of course, additional challenges in the future.

**First Challenge — Branch Maturation:** We must continue the professional development of the members of the Aviation Branch. You are presently developing the future leaders of the Branch. They have to be more than pilots — they have to be soldiers versed in Combined Arms Tactics.

Lessons from the National Training Center tell us that we need to increase synchronization of aviation assets with the other members of the Combined Arms Team. The APACHE does not replace the COBRA any more than the BRADLEY fighting vehicle replaces the M113 Personnel Carrier. We must refine our tactics, techniques, procedures, and standards to operate on the modern, lethal battlefield.

**Second Challenge — Constrained Resources:** We must reduce operations and support (O&S) costs. Part of our block modifications must go to O&S cost reduction. In many respects we

are undergoing a transformation that is similar to the commercial airline industry today in that the requirement exists to reduce costs to stay competitive. We can take pages from their procedures — prognostic maintenance, for example.

We need to solve the dilemma of peacetime and wartime O&S cost drivers. In peacetime, it is necessary to have APACHE, BLACK HAWK or CH-47 components that have long shelf life and long mean-time-between-failure. In a wartime environment, however, where we expect a helicopter may not survive more than 250 flying hours and where we need rapid industrial mobilization, our major system components should be geared for the life expectancy of the aircraft for maximum operational efficiency — all to create a more robust support inventory.

**Third challenge — Contractor Support of Systems:** We must expand contractor support for aviation systems in unit activations and the life of the system — that helps us cut costs and save manpower. Industry must remain an integral part of systems from the research and development beginning, to fielding units, and finally, to supporting units in the field, even in combat situations.

**Fourth Challenge — Independent Research and Development:** We must expand our complementary research and development efforts with industry playing an increasingly greater role. That's reality today.

The helicopter industry is devoting over \$100 million a year to this program. But 70% of that funding comes from government. The showcase projects you are developing are impressive:

- Bell's model 680 rotor
- Boeing's higher harmonic control system
- McDonnell's NOTAR — No Tail Rotor
- Sikorsky's integrated cockpit as demonstrated on the Shadow aircraft

You must remember, however, to "Dance with the One That Brung You" — put your independent research and development (IR&D) money into the systems that are paying the bill. I've looked over the industry IR&D numbers against Army funding. The leverage of the total put up by industry versus the Army ranged from 6.6 to 1.7. We all need to bring this up to at least the 6.6 level. The Army will continue to supplement funding of better products to mature them quickly

for readiness payoffs.

The key to this process is a continual dialogue between the Army and Industry on each other's R&D efforts and the Army's future requirements. So far, I've had three meetings with the presidents of the four companies involved in LHX. That dialogue will be the model for the TRADOC-AMC "Materiel for Winning" philosophy of the future.

**Final Challenge — View of the Future:** We must maintain a view of the future — to the turn of the century and to work to build a bench for that future. All of us must work diligently at this. What is your view of the future? How will you communicate that to your staff as commanders' or project managers' guidance? It's easy to do today's work but much tougher to envision the future and **make it happen!**

Remember — the PFC and corporal in your command today is the Command Sergeant Major of 2010, the new GS-9 to GS-11 of today is the senior executive of the same period, for industry, your new manager on the floor will be the CEO of your company at the same time; and finally, the company grade officers going through the instructor pilot course today will be commanding brigades in the year 2000.

Develop these people in **your view** of the future — they will make your vision your legacy.

### **AAAA and the "Total Army"**

We appreciate the continuing support of AAAA to apprise the American people of the role of the US Army as the conventional and strategic land force deterrent of the Nation. Your association has been instrumental in the support given to the modernization of the total force this decade. The Total Army must continue to receive its appropriate allocation of resources to complete this vital process. If we are to defeat a quantitatively superior enemy, it must be done with quality weaponry. Superb American soldiers deserve superb American equipment, and they are getting it! They just need more of it.

Throughout its 168 campaigns and over two centuries of history, the Army has always been there when it was needed in peacetime and war. Remember a soldier on the ground is the symbol of national will and the personification of national deterrence. I know that all the members of AAAA will do their part to ensure that the soldier, Army Aviation, and the Total Army will be there when they are needed in the future. IIIII



## **LHX - Cont. from Page 57**

(RFP) will contain provisions for contractors to pursue parallel alternate design and testing of selected airframe and MEP components for each design. It also contains provisions for the Government's right to early down-select to a winning design if prototype competition is not viable or affordable, and Government flexibility to infuse technology from the losing design to the winning design to enhance overall LHX effectiveness (performance, cost, RAM, MANPRINT, and ILS).

The program schedule calls for a final RFP to be issued on June 1, 1987, with industry responding to Government by September 30, 1987. Evaluations and negotiations would follow in October thru December. This will allow DEM/VAL contracts to be awarded in January 1988, signifying the beginning of a new age in Army Aviation. ■■■■

## **Extra Mile - Cont. from P. 10**

Army ATC Ten-Year Plan, which was briefed to the Vice Chief of Staff, Army on May 6, 1987, is being implemented. This plan reflects Army and Joint Service aviation doctrine and fiscal policy, and provides basic planning information to all Army fixed base operations of our extremely reliable worldwide Traffic Control and Landing Systems (TRACALS). These systems must be able to satisfy Army ATC requirements to facilitate various types of aircraft operating from combat support, as well as fixed airfields and heliports. Our TRACALS network is good; however, I believe it can be better. This ATC Ten-Year Plan will

upgrade the TRACALS and other ATC equipment and facilities in a manner that will not cause any degradation of Army ATC service. It provides both near-term (1987-1991), and far-term (1992-1997) planning to meet our Army ATC goals. As with other vital segments of our branch, the Air Traffic Control Activity is going the extra mile in ensuring that our branch will be able to fulfill its mission and help to safeguard our national interests and those of our allies. ■■■■

## **Asset - Cont. from P. 59**

tration of combat power at critical times and locations may mean the difference between arriving and winning. In the conduct of combat troop insertions and air assault operations, V-22 units will rapidly lift and insert forces which range in size from a four-man reconnaissance element to an entire infantry battalion. In the Middle East and other theaters where our distance requirements are considerable, V-22s will insert our forces and their required fighting equipment in less than one-half the time that is required to move the same force with UH-60s and require far less fuel.

The significant increase in ammunition and fuel expenditure during future conflicts will undoubtedly increase our combat resupply requirements. The role of the V-22 in the combat/logistical resupply mission cannot be overstated. With the ability to lift approximately 22,000 pounds using short take-off and landing (STOL) and 10,000-14,000 pounds in vertical lift, the V-22 will provide Army Aviation the ability to rapidly transport, recover or resupply personnel or materiel throughout the entire battlefield area. Not only is the

V-22 capable of performing the mission far more effectively in theaters requiring greater range, but it performs well with external loads in Europe where range/endurance is not as critical. Using a typical mission profile, which involves the movement of 10,000 pounds of ammunition externally from a European corps ammunition supply point to a forward firing battalion, the V-22 still successfully accomplishes the mission substantially faster and in the long run with less fuel than conventional helicopters. In the Middle East, the savings in time and fuel approximately double.

V-22s will displace UH-60 battalion and company (medevac) requirements at corps and augment rotary wing assets in the special operations aviation brigade. Corps commanders will be able to maximize the V-22's versatility and capability in executing the deep attack, logistical resupply, medevac, division reinforcing and intra-theater high-priority transport. Specially configured V-22's will augment currently planned SOF vertical lift assets (MH-60 and MH-C-47E) in the SOF aviation brigade and will provide the needed capability of mix of aircraft required to execute the critical SOF vertical lift mission.

Current Army requirements call for resourcing each of the five corps, the 17th Aviation Group, eight corps medevac companies, and the special operation aviation brigade with V-22s. Although the fielding plan has not been finalized, tentative plans call for fielding V-22s in both Active and Reserve Component units. ■■■■

CPT Andra Strauss is Project Officer, Army V-22, Systems Branch of the Materiel, Logistics and Systems Division of the Directorate for Combat Developments, US Army Aviation Center, Ft. Rucker, AL.





## The AAAA President's Annual Report for the 1986-1987 Membership Year

Remarks  
of MG  
George  
W.  
Putnam,  
Jr.

I want to report to you on the status of our organization, and I'll do that by telling you a bit about how we're governed, our membership status, and our Chapter activities, and a little bit about our financial status, and some possible changes.

**Individual Membership:** This year, our membership is just about at the peak that it was last year. We're about 200 short of that at this moment (with 16,813 members), but there's every expectation that by the end of this month we will have exceeded last year's **record membership** of over 17,000 members.

**Corporate Membership:** Our Corporate Memberships now stand at 146, two short of what it was last year. Again, we expect within the next few months - and we know that there are Corporate applications in the mail - that the total will **exceed** last year's.

**Meeting Activity:** Our membership meeting activity has been at a **high** over the past year. The **USAREUR Region** has continued its most successful annual Garmisch meeting. It was very well attended again; it offered great professional programs and an opportunity for the families to get together for a Ski Week. It's a wonderful program for the Association members in Europe.

The Association conducted several symposia this past year. The **ASE Symposium** in Rolling Meadows, Ill., for one. Its attendance was up and AAAA presented the first "ASE National Award" during the symposium's banquet.

**At our 13th Annual Product Support Sym-**

This Report was made on Thursday, April 9, at the General Membership Meeting of the AAAA held during the 1987 National Convention in Ft. Worth, Texas.

posium in St. Louis, we enjoyed another very well-attended gathering with **General Maxwell R. Thurman**, the Vice Chief of Staff, and **LTC Crosbie E. Saint**, CG, III US Corps, as guest speakers. A large portion of the net revenues of this symposium were donated to the **AAAA Scholarship Foundation** by the Symposium's sponsor, the **Lindbergh Chapter**.

In still another major gathering, the **Monmouth Chapter** sponsored its bi-annual **Army Aviation Electronics Symposium** at which the **Hon. James R. Ambrose**, Under Secretary of the Army; and **MGs Ellis D. Parker** and **Orlando E. Gonzales** were guest speakers. As a by-product of this meeting and other activities, the Monmouth Chapter donated \$17,000 to the Scholarship Foundation and now supports four sustaining (endowed) scholarships and one matching fund scholarship.

**Chapter Structure:** We have 52 Chapters worldwide with membership strengths ranging from a low of 40 to a high of 1,646. The Chapter meeting activity has been **unusually high** this past year with only one of the 52 Chapters being considered as "inactive." Some 25 to 30 of these Chapters conduct professional, social, and business meetings each month. Most of these meetings are addressed by key military and industry speakers on a wide variety of aviation related subjects.

We anticipate **growth** in the Chapter structure. For example, an **Aloha Chapter** has been reactivated; a **Wright Brothers Chapter** has been activated in the Columbus, Ohio area. We expect a Chapter in the Ft. Huachuca area to be reactivated, and activation kits have been requested by members in West Point, NY; Bethpage, NY; Stockton-Fresno, Calif.; Wichita, Kan.; Tucson, Ariz.; and Boise, Idaho.

**Scholarship Program:** A very important activity.  
**(REPORT: Continued on Page 69)**

**The  
1987  
AAAA  
National  
Scholarship  
Award  
Winners**



**Kelly D.  
Eckel**



**Anne M.  
Mialaret**



**Vicki L.  
Bogan**

**This  
Year's  
22  
Outstanding  
Men  
and  
Women**



**Nancy G.  
Hoffman**



**Melissa A.  
Kurowsky**



**William P.  
Stewart**



**Amanda J.  
Wingo**



**Eldon H.  
Ideus, II**



**Erika H.  
Fossum**



**Carrie L.  
Guppy**



**Jason  
Perez**



**Sally A.  
Lehrter**



**Ramona A.  
Crofoot**



**Teresa M.  
Wingo**



**Sybil K.  
Butterworth**



**Anne T.  
Stravato**



**Liane V.  
Brewer**



**Fred D.  
Wright**

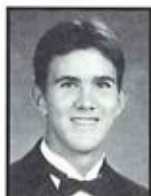


**Wendy E.  
Watkins**



**Kirsten A.  
Howe**

**The  
Program  
has  
returned  
\$163,275  
to  
353  
winners**



**Jeffrey D.  
Leeper**



**Thomas H.  
Griffiths, Jr.**





## AAAA Scholarship Foundation provides \$44.500 to 22 National Winners

**The AAAA National Scholarship—\$8,000 (\$2,000 a year for four years)** Kelly D. Eckel, daughter of COL Hasko K.W. Eckel, Ft. Totten, NY (2nd teacher's report used in lieu of AAAA interview).

**Robert M. Leich Memorial Scholarship—\$5,000 (\$1,250 a year for four years)** Anne M. Mialaret, daughter of COL Gerard J. Mialaret, Ret., Metairie, LA (2nd teacher's report used in lieu of AAAA interview).

**O. Glenn Goodhand Memorial Scholarship—\$5,000 (\$1,250 a year for four years)** Vicki L. Bogan, daughter of Robert L. Bogan, Ft. Washington, MD (AAAA Interviewer: LTC Rowland J. Nicholson, Ret.).

**William B. Bunker Memorial Scholarship—\$4,000 (\$1,000 a year for four years to an Engineering School applicant)** Nancy G. Hoffman, daughter of Roger P. Hoffman, St. Louis, MO (AAAA Interviewer: LTC (P) John H. Dick).

**B. Howard Dean Memorial Scholarship—2,000 (\$1,000 a year for two years)** Melissa A. Kurowsky, daughter of Ronald V. Kurowsky, Manasquan, NJ (AAAA Interviewer: Bernard V. Ricciardi).

**Rudolph Kahl-Winter Memorial Scholarship — \$2,000 (\$1,000 a year for two years)** William P. Stewart, son of COL John P. Stewart, Ret., Carlisle, PA (AAAA Interviewer: COL James D. Canfield, Ret.).

**Ken K. Kelly Memorial Scholarship — \$1,000—**Amanda J. Wingo, daughter of MAJ (P) Kenneth J. Wingo, Jr., Staten Island, NY (AAAA Interviewer: COL Jackie D. Catt).

**Aviation Center Chapter Scholarship — \$1,000—**Eldon H. Ideus, II, son of LTC Eldon H. Ideus, Enterprise, AL (AAAA Interviewer: COL Elray Jenkins).

**Checkpoint Charlie Chapter Scholarship—\$2,000 (\$1,000 a year for two years)** Erika H. Fossum, daughter of LTC Earl G. Fossum, II, Leavenworth, KS (AAAA Interviewer: LTC James L. Kluender).

**Colonial Virginia Chapter Scholarship — \$1,000—**Carie L. Guppy, daughter of LTC Chris M. Guppy, Ft. Eustis, VA (AAAA Interviewer: COL Richard G. Larson).

**Phantom Corps Chapter Scholarship—\$2,000**

**(\$1,000 a year for two years)** Jason Perez, son of CW4 Joseph Perez, Killeen, TX (AAAA Interviewer: LTC James C. McGrory, Jr.).

**Lindbergh Chapter Scholarship given in memory of GEN Frank S. Besson, Jr.—\$1,000—**Sally A. Lehrter, daughter of LTC John B. Lehrter, Belleville, IL (AAAA Interviewer: COL Kenneth E. Kellogg, Ret.).

**Monmouth Chapter Scholarship—2,000 (\$1,000 a year for two years)** Ramona A. Crofoot, daughter of LTC George W. Crofoot, Toms River, NJ (AAAA Interviewer: LTC Donald R. Ancelin, Ret.).

**Monmouth Chapter Perpetual Scholarship — \$1,000—**Teresa M. Wingo, daughter of MAJ (P) Kenneth J. Wingo, Jr., Staten Island, NY (AAAA Interviewer: MAJ Albert T. Fragola).

**Morning Calm Chapter Scholarship—\$2,000 (\$1,000 a year for two years)** Sybil K. Butterworth, daughter of Charles K. Butterworth, Atlanta, GA (2nd teacher's report used in lieu of AAAA Interviewer).

**Southern California Chapter Scholarship — \$1,000—**Anna T. Stravato, daughter of A.J. Stravato, Amarillo, TX (AAAA Interviewer: J.A. Carmena, Jr.).

**Washington D.C. Chapter Scholarship—\$2,000 (\$1,000 a year for two years)** Liane V. Brewer, daughter of LTC Larry K. Brewer, Ret., Arlington, VA (AAAA Interviewer: Dr. Ben L. Harper).

**Darwin P. Gerard Life Member Award — \$500—**Fred D. Wright, son of Fred E. Wright, Binghamton, NY (AAAA Interviewer: Daniel M. Bruet).

**Thomas E. Hall Life Member Award — \$500—**Wendy E. Watkins, daughter of MAJ Robert D. Watkins, Jr., APO NY (2nd teacher's report used in lieu of interview).

**Carl D. Stephenson Life Member Award — \$500—**Kirsten A. Howe, daughter of CPT Paul F. Howe, APO NY (AAAA Interviewer: LTC Clinton L. Williams).

**Leland F. Wilhelm Life Member Award — \$500—**Jeffrey D. Leeper, son of LTC David H. Leeper, New Llano, LA (AAAA Interviewer: LTC Robert S. Lay).

**Warren R. Williams Life Member Award — \$500—**Thomas H. Griffiths, Jr., son of Thomas H. Griffiths, Conklin, NY (AAAA Interviewer: Frank G. Garger).

Since the inception of the AAAA Scholarship Foundation in 1965 as a separate corporate entity, the sons and daughters of AAAA members and deceased members have received 353 national scholarship awards totaling \$163,275.00.

tivity in the Chapters has been the tremendous increase in their support of our **Scholarship Program**. For example, this past year nine Chapters supported the program with \$1,000 in **matching fund donations**. This was a first and one that we put very high in our organizational list of accomplishments.

**Awards Programs:** We present eight of our **National Awards** here at our National Convention. Four of these are individual awards that will be presented during our Awards Luncheon tomorrow with **General Wickham**, the Chief of Staff, being one of our presenters and our guest speaker.

The other four are unit awards that will be presented during our formal Awards Banquet Saturday evening with **General Maxwell Thurman** presenting one of these and also being our guest speaker.

We have other National Awards that are presented at other gatherings of our Ass'n membership. The "**Aviation Trainer of the Year Award**", for example, was presented at Ft. Rucker, Ala., and there are many others that I'm not going to mention now but these are presented not only to Active Army individuals but to our industry members as well at our various symposia and meetings.

The Ass'n has been providing sterling wings for some time to the initial entry **Distinguish-ed Graduates** and recently began providing

branch insignia to the **newly-branched officers** coming into the Army Aviation branch.

Today, at our Membership Luncheon, we're going to recognize the **30-year members** of the Ass'n who are present. Hopefully, they will stand simultaneously and have their 30-year lapel insignia pinned on by either their wives or their peers. And, of course, this same luncheon is the backdrop for our "**Top Chapter Awards**."

**Fiscal Analysis:** The Ass'n is **sound financially**, and let me explain that . . . Over the years, we've developed an **Emergency Fund** which would keep the Ass'n solvent if we had a catastrophic occurrence, such as the cancellation of a National Convention. That Emergency Fund is invested. It is now at a level of about \$100,000, and each year we add an amount considered necessary to maintain our objective. The monies **cannot** be touched without a vote by the National Executive Board.

We're very proud of the fact that we've been able to build up our **Scholarship Fund** to a level of about a **third of \$1 million**. What we'd like to do in this Program over the next nine years or sooner is build it up to a level of \$1 million so that we can have some more meaningful scholarship amounts distributed annually.

This would continue over an indefinite period since the base amount is invested with a good, solid return. To give you some idea of the **growth** of this program, within the past two years we've added at least \$125,000 to our Scholarship Fund.

I believe you can derive some satisfaction from the fact that **we haven't had a dues increase** since August, 1980, and, as far as I know, none is planned. I belong to a fairly large number of military-affiliated, military-supportive, and aviation organizations and our dues are the lowest. I hope they'll stay that way to help make the Ass'n attractive to the lower ranks and grades that make up the 80,000 to 90,000 people who are now members of the Aviation Branch.

**Industry Support:** I'd like to point out to you that our membership dues do not support our



President Putnam, right, rejoices on receiving the traditional end-of-term memento from Art Kesten, a correctly engraved AAAA "cube."



member activities. So how do we do this without becoming insolvent? This Ass'n really derives its surplus funds from our annual convention. But these funds do **not** come from banquets, registrations, or the sale of hotel rooms, or similar events. They come from the sale of **exhibit space** to our industry member firms in our exhibition hall.

Those funds have enabled us to keep our dues at their level; they've enabled us to do all of these other things that I've mentioned to you and to keep the Ass'n financially solvent. We owe a **great debt of gratitude** to those industry member firms that have supported us for so many years in making this Association a success and, in particular, a success from the point of view of our finances.

**Fiscal Philosophy:** Generally speaking, our financial philosophy - although you will not find it written anywhere - consists of:

**First**, keeping the organization financially sound. **Secondly**, supporting our Chapter and member activities, and their related programs. **Thirdly**, supporting our Scholarship Foundation and building it up so that our annual scholarships become more and more meaningful as time goes on, and **lastly**, supporting the Army Aviation Museum at Ft. Rucker.

**Government:** The Ass'n is governed and administered as follows: We have a **National Executive Board** which consists of ten **elected members**. There are also 12 **National Members-at-Large** who are appointed annually by the President.

We have 30 **Chapter Presidents** who are members of the National Executive Board and these Chapter Presidents keep us in touch with the real world of our membership. The 11 **Past Presidents** and the **USAREUR Regional President** also serve on the Board.

No member of the National Board receives any compensation for his or her efforts. All of our own members, except one, **pay their own way** all the way. The only person who receives any return is the incumbent President for whom travel and lodging expenses are met.

For your information, the AAAA has expended about **one point five (1.5) percent** of its an-



Some 44 members of AAAA's 60-member National Executive Board review the April 8 business agenda at the Ft. Worth "open square."

nual expenditures in support of the National Executive Board. If you study the list of people who make up your National Executive Board I think you will agree you're getting a tremendous amount of experience and leadership at a most modest expenditure of funds. It's truly a labor of love.

[President Putnam then introduced **MG Story C. Stevens, Ret.**, Senior Vice President; **Mr. Kesten**, the Executive Vice President; and **COL John J. Stanko, Ret.**, the Secretary-Treasurer.]

Although not an elected member of the Board — I asked him up here so that everybody could see him - **MG John L. Klingenhagen, Ret.**, is the head of our Scholarship Foundation. It is under **Jack's** leadership that our Scholarship Program is growing rapidly.

It's also under his leadership that we hope to see changes which will widen the base of the scholarship recipients to include the spouses of our soldiers who wish to continue their education. It's a great program and I think that while we have the opportunity we ought to give **Jack** and his Foundation Board of Governors a real vote of confidence and a hand of applause . . .

I would mention before I leave this area that the Scholarship Foundation, although a baby of the Quad-A, is a **separate corporate entity** and it must be that way under the laws of our country. The Foundation is supported by the AAAA but the AAAA does not participate in its activities or government; it is a separate entity of its own.

**Administration:** Our administration is handled by contract. We have no salaried employees. The cost of that contract is **negotiated annually** and in the case of dispute, which we have not had, there's provision in the contract for arbitration. The contract has been held for many years by **Army Aviation Publications, Inc.**, headed by **Arthur Kesten**, who is also our appointed Executive Vice President without vote.

This Ass'n has enjoyed excellent management through this contract. I personally have learned a great deal about how this Ass'n has been managed during the past four years - two years as Senior Vice President at **General Jim Smith's** knee learning how to run it, and the two years as President.

As best as I can determine, from the point of view of both our financial status and activities, we have a very well managed organization.

**National Elections:** The Association's Nominations Committee consists of the Incumbent President and the Past Presidents and is chaired by **MG James C. Smith** who will now present the three members proposed for National Executive Board elective office this year.

Our elections are conducted in exactly the same way as those of other Associations with which I'm familiar, and in the Boards of most of the corporations in which I hold stock.

The Nominations Committee slate can be competed but only if the competition comes forth with its slate 30 days in advance with a specific number of signatures. That has not happened as yet and, therefore, there hasn't been any competition in our election process. So this is why, occasionally, I have a feeling of unease about it although it's the way most elections are held out there in the real world.

First, on the Nominations Committee slate is **MG (Ret.) Story C. Stevens**. Story has had a remarkably successful career in Army Aviation and logistics; been a dedicated Charter Member of the Ass'n and a leader on our Nat'l Executive Board. The Board, in having the responsibility of electing its own officers, wants **General Stevens** as your next National President and there's no question in any of our

minds but that he will provide the great leadership that this Ass'n deserves.

Secondly, **LTG (Ret.) John J. Tolson, III**. **Jack Tolson** has been a leader in airmobility from the early days when people spoke about it in whispers until the day of his retirement from the Army. He's also been a Charter Member of the Ass'n and a National Member-at-Large on our Board for the last 3½ years. As head of the Army Aviation Museum Foundation he has led the way in raising funds to build the new museum.

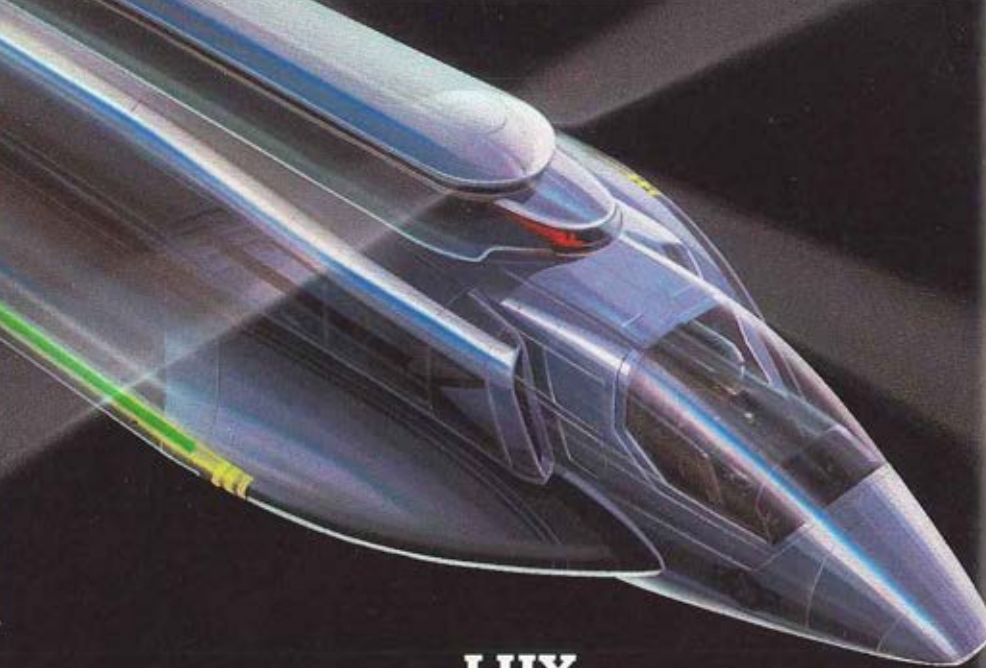
Thirdly, **COL John A. Lasch, III**, who is taking one of the Active Duty elective slots, has been a tremendous supporter of our Ass'n. He's served as the President of our Washington, D.C. Chapter; he's been a leader in the Army airmobility; he's had big jobs throughout his service and we would like to welcome him as one of your elected members of our Board.

This is the slate your Nominations Committee is presenting to you for election. Now having said that I'd like to hear a motion that we accept this slate . . . (The motion was moved, seconded, and after the unanswered request for discussion by the President, the attending delegates and members elected the slate by acclamation.)

**Open Discussion:** I would now offer the opportunity for anybody to stand up, complain, suggest, reorganize, cuss, or discuss anything that you'd like about our Ass'n and its management to question. For your information, I will hold - along with **General Stevens** - a meeting of our Chapter Presidents on Friday afternoon. We plan to encourage discussion, take notes, and make no comments except to promote discussion. We are interested in determining how best your Ass'n should move into the future. (**LTC Carl E. Bobo, Jr., Ret.**, then commented on the Wright Brothers' Chapter activation.)

**Adjournment:** I think you've picked a great name for your organization, **Colonel Bobo**, and I think you'll be a great President for it. Thank you very much . . . If there's no further business, I call this membership meeting to an end.





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