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ARMY AVIATION

VOLUME 37 **NUMBER 2**

LHX.
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Research, Development and Acquisition:

Maintaining the Momentum While Preserving the Future

by LTG Donald S. Pihl
Military Deputy to the Assistant Secretary of the Army (RDA)

Today, as we enter a period which will be characterized by real reductions in defense spending for investment accounts, it is prudent to review where we have been, where we are going and what we must do.

Modernization Momentum

In 1981 the Army was at a critical crossroads. We needed to replace obsolescent equipment and fill outright shortages with modern equipment that was in production or about to enter production. Remember, at that time very little of our new equipment, except BLACK HAWK, had been fielded in meaningful quantities.

With the support of the new administration, we began producing and fielding major items like the ABRAMS, BRADLEY, APACHE, HELLFIRE, COPPERHEAD, MLRS, PATRIOT, and BLACK HAWK in sizeable quantities. Since then we have added the OH-58D and the CH-47D, and substantially upgraded the capabilities of the COBRA. As a result the Army's war fighting capability has in fact been radically improved by new or product improved equipment across all mission areas.

Imagine the procurement "bow wave" that would confront us today if we hadn't followed through right away on getting this equipment to our soldiers. It is imperative that this modernization effort continue.

R&D — A Corporate Investment

It would be wrong however, to focus on this modernization effort alone. The modern equipment we are fielding today resulted from the six to ten years of intense research and development the Army conducted as we turned our attention away from fighting in Vietnam. The threat is rapidly changing and we must change accordingly to meet that threat. A strong R&D technology base is the place we start to counter a postulated future threat. Properly managed, this technology base provides the ability to predict the outcome of our investment and the readiness of the force. It also provides the opportunity for unexpected technological advances that could give the Army a technological leap ahead.

There are repeated instances in history where an unexpected technical advance by an adversary has caused us to apply extra R&D money to overcome the shortfall. It is far better for us to be the nation out in front.

We designed RAM/ILS/MANPRINT into our engine from the start, then we went the extra mile. Continually verifying and refining our T800-APW-800 engine in the field. Because when your challenge is to set new standards for engine reliability, availability and maintainability, your best advice comes from the Army experts who are going to use and maintain it.

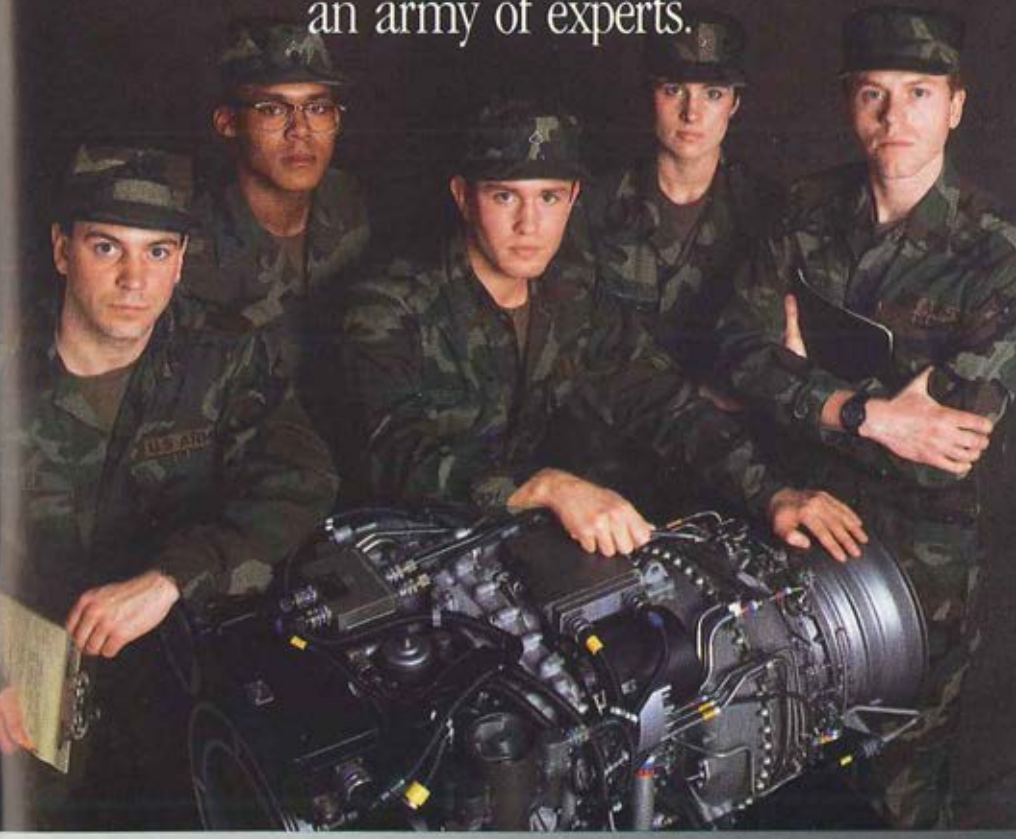
That's why the APW team took its mock-up to Army installations across the country. From Ft. Rucker to Ft. Campbell. Ft. Eustis to The Corpus Christi Army Depot. Army mechanics and maintenance officers validated our engine and gave us valuable insights.

This maintainability tour has prompted numerous design changes. Like a repositioned emergency lube system accumulator to improve compressor linkage access. And moved airframe-to-computer connectors for easier access.

Combine these design enhancements with the efficiency of one wrench size for all LRU's and advanced technology diagnostics, and the result is the most reliable, maintainable engine in the Army's inventory. One that provides more power with less maintenance and training; fewer support troops, parts and tools.

But you don't have to take our word for it. Just ask the experts.

When it comes to MANPRINT, this T800 engine team has recruited an army of experts.



TEXTRON LYCOMING AND PRATT & WHITNEY. THE POWER OF LHX.

"Imagine the procurement 'bow wave' that would confront us today if we hadn't followed through right away on getting this equipment to our soldiers."

Technological Thrusts

Our emphasis on a robust technology base is evident in the aviation community. Our technological efforts will result in the development of aeroelasticity conformable rotor blades and low drag hubs, and combined higher harmonic control and low vibration technology to provide more stable, highly reliable platforms.

The effect of this aeromechanical technology will be improved mission effectiveness, survivability, safety, availability, and, ultimately, reduced cost.

Research in the area of propulsion will lead to fuel efficient turboshaft engines that provide greater payload capacity and reduced cost of operation. The effort on transmissions will be aimed at developing lightweight components with improved efficiency, performance, reliability and survivability. Helicopter structures will benefit significantly from the expanded composites technology base.

Probably the most rapid technological advances are being seen in the world of electronics. The use of digital avionics systems will provide a means to increase system reliability and effectiveness, and reduce aircrew workload, as well as decrease size, weight and cost of systems.

Additionally, weapon systems, mission support equipment, and, most importantly, aviation survivability will all benefit from our technological efforts in the next generation aircraft.

The products of our research and development efforts connect with acquisition as we start full scale development and remain an integral part of our acquisition strategy throughout a system's life. An excellent example of our technology base at work is the LHX.

The Advanced Rotorcraft Technology Integration (ARTI) program defined the highly integrated cockpit and electronic systems architecture. Follow-on ARTI efforts include investigations of flight performance, aerodynamic interference, aeroelastic and aeromechanical stability and wind tunnel testing of scale model aircraft.

Concepts Incorporated

LHX will incorporate many concepts demonstrated by our technology base programs. These programs were focused and synchronized specifically to demonstrate the ability of existing applied technology to be utilized in the LHX. They include the Advanced Digital/Optical Flight Control System, advanced lightweight composite airframe, a bearingless composite rotor system and an advanced low-drag composite fuselage configuration.

Advanced technology will also be incorporated in the primary subsystems of the Mission Equipment Package. Examples include the Very High Speed Integrated Circuit computer, Electro-Optical Target Acquisition Designation System, wide-field-of-view Helmet Mounted Display and the Night Vision Pilotage System. Integration of these components into an aided target recognition system will increase the LHX crew's combat capability far beyond today's capability.

The Army's LHX development program was defined during numerous, detailed reviews conducted between July and November 1986. A Department of Defense review in April 1987 approved the Army's concept for replacement of our outdated helicopter fleet, but questioned restriction of the program to a helicopter only competition. The Under Secretary of Defense for

(Momentum — continued on page 53)

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FY88 Budget Realities

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

General Carl E. Vuono, Chief of Staff, U.S. Army, recently praised the men and women of the Army for the outstanding safety record attained in 1987. I echo his praise and reinforce my comments in the December issue, "Safety must be a mindset we constantly have with us — both on and off the job."

Five years ago we experienced a Class A mishap rate of 3.23 per 100,000 hours. If that rate had continued to the present, we would have had approximately 58 additional Class A mishaps at a cost of an estimated $100 million and, more significantly, an increased loss of life.

Through your efforts, in FY87 we recorded the lowest number of Class A-C mishaps in ten years and the third best Class A mishap rate in history — 2.22 mishaps per 100,000 flying hours. This achievement has resulted in increased readiness through the preservation of our resources — dollars, aircraft and, most importantly, people. Safety is a combat multiplier!

I am extremely proud of the men and women of the Aviation Branch for doing their part to bring about this impressive accomplishment in aviation safety.

FY88

The significance of our safety accomplishments gains even more importance as we move into FY88 and face the realities of decreased funding levels. These budget decrements will have a direct impact upon the branch and many of the flight training programs at Ft. Rucker.

Initial Entry Rotary Wing (IERW) training will continue at FY87 levels, and multitrack IERW will be implemented as planned. Additionally, training to meet new system/force modernization fielding plans will not be decremented. Therefore, the aircraft qualification courses for AH-64, CH-47D, OH-58D and UH-60 will continue to train aviators in sufficient numbers to meet their respective fielding plan requirements.

One manner in which we are looking to reduce costs is by reviewing each Program of Instruction (POI) to identify potential areas for savings. For example, we have determined that we can reduce the AH-64 AQC from 14 weeks to 10 weeks, save $1.7 million and suffer no reduction in the quality of the aviator.

How can we do that? By carefully analyzing the POI, we identified tasks which can be trained in the simulator more effectively and with less expense than in the aircraft. Additionally, several flight hours which were spent training collective tasks were deleted from the POI and transferred to the APACHE Training Brigade at Ft. Hood. We are now reviewing other programs to see if similar savings can be realized.

Flight Reduction

Unfortunately, we could not reach the total savings required through the methods mentioned above. Therefore, we will realize approximately a 10 percent reduction in programmed flight hours and a 20 percent reduction in student input for the remainder of the fiscal year. These reductions will be felt primarily in the remaining "graduate courses," such as the Fixed Wing Qualification Course, Rotary Wing Aviator Refresher Course, and others. Again, I assure you there will be no reduction in the quality of training.

FY87 was a great year for the Aviation Branch, and I challenge each of you to do your utmost toward making FY 88 even better. Safety, improved management and innovative training will enable us to continue to be truly "Above the Best."

Recognition of a job well done.

For 350 years, the National Guard has come to our nation's aid in times of war and in times of natural disaster. But no amount of determination and valor can overcome the limits of their equipment.

Right now the Guard is flying helicopters rendered obsolete a decade ago—with the introduction of the U.S. Army BLACK HAWK to the active forces. Today the UH-60A BLACK HAWK is the most effective and mission flexible helicopter in the air, the standard for our nation's Army.

It's the vehicle of choice because it's nimble, flexible and powerful. Armed, it performs as an assault helicopter. But on the other hand, it has the muscle and flexibility for serious disaster-relief work. It'll fight fires; carry supplies; and save lives in search and rescue and medevac missions.

The Guard, as part of the total force structure, needs the same equipment used by the active Army.

Simply put, the BLACK HAWK is the best there is. And the National Guard doesn't just deserve the best.

They need it.

UNITED TECHNOLOGIES
SIKORSKY AIRCRAFT

The Aviation NCO Symposium

by SFC (P) William C. Hawkins

FT. RUCKER, AL — On November 17, 1987 another aviation first took place at Ft. Rucker, AL when, USAAVNC Chief of Staff COL Andrew J. Miller - on behalf of MG Ellis D. Parker, CG USAAVNC and Aviation Branch Chief - opened the first annual Aviation NCO Symposium.

According to CSM John P. Traylor USAAVNC and Aviation Branch CSM, the purpose of this symposium is to provide an opportunity for Aviation's key noncommissioned officers to focus on issues which affect our Branch, and to discuss issues that are pertinent to their respective areas.

COL Miller's opening remarks touched on many areas of branch business, including equipment updates [AH-64, OH-58D, (AHIP) etc.] and how the 93B was performing in AHIP. But to me the key statement made by COL Miller was that aviation is a very unforgiving business and with increased technology is even less forgiving. Noting that we must reduce human error mishaps, he said, "As leaders we must correct unsafe conditions or acts." The NCO has tremendous impact!

CSM Traylor, who hosted the event, followed COL Miller. His speech included some of the following items of interest:

- The U.S. Army Aviation NCO academy is on track and will retain responsibility for Department of Enlisted Training, (DOET). CSM Hartwell Wilson, Commandant of the Aviation NCO Academy, is also the DOET Director.
- The Aviation soldier of today is the best qualified in our history (97% are high school graduates).
- There have been many complaints about the shortage of 93B's in the field. The big problem is the lack of OH58 IP's. This should be fixed in CY88.

Following the opening ceremonies came two days of briefings, tours, aircraft demonstrations, and panel discussions. The symposium was attended by NCO representatives of every major Aviation command, worldwide.

I would like to directly quote each and every briefer and speaker at the symposium, but space will not allow. I will however, attempt to touch on "key points" that were covered. I would like to apologize to anyone who feels left out. All briefings

Aviation NCO Symposium Itinerary

EVENT	BRIEFER	TIME
16 November 1987		
Icebreaker Social at the NCO Club		1900 - 2100
17 November 1987		
Welcoming Remarks	COL Miller	0800 - 0830
Opening Remarks	CSM Traylor	0830 - 0845
Agenda	CSM Wilson	0845 - 0900
USAAVNC/School Brief	SGM Arnold	0900 - 0950
Aviation Proponency Update	SGM Lloyd	0950 - 1050
Lunch		1145 - 1245
Aviation Modernization Plan	LTC Riggs	1100 - 1145
Department of Enlisted Training	MSG Sutton	1245 - 1315
Aviation Logistics School (USAALS)	MSG Privott	1315 - 1400
Corpus Christi Army Depot	SGM Rymer	1315 - 1400
Tour Yano Hall and Aviation Museum		1430 - 1630
No-Host Dinner (NCO Club)		1900-
18 November 1987		
Directorate of Training and Doctrine	MSG Dowell	0800 - 0830
Aviation Development & Test Activity	SGM Davis	0830 - 0900
U.S. Army Aviation Board	SGM Smythe	0900 - 0930
School of Aviation Medicine	SFC Holmes	0940 - 1000
U.S. Army Safety Center	SGM White	1000 - 1050
Group Photo		1050 - 1100
Lunch (Lake Lodge)		1100 - 1200
Automated Log Book, PPM, SDC	Mr. Davis	1200 - 1250
U.S. Army ATC Activity	SGM Williams	1250 - 1320
Reserve Components	SGM Gannon	1320 - 1400
Seminar (Panel Discussion)	CSM Traylor	1400 - 1600
Closing Remarks	CSM Traylor	1600 - 1630

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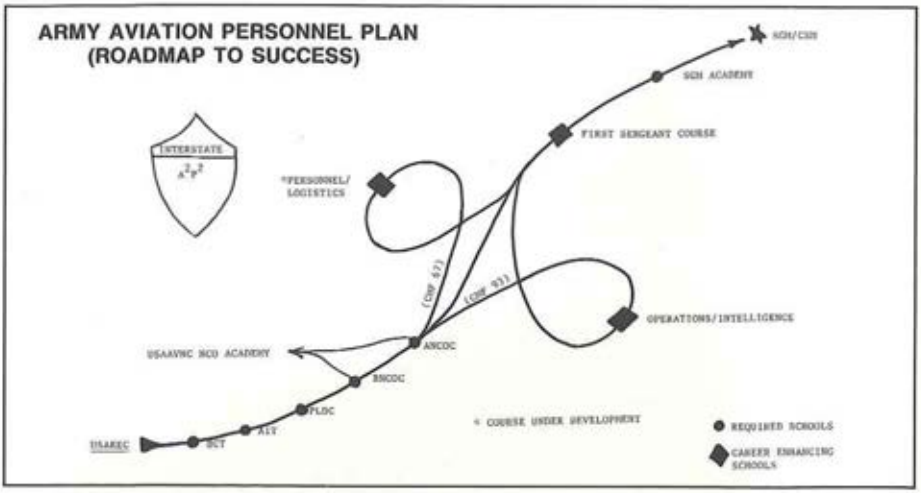

were outstanding. I included the itinerary to show how the symposium was structured and who the briefers were.

As you can see from the schedule, it was a full two days. I will address some of the symposium highlights in the order they were briefed: Aviation Proponency, DOET, and U.S. Army Safety Center.

Aviation Proponency Update

SGM Lloyd briefed on the Army Aviation Personnel Plan (A^2P^2). A^2P^2 was developed over the past 18 months and contains a guide on where aviation is and wants to go in the enlisted personnel arena. It also provides a "roadmap to success" **(see figure above)** for the aviation soldier. If this "map" were issued to every soldier upon entry into the service he/she would know at each point in his/her career what school was required or needed for upward mobility.

But for any plan to work it must first have a solid foundation and the quality of soldiers today in Army Aviation **(below)** obviously provides us with that foundation. A^2P^2 as shown in **figure 3,** much more closely ties NCOES to promotions, and "puts the handwriting on the wall" where it applies to advanced schooling.

A^2P^2 also addresses promotion stagnation problems at E5/6. This situation is best shown in MOS 93P) **(figure 4)** but the situation is applicable across all aviation CMFs. In the air operations arena a proposed MOS restructure **(figures 5 & 6)** will hopefully eliminate the majority of the problem.

This is not to say that A^2P^2 addresses only CMF 93, it encompasses all aviation CMF's. When A^2P^2 methodology becomes effective (projected FY 90, it should have a far reaching and positive impact on enlisted career management in the Aviation Branch).

Dept. of Enlisted Training

MSG Sutton briefed on DOET Organization and mission. DOET is the only Department that is totally run by NCOs at USAAVNC. The department mission is to provide Advanced Individual Training for five Military Occupational Skills;

According to MSG Sutton "DOET is an integral part of the "Solderization" process established by TRADOC," and designed to enforce that each soldier, upon completion of MOS training, participates in a four day three night FTX that allows

(NCO - Continued on Page 57)

QUALITY OF AVIATION PERSONNEL
FY 86 ENLISTED DISTRIBUTION OF QUALITY

	CAT I-IIIA	CAT IIIB	CAT IV	HS GRAD
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CMF 67	72%	25%	3%	98%
CMF 93	74%	26%	0%	99%

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DEFENSE

SAINT

A-JAATT

(Advanced Joint Air Attack Team Tactics)

by Lt. General Crosbie E. Saint, USA
and Lt. General Charles J. Cunningham, Jr., USAF

CUNNINGHAM

The fielding of the AH-64 at Fort Hood, Texas, is providing us with the opportunity to develop the techniques, tactics, and operational procedures which are the underpinnings of our AirLand Battle doctrine. By working closely with the 12th Air Force at Bergstrom Air Force Base, Texas, AirLand Battle has been kept alive and well, as the Army and Air Force operators put it together in the air and on the ground.

Integration of Forces

Implicit in the term "AirLand Battle" (AirLand Battle doctrine) is the complete integration of air and land forces throughout the width and depth of the battlefield. The speed, distances, and fluidity attributed to the AirLand Battle creates complex command, control, and coordination problems during joint operations in the forward areas as well as in the rear and deep battles. These problems are compounded by the requirement to extend joint AirLand operations through the hours of darkness. This is well understood both at III Corps and at 12th Air Force.

Historically, the integration of air and land forces on the battlefield has been difficult at best during daylight hours and almost impossible at night because of the significant problems related to acquisition, designation, and fire distribution.

Without addressing ongoing Army/Air Force efforts for improved future Close Air Support (CAS), it should be noted that the A-7D ongoing Low Altitude Night Attack (LANA) upgrade will provide Forward Looking Infrared Capability (FLIR). The F-16 Low Altitude Navigation Targeting Infrared Night (LANTIRN) and the CAS capability around-the-clock in a high-threat environment. But our job in the field is to fight today's war and we are making progress with current systems to enhance and indeed make joint force employment more viable.

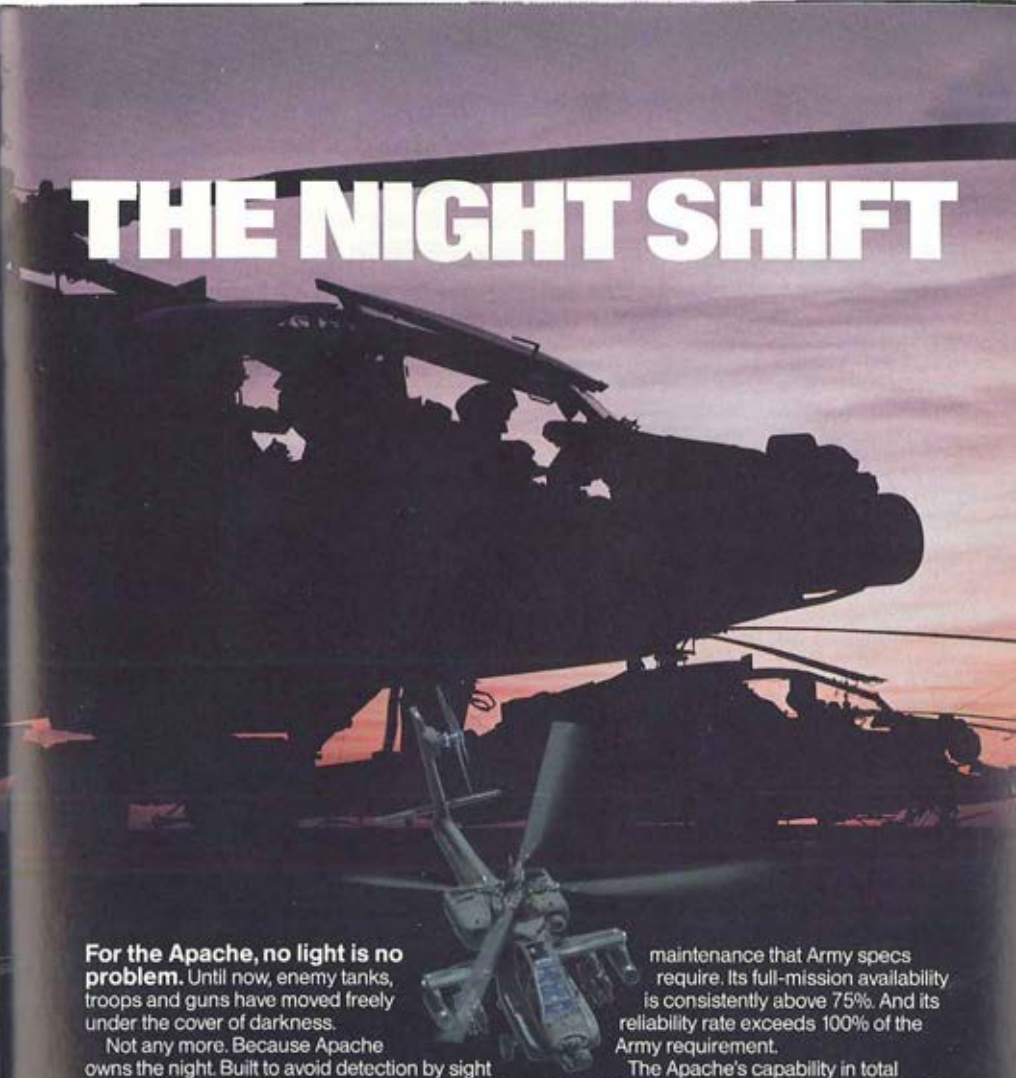
To "review the bidding" let's look at two systems we are using. The A-10 is a single-seat, dual-engined, CAS aircraft. Avionics and equipment include a heads-up display (HUD); a weapons delivery package that can incorporate the Pave Penny Laser detection pod; equipment for Maverick and other missile systems; threat warning (RHAW); and secure voice radios. Key to its armament is the GAU-8 gun, a 7-barrel 30mm high velocity cannon, with a capacity of 1,174 rounds, firing 2100 or 4200 rounds per minute. Four pylons underneath each wing and three under the fuselage give the A-10 a maximum external load of 16,000 lbs. It can carry 500 lb. and 2000 lb. general purpose bombs, incendiary bombs, cluster bombs, Maverick anti-tank missiles, and 500 lb. or 2000 lb. laser-guided bombs.

Served Well

The A-10 is equipped with a chaff/flare self-protection system and can carry the ALQ-131 ECM pod. A typical combat load for an A-10A consists of the 30mm gun with full ammunition, four Mavericks, a Pave Penny pod, chaff, flares, the ALQ-131 and max internal fuel. The A-10 has served us well but its limited night flexibilities and survivability in high threat to support deep maneuver make us now look toward a follow-on system.

When we consider AirLand Battle and the need to integrate air operations in the close-in battle and second echelon simultaneously in high threat, the F-16 must be given a fair "day in court." The F-16 is a multi-role aircraft which is very capable and we need to exploit more fully its great capabilities. This single-seat,

THE NIGHT SHIFT



For the Apache, no light is no problem. Until now, enemy tanks, troops and guns have moved freely under the cover of darkness.

Not any more. Because Apache owns the night. Built to avoid detection by sight and sound as well as by radar and heat-seeking missiles, the AH-64 Apache has advanced avionics that seek out, identify and lock onto targets several miles away. On the blackest night. Laser-guided Hellfire missiles plus cannon and rockets make short work of enemy targets.

Combat-ready with U.S. Army units, Apache is establishing an impressive operating record in the field. It needs less than half the maintenance that Army specs require. Its full-mission availability is consistently above 75%. And its reliability rate exceeds 100% of the Army requirement.

The Apache's capability in total darkness and adverse weather is unmatched. Clearly, Apache is made for the night shift, and heaven help anything the enemy shifts at night.

APACHE

It gives nightmares to all the right people.

For more information, write: McDonnell Douglas Helicopter Company, 5000 E. McDowell Rd., Mesa, AZ 85205

MCDONNELL DOUGLAS

"Now, with the fielding of the AH-64 APACHE, the terms "AirLand Battle" and "Joint Operations" have taken on new meaning and significance. This can be attributed to the enhanced capabilities of the AH-64, especially in the areas of communications, target acquisition, target designation and the ability to integrate these enhanced capabilities with the laser trackers and laser-guided munitions on Air Force tactical aircraft."

single-engine "fly by wire" fighter uses the versatile APG 68 pulse-doppler radar. An ALR-69 RHAW system is installed, as well as both UHF secure and VHF radio capability. Armament includes a 20mm internal gun with 515 rounds and provisions for up to three AIM-9 missiles on each wing. Underfuselage and underwing hard points can carry a myriad of conventional weapons (electro-optical, IR, LGB). A typical combat load for the F-16 might be six 500 lb. general purpose bombs, two AIM-9 missiles, the 20mm gun, the ALQ-131 ECM pod, chaff, flares, and two 370 gallon external fuel tanks. Its remarkable avionics are well suited to techniques never before considered in the application of tactical air in the close-in battle.

Further, the F-16 has demonstrated the ability to sustain high sortie rates with rapid ground turnaround times, or to conduct complex, long-range missions with the help of air-to-air refueling. And, with its exceptional air-to-air agility, the F-16 can also contribute significantly to assisting in air superiority over the battle area, should that be called for by the theater or joint task force commander.

Enhanced Capabilities

Now, with the fielding of the AH-64 APACHE, the terms "AirLand Battle" and "Joint Operations" have taken on new meaning and significance. This can be attributed to the enhanced capabilities of the AH-64, especially in the areas of communications, target acquisition, target designation and the ability to integrate these enhanced capabilities with the laser trackers and laser-guided munitions on Air Force tactical aircraft. So, let's look at the capabilities of the AH-64, the integration of the AH-64 with the A-10 and the F-16, and the emerging operational concepts used in the joint employment of these forces on the AirLand battlefield -- deep, close, and rear.

New Foundation

The AH-64 APACHE is a rugged, reliable, and maintainable aircraft with a superb Aircraft Survivability Equipment (ASE). Its weapons array provides a very accurate long range point weapon (Hellfire) and area weapons capability (30mm cannon & 2.75" rockets). The heart of the system is the Target Acquisition and Designation System (TADS) and the Pilot's Night Vision Sstem (PNVS). This constitutes a new foundation for Joint Air Attack Team Tactics. The PNVS provides the pilot with Forward-Looking Infra-Red (FLIR) with 1-to-1 magnification for operation in the night environment. The FLIR provides a significant advantage in that it is not a light-amplification device.

As such, the FLIR frees us from the ambient light/pink light requirements of other night vision systems. The Target Acquisition and Designation System (TADS) provides the copilot/gunner a four-position FLIR with up to 37-power magnification, a three position low-light television with up to 126-power magnification, a direct-view optic with 18-power magnification, a laser spot tracker, and a laser designator/range finder. These systems are integrated with an excellent fire control computer which provides for prepointing of the 30mm cannon and TADS to preprogrammed points/targets.

The significantly enhanced capability of the

AH-64 over previous systems in TADS, PNVS, and in fire control provides the AH-64 the capability to operate in the rear, close, and deep battles both day and night and opens the door to new levels of integration in joint operations with tactical air force and artillery systems across the full AirLand Battle spectrum.

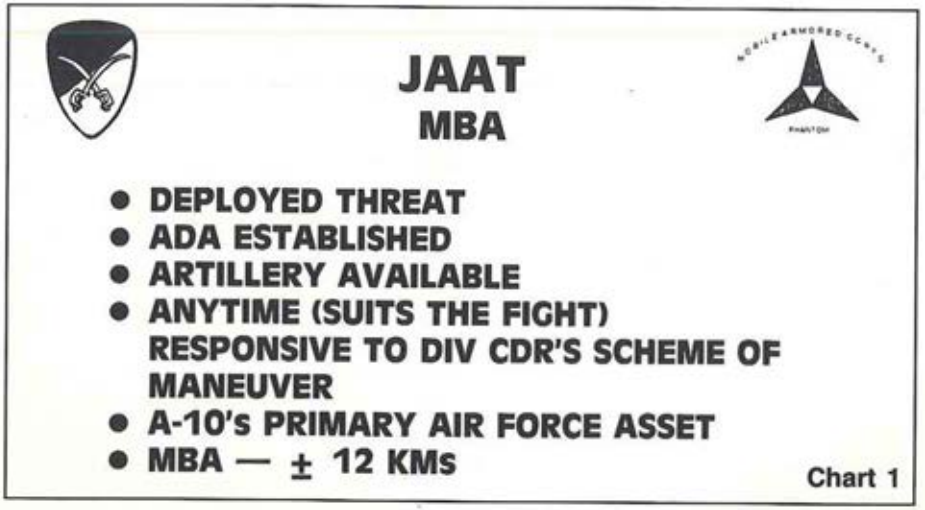
The key to the advanced level of joint operations between AH-64 units and the tactical air forces is the interface of the laser target designator on the AH-64 with laser spot trackers, such as the Pave Penny, on Air Force tactical aircraft; laser-guided munitions delivered by Air Force tactical aircraft; artillery systems; and the AH-64's capability for secure communications with Air Force tactical aircraft through the AN-ARC 164V "Have Quick" frequency hopping radio.

The Pave Penny system is a laser tracker externally mounted on Air Force tactical aircraft (A-10, A-7, and planned for the A-16) which allows the pilot to see the laser spot, provided by a coded laser designation — but more importantly that of the AH-64 on his Heads Up Display (HUD). This capability has far-reaching implications in Joint Air Attack Team operations in the rear, close, and deep battles and opens new doors for joint operations in general and CAS operations at night in particular.

The significance of laser designation and tracking to target acquisition and engagement, fire distribution, accuracy, survivability, and joint operations, especially at night, are obvious. The ability of an attacking fighter pilot to see a laser spot up to 10 kilometers out on his attack run allows him to remain at very low altitude, engage the target at maximum range, and break off the attack prior to overflying the target -- all of which increases his efficiency and survivability. Additionally, the Attack Helicopter Team can designate an area or line for the engagement by running the laser spot around the area or down the line. The fighter pilot, by following the laser spot in his HUD, receives rapid, positive, and very precise target handoff and orientation, with little or no communication. Think of it - the elimination of lengthy radio transmissions and the likelihood of misidentification and the rapidity of response all because of this compatibility.

At night, the fighter pilot can effectively engage targets by simply keeping his sights on the laser spot. The Attack Helicopter Team can control the engagement of point targets using this method, or they can engage linear targets, such as a line of vehicles, by slowly moving the laser spot down the line. This can enhance friendly force identification, save time, and permit total integration of fighter firepower with close-to-ground integral Army units -- attack helicopter battalions.

When operating with Air Force aircraft



without a Pave Penny capability, laser-guided munitions provide the unique capability to place accurate and devastating firepower on the target. By using a low level toss technique, the Air Force aircraft can loft its bombs from stand-off position to be terminally guided to a point target by the AH-64 team. This provides the opportunity and ability to operate with tactical and even "strategic" systems in the deep battle at night.

Early in the planning for the fielding of the AH-64 at Fort Hood, Texas, we committed ourselves to the complete integration of the artillery and the Tactical Air Force into all of our training scenarios. After establishing the requirement, articulating the standards, providing the required resources, and operational units, the program developed a momentum of its own. Our people in III Corps and 12th Air Force have gone beyond the point we expected them to go – and they've done so quickly, effectively, critically, and safely.

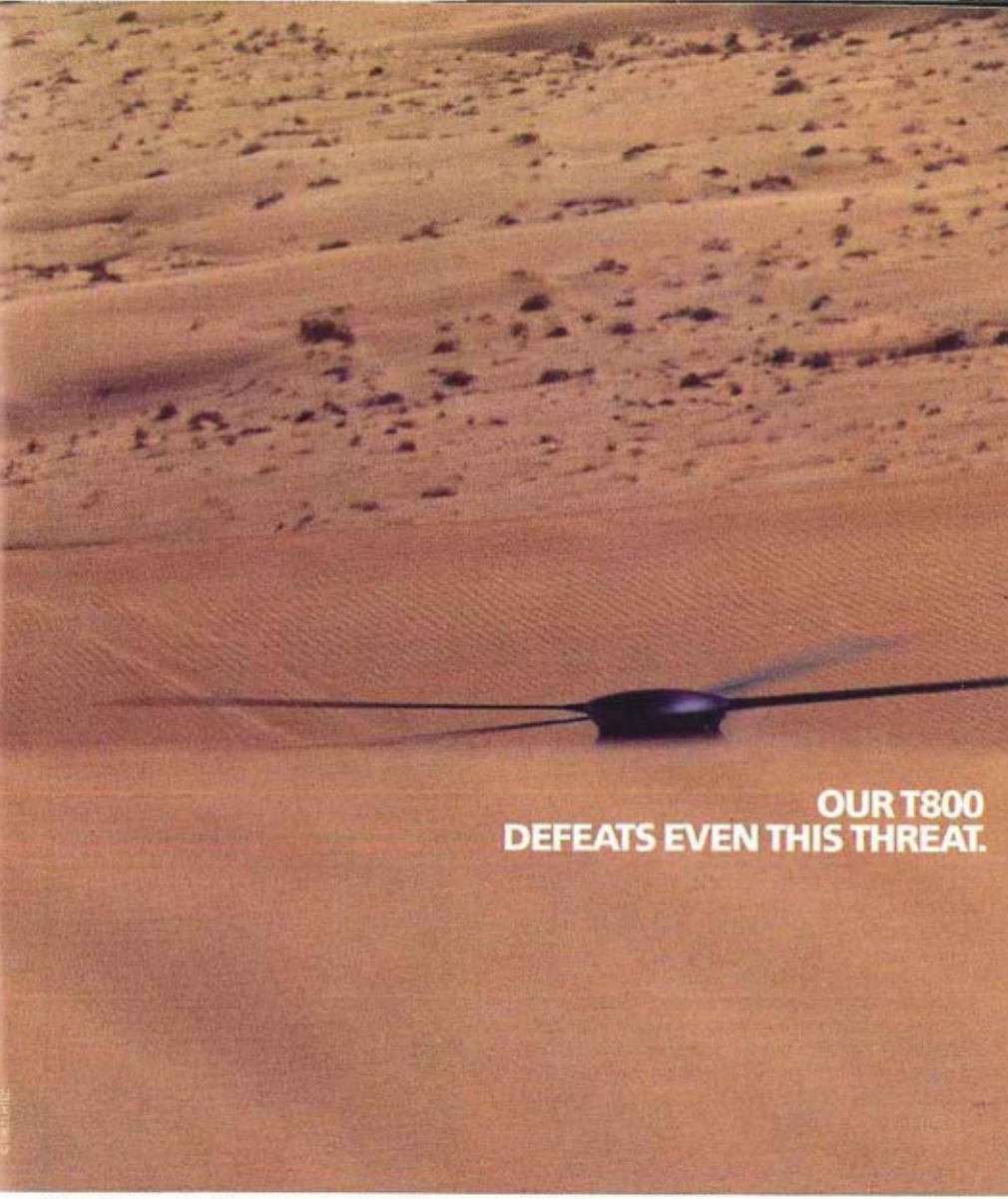
The capabilities available through the complete integration of these modern systems were so obvious and provided us with such an advanced capability that within an incredibly short period of time our operational units had developed an ability to focus combat power and to influence the tempo of the battle that we had not previously achieved.

Our ability to move as rapidly as we did was due, in large part, to the natural integration and participation of the Fighter Weapons School at Nellis Air Force Base, Nevada, into all of our efforts.

We initiated our program and conducted many of our early A-JAATT exercises during a Fighter Weapons School deployment to Fort Hood. This was closely followed by a deployment of the 474th Tactical Fighter Wing from Nellis Air Force Base in Las Vegas, Nevada, to Bergstrom Air Force Base in Austin, Texas, for operations at Fort Hood. The objective of both of these exercises was to develop the operational techniques and procedures for A-JAATT during daylight hours.

These exercises were closely followed by a 6th Cavalry Brigade deployment to Nellis AFB to verify the daytime procedures in an intensive A-JAATT live-fire program with both the Fighter Weapons School (A-10) and the 474th Tactical Fighter Wing (F-16).

Upon completion of the day program, we immediately asked for and received another deployment of the Fighter Weapons School to Fort Hood to develop the operational techniques and procedures for A-JAATT at night. Due to the outstanding TADS capability of the AH-64, we successfully demonstrated the capability of the joint team to place accurate



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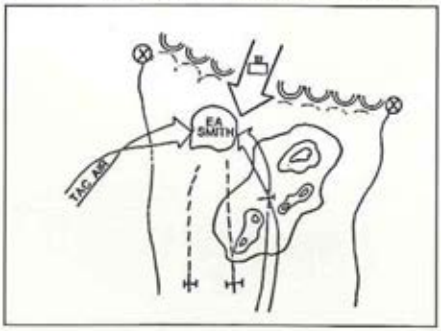
After developing our basic night operational procedures, the 6th Cavalry Brigade redeployed to Nellis AFB to verify the night A-JAATT procedures in a live-fire exercise with both A-10s and F-16s from 12th Air Force units.

This entire A-JAATT program culminated during the week of January 12-16, with a successful no-notice deployment exercise by the 6th Cavalry Brigade and the 474th Tactical Fighter Wing to Cannon Air Force Base, New Mexico, for a live-fire A-JAATT.

The AH-64 and integrated TACAIR using the A-JAATT provide the commander with a significant combat capability which is applicable to

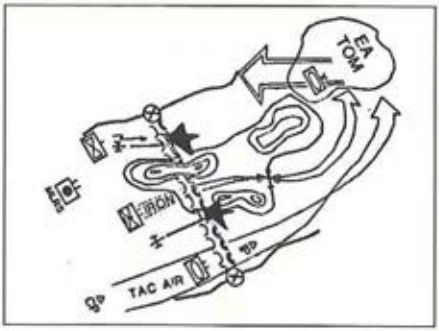


all areas of the AirLand battlefield. In the rear battle, they give the Joint Attack Team the capability to acquire, isolate, engage, and destroy both airlanded and operational maneuver group (OMG) threats with great precision in both the day and night environments. The AH-64 Attack Battalion also has the command, control, and communications capability to integrate and coordinate this battle. In the near battle, conventional A-JAATT concepts, which are enhanced by the capabilities of the AH-64, apply and result in significantly greater accuracy, survivability, and efficiency. Close-in applications of the F-16 (and future A-16) with high-capability avionics offer a synergism with the AH-64 which was not previously imagined. In the deep battle, the night capability of the AH-64 significantly enhances survivability and effectiveness. As before, the AH-64's TADS provides the positive interface between Army and Air Force systems required for the engagement of combat, combat support, combat service support, and command and control targets to a depth of 150KM. We now have not only the range and firepower but also the A-JAATT concept necessary to put it all together.

At the same time, we have learned that the planning and conduct of the A-JAATT in the deep battle is quite different than in the rear and near battles. Some of the factors that drive these differences can be seen through a comparison of Charts 1 and 2.

Since the initial fielding of the AH-64 in III Corps at Fort Hood, Texas, every effort has been made to integrate joint operations into our training and evaluation programs. As a result, each battalion undergoing the AH-64 training program conducts three A-JAATT live-fire exercises during pre-ARTEP training and two A-JAATT exercises during their ARTEP. Our A-JAATT efforts have routinely been a live-fire integration of the AH-64, artillery, and the A-10/F-16 in an active ADA threat environment. This very successful program will be continued for the follow-on AH-64 battalion training programs. The 6th Cavalry Brigade and the 474th Tactical Fighter Wing (F-16) have been the leaders in the development of A-JAATT techniques and procedures, but this is just the beginning.

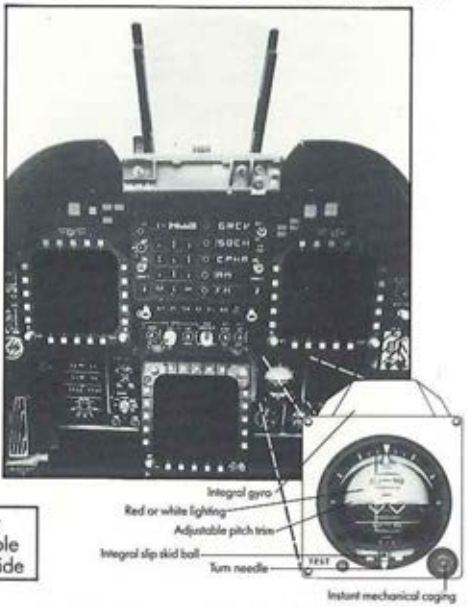
While our A-JAATT work was initiated because we recognized the unique capabilities



of the AH-64 and its impact on joint operations, if we conceive them properly, we believe that AirLand Battle operations and joint operations are one and the same. Clearly, joint operations

(A-JAAT — continued on page 52)

WHEN THE "CHIPS" ARE DOWN, GO BACK TO BASICS



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Operations:

USAREUR JAAT EAGLE '87

by Captain P. J. Dermer

APO, NY — From August 17-21, 1987, the most extensive Joint Army and Air Force training exercise between units of the 1st Armored division and the 81st Tactical Fighter Wing, took place in southern Germany in the area of Low Fly 7, centered around the city of Nordlingen. It was the most realistic and demanding training we had ever done.

Participants

Units that participated were the 511 Tactical Fighter Squadron from Bentwaters, England; Detachment 2, 81st Tactical Fighter Wing based at Leipheim Air base, Germany; the 10th Attack Helicopter Battalion, 4th Aviation Brigade, from Illesheim, Germany; the 2/59 Air Defense Artillery Battalion from Schwabach, Germany; OL-R, Detachment 2, 602nd ASOG; and four civilian manned Tactical Radar Threat Generators (TRTGs) from Ramstein and Hohenfels, Germany.

All units deployed to and staged the exercise out of the German Air Base at Leipheim, Germany, the home of Detachment 2, 81st Tactical Fighter Wing. This type of deployment was a first by the Army units for an exercise of this kind.

The Army units deployed to Leipheim for the main purpose of improving the situational planning and mission awareness between the Army and Air Force. This ranged from the pre-mission ground planning stages to the time the actual Joint Air Attack Team attack took place in the battle area. The most important benefit of all this was in-depth after action face-to-face reviews among all the units.

"Army personnel, due to their lack of training, do not have the Air Force terminology and timing down for clear and concise control of CAS aircraft, especially in hectic JAAT situations."

Normally, all elements of a JAAT meet in the battle area only in transit and therefore have no provision to decide the outcome or to discuss and correct together the things that went wrong. As the NTC and IRONSTAR have proven, an after action is critical to a unit in order to highlight its strengths and weaknesses, and to pinpoint the areas of its training that must be improved.

Objectives

The training objectives were:

- Exercise and test the procedures outlined in the USAREUR JAAT SOP.
- Exercise the command and control necessary for proper timing and coordination of a JAAT, to increase the efficiency of a JAAT employment.
- Train Army and Air Force crews in an integrated high threat radar and surface to air missile environment, using the TRTGs, and full up MILES/IFF Stingers.
- Exercise multiple team battle hand-offs in a JAAT environment.
- Integrate the scout's eyes and A-10's firepower.
- Provide the most realistic training for Air Defense and TRTG personnel.
- Provide after action review by visual feedback [video] and face-to-face discussions.
- Tie above objectives together in the development of a framework for a continuous training program of joint Army and Air Force exercises on a standard basis throughout USAREUR.

Mission Scenarios

The missions were based on locally derived generic intelligence scenarios specifically developed for the timing of meaningful JAATs. Two missions a day for five days were

CPT Dermer is U.S. Army Attack Helicopter Company Commander, 4th Brigade, 1st Armored Division, APO, NY.

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flown against the scenarios.

The first enemy situation was a static buildup of an undisclosed size force, but appearing to be that of a regimental size (possible Operational Maneuver Group) tank unit, in a holding area preparing for possible operations against our division in 48 hours.

The second situation was the breakthrough in our division sector of an unidentified tank regiment in pursuit of an Army objective in our rear area.

Stationary Targets

The first scenario was developed to allow the first JAATs to be conducted against stationary targets. The succeeding scenarios were developed for JAATs to be conducted against moving targets to stop a breakthrough in our division sector.

The friendly force consisted of six A-10's divided into three sorties of two A-10's each (with the sorties divided by 15 minutes), an Army Aviation mix of seven AH-1s and 3 OH-58s, and a simulated 155mm Fire Direction Center (FDC).

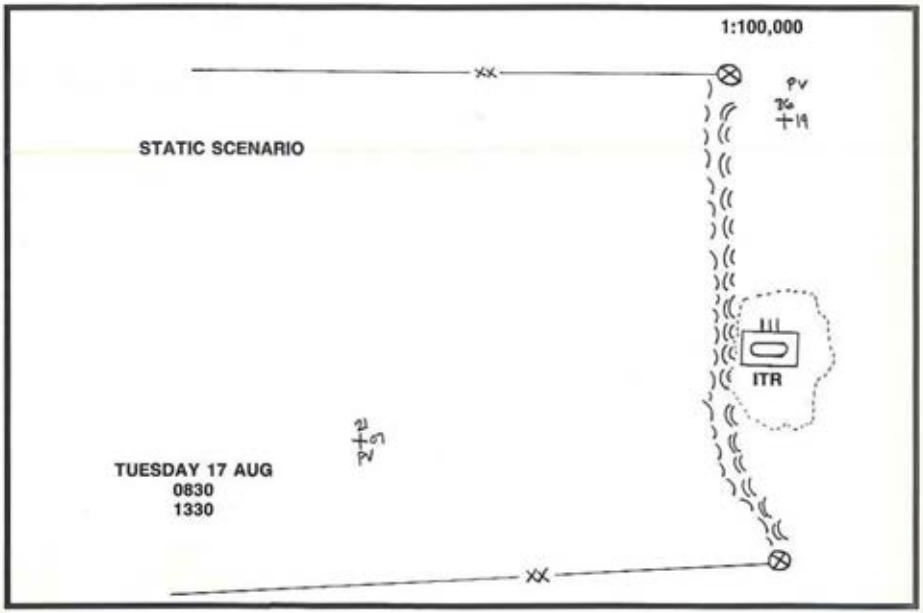
The OPFOR, which was the key to the whole exercise was developed specifically for this exercise.

It consisted of four TRTG's (capable of emitting the signals of ZSU-23-4s and SA-8s), five Miles/IFF Stinger teams (10 missiles), and numerous wheeled vehicles which were equipped with Miles receivers representing various Soviet vehicles.

The Tactical Radar Threat Generator is a training device mounted on a two an a half ton truck. It is designed to add radar-directed ADA simulation to aviation battledrill training. The TRTG has on-board video cameras which allow filming ground-to-air engagements and facilitates post-mission analysis. The TRTG can simulate any Soviet ground-to-air missile system in the search, acquisition, and track modes. It can also provide a missile launch indication in the cockpit. The TRTG's main benefit is that it adds realism to the battledrill training.

Different Configurations

The Miles Stinger and the IFF Stinger are two different training weapons configurations. The Stinger cannot be fitted with both. The IFF Stinger is for training by electronic means in the interrogation and reply of Mode 4 for the determination of aircraft to be friend or foe. The MILES Stinger is



"The Air Force would have to hold time and time again while the Army maneuvered to get the battle area 'ready'."

used for training in the search, acquisition, and tracking [by Infra-red] of aircraft. It can also "shoot" an aircraft by means of an ATWESS cartridge in the Stinger. The Miles Stinger is equipped with a tracker-head-trainer that can acquire an aircraft's Infra-red signature as far as the operator can see.

Once fired, the Stinger operator must track for three to six seconds in order to register a kill on the the aircraft's Miles receiver.

All in all the OPFOR provided an overwhelming threat environment.

Method of Umpiring

The missions were filmed using video recording equipment inside each TRTG van, and by a hand held video camera carried by an airborne controller who accompanied each mission.

SOP Ratification

The USAREUR Joint Air Attack Team SOP differed in several key areas from the events that actually took place during JAAT Eagle. First, the SOP target prioritization for JAATs is tanks, armored vehicles, ADA weapons, and then command and control vehicles.

This is contrary to Army Aviation doctrine in that regardless of whether the mission is a JAAT or simply a direct attack with helicopters alone, the primary target is the one that is the most immediate threat to the aviator. Command and control vehicles, ADA systems, and then the masses of armor vehicles that are left, follow in order. This prioritization is based on many factors which differ with each mission.

Different Priorities

The Air Force differed on this as they prioritized ADA first and foremost, and did not consider armor vehicles or small arms as an immediate threat to them at all. This caused a minor schism at the planning levels between the Army and Air Force pilots because the Army Air Battle Captain (ABC) and his guns could not guarantee first and foremost that the target area would always be "ADA free" upon arrival of the A-10s.

Secondly, the SOP states that the Army ABC authenticates the JAAT mission with the A-10 aircraft over voice radio. The Army at aviation battalion, and even brigade level, does not have the Air Force authentication tables. Without a forward air controller (FAC) or Air Force Liaison Officer (ALO) in the same aircraft, this is an impossibility.

Third, and most important, the SOP does not make clear who should actually exercise positive control of the A-10s once they enter the battle area. This was a source of constant trial and error throughout the exercise.

The bottom line finally agreed upon was that a person that is already trained (ALO or FAC) and who is airborne with the ABC or in his own helicopter, was the best control for the A-10s. This was true for several reasons.

Army personnel due to their lack of training do not have the Air Force terminology and timing down for clear and concise control of CAS aircraft, especially in hectic JAAT situations.

A-10s

The ABC is way too busy and not usually in a position to personally control the A-10s. The forward Army scouts also are either too busy, can not always readily identify the target, or are not in position.

The scouts usually had to maneuver to get into position

(JAAT — cont. on p. 60)

Combat Development:

Light Weight LHX Program

by Colonel Frank H. Mayer

FT. RUCKER, AL — The Defense Acquisition Board, chaired by the Assistant Secretary of Defense Richard Godwin, met on April 23, 1987 to determine if the LHX program should proceed into engineering development. Issues discussed ranged from the validity of Army goals of low cost, light weight, personnel savings, and commonality between scout, attack, and utility systems to the more basic issues of whether the aircraft should be a new helicopter, a tilt rotor, or a product improved APACHE/UH-60.

As most of you know, the Army was given the go ahead only with regard to developing mission equipment for LHX and contracts were let to the RAND Corporation and Institute of Defense Analysis (IDA) to conduct independent studies to either validate the Army's program or identify a better alternative. Both contractors drew from Army experience, but were very careful to avoid service influence beyond that of information collection.

First Step

One of the first requests by both IDA and RAND was for new design studies that would provide a starting point for design trade-offs. This was accomplished in a continuing dialogue between each contractor, the Army Aviation Center, the Aviation Systems Command, and their laboratories.

The original design estimates for the conventional helicopters were 10,900 lb to 14,000 lb depending upon equipment and mission assumptions, and 13,200 lb to 15,400 lb for the tilt rotor versions. Comparison with the 17,650-lb APACHE prompted Congress and Office of Secretary of Defense to challenge the validity of a new development program.

While the Army countered with the rationale that the existing inadequacies of the current fleet cannot fully be resolved by procurement of an improved APACHE and BLACK HAWK helicopters, the argument based on aircraft weight persisted. This prompted a series of design scrubs intended to eliminate all but the most essential characteristics of the LHX in an effort to return to the program goals.

Incumbent upon the Army throughout these design scrubs was the responsibility of ensuring that the new design would still resolve the operational deficiencies for which the program was conceived.

Subject matter experts were convened to review stated requirements and the associated cost and weight penalties. Emphasis was given to developing innovative design techniques that would reduce aircraft empty weight and still give the aviation unit commander the flexibility to tailor his fuel, armament, and mission equipment for his specific mission objectives.

The savings would accrue through elimination of structure and fuel that would otherwise be required to accommodate seldom used equipment and capabilities.

"Some of the key adjustments involved the design philosophy for the integration of mission equipment, levels of ballistic protection, and replacement of integral but seldom used capabilities with kits."

Key Adjustment

Some of the key adjustments involved the design philosophy for the integration of mission equipment, levels of ballistic protection, and replacement of integral but seldom used capabilities with kits. A significant 208-lb (13 percent) savings in mission equipment package installed weight was accomplished through better design integration of essential features and

(LHX — cont. on p. 54)

COL Mayer is Director of Combat Developments, US Army Aviation Center, Ft. Rucker, AL

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Hardware:

CH-54 "Skycrane": Meeting the Mission

by David Dapkus

ST. LOUIS, MO — The CH-54 TARHE, commonly referred to as the "Skycrane", was originally procured "off-the-shelf" from Sikorsky Aircraft in the mid-sixties to temporarily fill the shortage of Army Cargo Aircraft. It played a significant role in Vietnam recovering downed aircraft, moving equipment, Logistics Over The Short (LOTS) missions, and transporting troops in the detachable pod.

20 Year Life Cycle

Original fielding was to Active Army units, later transitioning into the Army National Guard. This "off-the-shelf" aircraft was intended for a 20 year life cycle, that began 22 plus years ago. Logistical suport for the most part has been short term and on a year to year basis. Modifications have been scarce and the configuration has been frozen with 1950's-1960's technology.

Despite this old technology and low command visibility, the capabilities of the CH-54 remain comparable to the capabilities of modern day Army cargo fleet. The CH-54 is a twin turbine, single rotor helicopter. It is designed to carry a detachable pod for transporting personnel and cargo, for precision hoisting utilizing a rear facing pilot and an extendable 100 foot cable, and hard pointing attached loads.

Mr. Dapkus is Logistics Manager for CH-54, U.S. Army Aviation Systems Command, St. Louis, MO.

Two Models

There are two models; the CH-54A and the CH-54B, capable of carrying 20,000 and 25,000 pound (repectively) external loads which is comparable to the 25,000 pound external capacity of the "D" model CHINOOK. However, there are only 72 CH-54s which renders the Skycrane a low density, low priority aircraft system in comparison with the other aircraft systems.

To compound the problems of logistically supporting an aging, low density system, many suppliers are either out of business or no longer interested in tooling up for relatively few parts. Lead times are extensive and costs are high in this scenario. The number of components in this situation is multiplying rapidly; usually handled on a case by case, time consuming manner.

RAM Changes?

From an economical and readiness standpoint, this would appear to support a need for some Reliability, Availability, and Maintainability (RAM) changes. These changes have not taken place, and in the current budget environment, may not.

The reason for the present situation is quite ironic, considering the assignment of the CH-54 fleet to the National Guard. The National Guard enjoys the advantage of technicians with an average of 15 years experience who have endured almost any problem imaginable.

There are only seven CH-54 units, which allows for close communication and brainstorming. The National Guard sees the CH-54 as a viable and very capable cargo aircraft. Their attitude, dedication, and uncanny ability to overcome any barriers have enabled the CH-54 to consistently meet the mission without the RAM changes or the level of support most of the other aircraft systems enjoy.

Future

The future of the CH-54 is uncertain at this time. Phase out as early as 1993 has been considered, but without another aircraft to replace it, and given the continuing cargo fleet shortfall, this seems unlikely. Logistical support tactics for the Skycrane are changing in order to provide better support despite ever decreasing funds.

Overhaul programs and procurement of parts are being closely scrutinized in order to improve delivery schedules and reduce costs.

The largest programmatic change is the effort to obtain Contractor Logistic Support (CLS). CLS costs are comparable to present support costs and should provide a much better level of support. CLS removes the CH-54 from competition with other priority systems and will provide a support plan designed for an aging, low density system.

In any case, the National Guard and the Cargo Weapon Systems Office is dedicated to meeting the mission. As long as this happens, the CH-54 will remain a valuable asset to Army Aviation. IIIII

Hardware:

Update: Combat Aviation

by Brigadier General William H. Forster

ST LOUIS, MO — The Program Executive Officer, Combat Aviation, was chartered and began operations in May 1987, at the direction of the Army Acquisition Executive (AAE), under Secretary of the Army, James R. Ambrose. The Office of the PEO, Combat Aviation, has executive management responsibility for the following Program/Project/Product Managers (PMs): AH-1 COBRA helicopter family, AH-64A APACHE, Aircraft Life Support Equipment (ALSE) family, Aircraft Survivability Equipment (ASE) family, Light Observation Helicopter (LOH) family (OH-58A/C KIOWA, OH-6A Cayuse, and TH-55), Army Helicopter Improvement Program (OH-58D KIOWA), Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS) for the AH-64 APACHE and Air-to-Air Stinger (ATAS) missile system for the AH-64A APACHE, UH-60A BLACK HAWK and OH-58C/D KIOWA aircraft.

BG Forster is Program Executive Officer, Combat Aviation, AVSCOM, St. Louis, MO.

The Office of the PEO, Combat Aviation, is organized as follows: there is a PEO, deputy PEO, three functional deputies (one each for Programs and Analysis, Logistics Management and Systems Management), and several liaison officers to be co-located with Headquarters DA (Pentagon) in a PEO, Combat Aviation, Liaison Office.

Responsibilities

The PEO performs as DA's centralized manager of assigned programs, providing executive level oversight and reporting directly to the AAE on the same. As such, the PEO is to:

- provide overall leadership, direction and guidance for acquisition and fielding;
- coordinate, lead and directly control the PMs;
- place emphasis on cost estimating, cost analysis, planning, programming, budgeting, and program integration;
- cross level resources and lessons learned;
- identify and seek to solve systemic problems and issues;
- establish priorities within the PEO; and coordinate priorities with the U.S. Army Aviation Systems Command (AVSCOM).

The Deputy PEO's responsibility is to assist the PEO in the successful execution of the mission and functions of the office and responsibilities cited above.

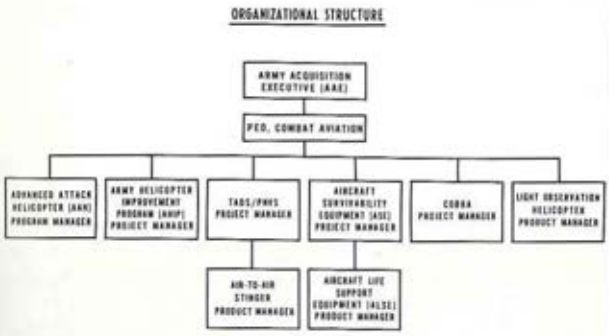
Programmed Analyses

The Deputy for Programs and Analysis is responsible for:

- managing, coordinating and participating in planning, programming, budgeting and execution;
- the Aviation Mission Area Materiel Plan (MAMP), Army Aviation Modernization Plan (AAMP) and Long Range Research and Development Plan (LRRDA);
- computer data information systems;
- technical studies and analyses;
- audits and internal Reviews and Analyses (R&As);
- program change drills;
- cross leveling of funds in accordance with established priorities;
- program scheduling;
- competition and breakout

(Combat — cont. on p. 52)

OFFICE OF THE PEO, COMBAT AVIATION



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Expertise and experience—a potent combination.

Training:

The Ultimate Instructional Delivery System?

by Agamemnon Vassos

FT. EUSTIS, VA — Let's start with an acronym quiz...what does IVD and EIDS stand for? If you said that IVD stands for Interactive Videodisc and EIDS stands for Electronic Information Delivery System, you can be proud of keeping up with the latest activities in training developments. More importantly, have you seen or know what it does? If so, you're No. 1 in your class.

It all began in 1976 when the Army realized it was drowning in paper. As a result, the Army Communicative Technology Office was established by TRADOC to explore this problem. After years of research and study, EIDS was adopted as a stand-alone, computer-based instruction (CBI) and IVD delivery system for education and training.

Training Evolution

It is interesting to observe the "evolution" of training media in the Army beginning with the chalk and blackboard days through flannel boards, flipcharts, overhead projection, 35mm slides, and videotape to mention a few, (All, by the way, are still in existence). And, let us not forget Training Extension Courses (TEC) with the Beseler-Cue-See projector. A parallel exists here in that we have progressed from the "horse and buggy days" to the Space Age. So, how is training conducted in your unit and proponent school? What age are you in?

I suspect many of us are on a STAR TREK journey where we have left the old world in search of "New Worlds" where no man has gone before. We are carrying with us the tools and techniques developed from our old world experiences. But, we are also carrying with us an openness and curiosity to explore the Universe and add to our lives the enrichment of new discoveries.

"...we have progressed from the 'horse and buggy days' to the Space Age."

EIDS

What makes up the EIDS system? Simply stated, it consists of a video monitor, a videodisc player and a microcomputer. If you want to know more you can contact the Army Training Support Center and ask for the TRADOC publication titled, the EIDS PRIMER.

So much for EIDS. What about IVD? IVD refers to the videodisc which contains the stored training material referred to as the Interactive Courseware (ICW) developed by the school house.

What about exportability? Recently, the USAALS took several IVD units to Germany to address a training deficiency on the OH-58D aircraft. Use of the system resulted in an 80% retention rate thus meeting a critical maintenance requirement.

By now, I suspect you are able to see, with the EIDS capability, that it has the potential of becoming the ultimate instructional delivery system. As I look around today, I see a video and computer world NOW. As I look into my crystal ball, I see greater utilization and integration of this technology. (What else is there?)

The U.S. Army Aviation Logistics School has established a proponent office to utilize this technology and has programmed five IVD pojects for FY88. All projects are concerned with the AH-1S aircraft....three projects will train the 68J MOS on the "Troubleshooting of the Test/Measurement/Diagnostic Equipment (TMDE) and the "Maintenance of the M65 Armament Subsystem." The remaining two projects will be to train the 67Y MOS on the "Powertrain System"and "Rigging the Flight Control." As the school house develops training programs for the field, the door will then be open for field units to take advantage of this modern technology.

The Army Training Support Center has a motto which states, "Supporting Tomorrow's Training Today." EIDS/IVD has the capability for bringing this about. Will EIDS/IVD become the *ultimate* Instructional Delivery System? ....only the future will tell. (Meanwhile, we are working on it.) IIIII

Mr. Vassos is Chief, Visual Media Branch, U.S. Army Aviation Logistics School, Ft. Eustis, VA.

Hardware:

Fixed Wing Aircraft

by Lt. Colonel Theodore T. (Tom) Cappone

ST. LOUIS, MO — BEHOLD! The fixed wing fleet is alive and well! For too long, Army Aviation has been emphasizing helicopter achievements and developments. Well, I'll be discussing fixed wing aircraft because they, like helicopters, are also entering a new and exciting era. This article will highlight a few of those events, which hopefully will be of interest to the majority of readers. Let's get started.

Jet Aircraft

Jets for the Army? Yes! On May 8, 1987, Aviation Systems Command (AVSCOM) bought two Gulfstream III aircraft. The military designation is a C-20E and they'll become the Army's first fixed wing jet aircraft when delivered in June and July 1988.

I'm sure there's someone who remembers when there were jet aircraft in the Army inventory earlier than these C-20Es. True, however, they probably were of the Research and Development (R&D) flavor.

These C-20E's will supplement the OSA fleet and support not only senior Army and Government officials, but will also be available for "Space A" travelers. Since the employment concept is still being developed, I'll provide additional information on this subject in subsequent articles.

LTC Cappone is Asst. Project Manager - Fixed Wing, SEMA/FW Project Manager's Office, AVSCOM, St. Louis, MO.

U-21 CLS

In March 1987, the U-21 aircraft came under a Contractor Logistics Support (CLS) contract and the results have been outstanding. To sum it up, the U-21 fleet is now flying more (32% flying hour increase) while maintaining a Mission Capable rate well above what it was prior to going under CLS.

The contractor, Beech Aerospace Services, Inc., (BASI) has averaged an 82% MC rate since the contract was awarded — and that figure is continually improving! By the way, the C-12 has been under the BASI CLS umbrella since 1975 and its MC rate has averaged 92%.

Confiscated Aircraft

I wonder if many readers realize that Army Aviation, particularly the Fixed Wing Weapon System Manager — reorganized now under the PM Special Electronic Mission Aircraft/Fixed Wing office (PM SEMA/FW), has been actively involved in the Confiscated/Excessed Aircraft Program (C/EAP) since the early '80s?

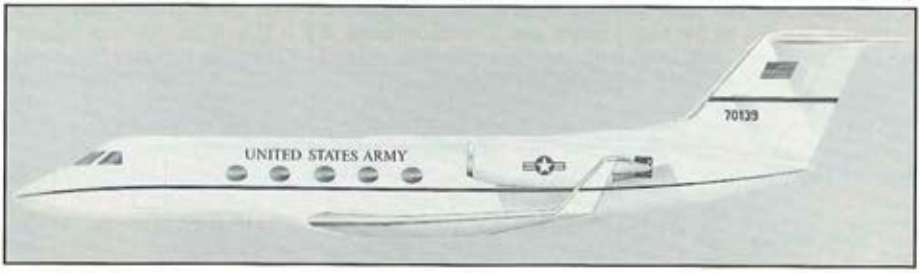
To date, we've acquired 27 aircraft which have been processed into the Army inventory and are now being used by both Active and Reserve Component units. That's about a $15.8 million savings.

Regional Scheduling

The final subject. Money is scarce plus resources are hard to get. How can Army Aviation better support the user with its OSA fleet? One option is to consolidate all CONUS OSA aircraft into a single centralized command for support within CONUS. Aircraft would be tasked through a single operations center to support mission requirements on a CONUS-wide basis as opposed to a command/installation basis.

As a first step to implementation, CONUS has been divided into regions for consolidated air-

(Fixed Wing — cont. on p. 53)



Safety:

Fiscal Year 1987 — A Banner Year in Safety

by Colonel A.E. Hervey, Jr.

FT. RUCKER, AL — FY87 was the Army's safest year on record, with the lowest number of ground accidents ever and the lowest number of Class A through C aviation accidents in 10 years. There were 2,800 fewer ground accidents than the average for the past five years. Total Army fatalities continued on a five-year downward trend.

Dramatic reductions in accidents were achieved in FYs 86 and 87, the first two years of the SafeArmy 1990 plan. Under this plan, the Army set itself a goal of a five-percent reduction in aviation accidents each year for five years and a three-percent reduction each year in ground accidents.

We missed our FY87 objective in the number of Class A through C aviation accidents by only one accident, and we were well below the objective in reducing ground accidents.

Class A

In aviation, there were four more Class A accidents than in FY86, the best year on record in Class As. However, we were three accidents below the reduction objective for Class A accidents in FY87. The 38 Class A accidents by aircraft type were: nine UH-1s, seven UH-60s, four AH-1s, four AH-64s, three CH-47s, two OH-6s, seven OH-58s, one OV-1, and one U-21.

There were 42 aviation fatalities in FY87. The deaths of 10 crewmembers and soldiers in one UH-1 accident contributed to an increase of 15 over the 27 fatalities in FY86. Four other aviators were killed in another UH-1 accident. Eight aviators were killed in three midair collisions (two were collisions of Army helicopters; the other involved an Army U-21 and a civilian aircraft).

The Cost

Although the number of Class A through C accidents has been reduced, the cost continues to rise because of the high price of equipment. The average cost of a Class A aircraft accident in FY82 was about $1.1 million (the cost of a UH-1 helicopter). In FY87, the average cost rose to about $2.5 million.

While the Class A rate of 2.22 for FY87 is higher than the FY86 rate of 2.04 and fatalities increased, we must bear in mind that FY86 was the safest year ever recorded for Army Aviation and our aviators flew about 43,000 more hours this year than in FY86.

Higher Risk

Also significant are the increasing mission demands placed on our aviation units today. More and more often we are operating our helicopters at treetop level, in marginal weather, under radio silence, and in multi-aircraft formations, and we are flying more at night with night vision goggles. All of these are circumstances in which a single performance error greatly increases the probability of a major accident.

Indicative of the high-risk environment in which Army aviators train are the 14 Class A accidents that occurred at night as compared to five for FY86. Nine of the 14 involved night vision goggles.

"More and more often we are operating our helicopters at treetop level, in marginal weather, under radio silence, and in multi-aircraft formations, and we are flying more at night with night vision goggles...14 Class A accidents occured at night as compared to five for FY 86."

We are making progress, and the credit for that belongs to aviation units: to the commanders, the safety officers, the operations officers, and most of all to the pilots in the cockpits and the mechanics on the flight lines. IIIII

COL Hervey is Deputy Director, U.S. Army Safety Center, Ft. Rucker, AL

Hardware:

AHIP: 'The Little Engine That Could'

by Colonel John N. Tragesser

ST. LOUIS, MO — It's a great delight for me to finally write this article and tell you a good news story. We in the Army Helicopter Improvement Program (AHIP) have ducked the print media for nearly two years, ever since the program was terminated for reasons of affordability. We're coming out of the closet now and we want to tell you the real story about "the little engine that could."

Black Friday

You recall Black Friday when we received word in our office that the Army couldn't afford AHIP. I don't need to tell you how devastating that was to the AHIP Acquisition Team and of course, the contractors. There was more than affordability behind that decision.

I have to believe that there was concern about weaknesses in OT II. As we rushed through an accelerated development (successfully), we probably went into the test without optimum preparation. The test design wasn't perfect, nor was the test tightly executed. Yet, it was not a bad test.

We peeled back the layers on every trial and, in each instance, were able to find reasons for poor performance. When we isolated good performance among the trials we saw that where the aircraft was employed properly, there were good results.

The lesson learned here for all to know is that these results weren't accepted because "the little engine that could" didn't succeed often enough. It didn't satisfy Pentagon analysts who rest their cases solely on statistical sufficiency.

Another OT

That's the nub of it and we were tasked to run another operational test. But, the subsequent program termination decision caused the test to be restructured to answer the very fundamental question: "How will the Army scout without AHIP?"

AHIP was the baseline and was to be pitted against a scout configured APACHE, COBRA, plain vanilla OH-58C and OH-58C with roofmounted FLIR. There were even to be trials with a prototype COBRA C-NITE.

This time, everything was done differently and better, beginning with test preparation. Preparation involved meticulous test design, intensive training of a battalion sized test unit up to ARTEP standards and an automation development effort to support data reduction during the test. Each one of these activities was a tremendous challenge and done extremely well.

The final test plan presented the toughest threat array Army Aviation has experienced on tactically realistic terrain wrapped around tactically realistic scenarios. Test management was thorough.

The automated data reduction center performed flawlessly. For the first time, there was nearly real time data reduction used for feedback to the participants and it also allowed decisionmakers to fine-tune their test design midway through the test ... a real plus!

"Between breakout and Should Cost effort, we estimate we saved the taxpayer about $50 million and that's not petty cash."

Results

The final results were superb. It showed that AHIP really is the right aircraft for the scout mission. Kudos to Ft. Rucker, Task Force 1-112 and OTEA for pulling together what might be the very best, or certainly one of the very best, operational trials Army Aviation has conducted.

While we were preparing for

Colonel Tragesser is Project Manager, Army Helicopter Improvement Program, AVSCOM, St. Louis, MO

the test, the Government Acquisition Team led by the AHIP Project Manager's Office and the contractors, banded together to make this program squeeky clean.

We took on the task of concurrently planning for, conducting and supporting an unprogrammed test while continuing our transition through production and fielding to CONUS and Germany. We believed that this model program could be even better and that the Army would ultimately realize AHIP was a program whose time had come.

In the ensuing year, we completed fielding to the training base, including Ft. Sill which was unprogrammed, with training packages rated by OTEA as one of the best given to the aviation training base.

In fact, the Aviation Branch Chief, MG Parker, told our AMC Commander that it should be used as a model for all future weapons systems.

Fielding

We took great pride in that training accomplishment, but there was more to do. We met IOC at Ft. Hood on time and then followed through fielding four separate units to Germany. We achieved another record.

The challenge there was to field with 100% Total Package Unit Materiel Fielding. In plain English that means all the spares, special tools, support equipment, test equipment and trained personnel must be in place.

That's HQ DA policy and it's been in effect for some time. No one heretofore has ever achieved it, but "the little engine that could" did!

We still didn't take time to read our press clippings. There was more unfinished business because Korea asked us to accelerate fielding. We worked hard on the production line and got ahead of schedule to do that.

Testing

Also, we had to undergo the rigors of more testing. That included EMI, EMC, EMV and HERO testing. All those were passed 100%!

To continue with our airworthiness validation, we did Climatic Hangar testing at Eglin Air Force Base where we were subjected to cold-soaking temperatures of -50°F. Then on to demonstrating at -25° and -50°F that the aircraft would battery start, that the Mission Equipment Package (MEP) and sensors would work and finally, that there would be no problem with the air vehicle dynamics.

Again, good news, we passed with flying colors.

Status

Where are we now? Congress has marked the budget. There's money in the AHIP line for Lot #5 which includes $22M long lead for Lot #6. That's good news. We hope that leads to complete program restoration. Meanwhile, we cost-avoided nearly $30M this year by breaking out our major subs, McDonnell Douglas Astronautics Company, and Honeywell, in Lot #4 contract negotiations (including spares).

This was probably the Army's earliest successful breakout of major subs that has ever been attempted. To prepare for contract negotiations, we at AVSCOM conducted an in-depth Should Cost study at each AHIP contractor and verified actual costs.

That led to tough, defensible negotiating that drove our unit cost down. Between breakout and Should Cost effort, we estimate we saved the taxpayer about $50 million and that's not petty cash.

Readiness

The last item, readiness, is certainly near and dear to the hearts of AHIP users. You folks have been doing a great job maintaining fielded AHIPs. We have been at or above the DA standard with all of our tactical units. I think that's remarkable for a high-tech system in its infancy, but there's more that we can do to help you.

I can't promise you more parts. There isn't any money and it's not the right solution. Anybody can achieve operational readiness with an infinite supply of spares.

We're doing two very important readiness improvement tasks. We're using the contractor depot repair cycle to do fault isolation analyses. That will improve system reliability. We're focusing on the MEP and sensors because the air vehicle exceeds its spec.

To date, well over 90 fixes have been made to correct design, workmanship, process and materiel deficiencies. We're getting early indications at the factory that acceptance test rejection rates are on a downward trend. That leads us to believe we'll continue along the planned reliability growth curve. This means that, over time, you should see maintenance manhours trending downward and availability trending upward.

(AHIP — cont. on p. 56)

Hardware:

APACHE PM Update

by Colonel Curtis J. Herrick

ST. LOUIS, MO — The 300th APACHE was accepted by the Army from McDonnell Douglas Helicopter Company (MDHC) at Mesa, AZ, early in December in a ceremony with Dr. Costello, the Defense Acquisition Executive nominee. The Program continues at full steam with a production rate of 10 per month.

Presently, five Attack Helicopter Battalions (AHBs) have completed Total Package Materiel Unit Fielding (TPUMF) and Single Station Training at Ft. Hood. The 6th battalion, the 1-82 AHB is reported to be doing well in their unit training phase.

APACHE Impact

In August, the 1-6 and 2-6 AHB deployed from Ft. Hood through Beaumont, TX, where the APACHEs were shrink wrapped in plastic prior to embarkation for Holland and REFORGER. The aircraft performed well in USAREUR on the day forward battle area and night deep strike operations enjoying availabilities between 83% and 100% while flying over 850 hours. A foreign military observer remarked that the APACHE will change the balance of power in Europe.

On November 9, Governor Martin of North Carolina, in a ceremony at Raleigh, accepted the APACHEs for the 130th AHB of his State National Guard. The 130th AHB, a roundout battalion of the 82d Airborne Division, is the first Reserve Component unit to receive APACHE units. The guard aviators and soldiers trained at Fts. Rucker, Gordon, Eustis, and Hood. They will conduct individual and unit training in preparation for an ARTEP at Ft. Hood this summer.

In mid-January, upon arrival of the main body, the 2-6 AHB will become fully operational in Illesheim, Germany, as the first USAREUR APACHE unit.

The APACHE, at about the 70,000 hour mark during the 100,000 hour maturity phase, is proceeding well toward meeting the unit readiness requirements and the reliability specification requirements.

Intensively managed supply actions continue to support the operations at Fts. Hood and Rucker, Raleigh, and USAREUR. During this calendar year, production aircraft will begin to arrive with the Back-Up Control System (BUCS) and the -45 Fire Control Computer (FCC) software. The Army should be strengthened by the addition of five more operational APACHE battalions in 1988. IIIII

The APACHE, at about the 70,000 hour mark during the 100,000 hour maturity phase, is proceeding well toward meeting the unit readiness requirements and the reliability specification requirements.

Colonel Herrick is Program Manager APACHE Advance Attack Helicopter, U.S. Army Aviation Systems Command, St. Louis, MO

Hardware:

CH-47D CHINOOK Reaches Germany

by Captain Paul E. Hutzky III

ST. LOUIS, MO — The CH-47D Modernization Program reached another fielding milestone with the arrival of the "D" Model Chinook at the 205th Aviation Company in Mainz, Germany.

The 205th Aviation Company, part of the 4th Transportation Command, received its first of 16 CH-47D helicopters on November 6, 1987. The 205th Aviation Co., the first European unit to get CH-47D's to replace their aging CH-47C models, held its acceptance ceremony at Finthen Army Airfield and the guest of honor was GEN Glenn K. Otis, Commander in Chief, U.S. Army Europe and Seventh Army.

CH-47A Reassigned

During the ceremony a remanufactured CH-47A model was reassigned to the 205th Aviation Company after a long absence from its earlier assignment with that unit during the Vietnam War in the late 1960's. This aircraft, up until about 12 months ago, had been transporting troops and equipment since 1966 and had accumulated a total of 3,263 flight hours, with more than 1,400 combat hours, in its 20 year existence as a CH-47A model CHINOOK.

A total of 186 CH-47D CHINOOK helicopters have been fielded as of November 1987 and all CONUS CH-47 units have been fielded. During the first five years of operational service the CH-47D fleet has accumulated over 66,000 flight hours. This fleet has increased its operational capabilities by 52%, lowered operating cost by 20%, reduced maintenance requirements, and improved flight safety and survivability while improving the compatibility of the CHINOOK fleet for sustained combat operations on the modern battlefield as compared to the CH-47A model aircraft.

A total Army effort was used in transporting the CH-47D's to Germany. The process began when the aircraft landed at the Port of Bayonne, N.J. after being ferried from Philadelphia, PA by the pilots of the Army Plant Representatives Office assigned at the Boeing Helicopter Company, Philadelphia, PA. Members of the 89th Aviation Support Facility (U.S. Army Reserves), Olathe, KS prepared the CH-47D's for surface shipment to Germany. The blades were promptly removed and the preservation process began using a new material called heat shrink for shipment of Army aircraft. This procedure will replace the traditional aircraft "bagging" concept and will result in reduced costs to the Army.

Each aircraft had heat shrink applied using a specially manufactured plastic material and a heat gun to bond the overlapping materials. The heat shrink process takes about 30 man-hours and the entire preservation process from start to finish takes about 75 man-hours using five trained personnel.

The aircraft were then transported by roll on/roll off (RORO) ship to the Port of Rotterdam and then were transferred to a RORO barge to be moved into Germany down the Rhine River. From a NATO ramp on the

(CH-47D — cont. on p. 52)

The 205th Aviation Company received its first of 16 CH-47D helicopters during a ceremony in November.

CPT Hutzky is Logistics Staff Officer, CH-47D/Army V-22 Aircraft Programs PM's Office, AVSCOM, St. Louis, MO.

Maintenance:

Supporting the Soldier in the Field

by Colonel William J. Blair

CORPUS CHRISTI, TX — Support to the soldier in the field comes in many forms. Corpus Christi Army Depot provides its support through the repair and overhaul of the Army's fleet of helicopters. It also lends this type of support to the Marines, the Navy and the Air Force.

While most of the work is accomplished at the depot, much of the support provided is on-site or in the form of telephonic assistance to the soldier in the field.

24 Hour Hotline

Requests for CCAD's on-site depot level repair and telephonic assistance comes through the depot's 24-hour hotline. As a result of one of these calls, a quick reaction team may be dispatched anywhere in the world. The team can often be on site within 72 hours. Overseas travel could take longer, with requirements for theater clearances, passports/visas.

The hotline is located in the depot's Engine Service Center, which was established in 1978 with a nucleus of four to five mechanics taken from various other shops in the depot. The hotline is manned during normal duty hours 0700-1530 Central time and monitored by a recording device during non-duty hours.

The time required to react to field's questions may vary. Some questions can be answered immediately, others may require research, and if an inquiry requires a team to be dispatched, travel arrangements must be made.

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

Engine Service Center

The Engine Service Center has grown from its humble beginning into a much larger operation with 15 aircraft mechanics, each with an average of 20 years of hands-on experience.

"The hotline is manned during normal duty hours 0700-1530 Central time and monitored by a recording device during non-duty hours."

Usually at any one time, about half of the mechanics are in the field, while the other half remain in the center.

In FY87, the depot received 1,142 hotline calls from 515 units. Twenty-six engines were returned to service through telephonic advice. This resulted in a documented cost avoidance of $1,064,123.

During this same time, teams were dispatched to 170 locations where they returned 207 engines to service with a resulting cost avoidance of $10,674,051, thus saving the government a total of $11,738,174 during FY87.

Dedicated Facility

The depot is the Army's only facility dedicated solely to the maintenance and overhaul of helicopters. In addition to helicopters, the depot also repairs components and turbine engines for the rotary wing fleet.

From basic cleaning to sheetmetal fabrication; from precision tool and die work to repair of plexiglass and fabrication of structural honeycomb panels, the depot's highly specialized shops and unique capabilities are too numerous to mention individually. And, with all its sophistication, the depot continues to acquire state-of-the-art equipment and technology.

Some of the latest acquisitions include laser cutting and marking; a robotic metal spray system; electron beam welding, and a computer aided design and drafting system.

Other support the depot provides the soldier is hands-on training in depot level helicopter maintenance. Each year, about 1,500-2,000 Army Reserve, National Guard and active duty Army personnel train at CCAD.

The expertise of the nearly 4,000 civilians and 40 military personnel covers a multitude of skills. With these skills, the depot is able to provide "cradle-to-grave" care for helicopters, their components and engines.

And, along with this care, goes the depot's guarantee, proving again that "Our Products Reflect Our Pride," and providing the soldier in the field the decisive edge. IIIII

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Operations:

Aviation Training Brigade

by Colonel Clinton B. Boyd

FT RUCKER, AL — Since this unit's last article in the January 1987 ARMY AVIATION magazine, the Aviation Training Brigade has continued to train initial entry students and rated student pilots in nine different aircraft in a safe, effective and realistic manner.

Leadership Change

In addition to our training highlights, some other significant events have occurred in this past year. The Brigade changed leadership on April 17, 1987 as COL Clinton B. Boyd, former FORSCOM Aviation Officer, assumed command and COL Haspard R. Murphy departed for Ft. Bragg, NC.

Another significant event involved the redesignation of four of ATB's battalions under the U.S. Army Regimental System on November 17, 1987. The 7th Battalion (Hanchey) was redesignated 1st Bn, 14th Aviation; the 8th Battalion (Cairns) is now the 1st Bn, 223d Aviation; the 9th Battalion (Lowe) changed to 1st Bn, 212th Aviation; and the 10th Air Traffic Control Battalion was redesignated the 1st Bn, 11th Aviation. As the ATB enters a new year, I would like to briefly discuss some training highlights by battalion.

The 1-14th changed command in July and is now under the able leadership of Daniel J. Boccolucci. LTC Boccolucci's unit, the Tomahawks, continues to train "the killers" in contact, tactics and NVG techniques in the AH-1, OH-58A/C, OH-58D and AH-64. Working with the latest and most advanced helicopter technology, the IPs of the 1-14th produce well trained and skilled pilots.

"The 1-212th, commanded by LTC James Orahood, continues to train the largest number of initial entry rotary wing students with some 1700 officers graduating annually in the UH-1. While instructing such a large number of students, the 212th flew in excess of 145,000 accident-free hours in one year."

1-14th IPs have provided invaluable experience, knowledge and hands on support to civilian contractors regarding training improvements to the OH-58D and AH-64 programs. Continually seeking new methods to streamline training, reduce operational costs and still meet a demanding mission, the Tomahawks are certainly a unit of extraordinary officers and soldiers.

1-223d Aviation

LTC Edward A. Just and his Battalion have been transitioning the Rotary Wing Instrument Flight Examiners Course from military instructors to the civilian contract IPs of Pan Am Support Services. Pan Am began instrument instruction on October 26, 1987 and continues to provide the same quality training previously conducted by military and DAC IPs.

On December 18, 1987, as part of the USAAVNC Basefield/Stagefield Realignment Plan, all UH-60 BLACK HAWKs were relocated from Lowe to Cairns.

Of great interest to all members of the Army Aviation community and the members of 1-223d in particular was the highly successful transport of the XCH-62 Heavy Lift Helicopter (HLH). On December 6, 1987, the free world's largest helicopter, the XCH-62, made its first and last flight with a little help from a CH-47D CHINOOK flown by members of C Company, 1-223d Aviation.

This HLH was the only one produced and was donated to the Army Aviation Museum by Boeing Helicopter Co. The HLH was stripped to 22,800 pounds for the flight compared to its desired takeoff weight of 88,652 pounds, and its maximum gross weight

(ATB — cont. on p. 56)

COL Boyd is Commander, Aviation Training Bde, USAAVNC, Ft. Rucker, AL

Air Traffic Control:

U.S. Army Air Traffic Control

by Colonel Melvin J. McLemore

FT. RUCKER, AL — The U.S. Army Air Traffic Control Activity (USAATCA) is responsible for the overall management guidance, standardization, systems evaluation, and development of the Army's air traffic control facilities and navigational aids worldwide. Additionally, USAATCA provides interface with the FAA, DOD, and allied nations and services on airspace and aeronautical information.

On October 1, 1986, the proponency for U.S. Army Air Traffic Control was officially transferred from the U.S. Army Information Systems Command (USAISC) to the U.S. Army Aviation Center (USAAVNC).

Since the transfer, USAATCA, USAAVNC, and the major Army commands have been aggressively engaged in programs to modernize equipment and enhance ATC support and services for U.S. Army Aviation, joint service, and civil aircraft operations worldwide.

Training and Maintenance

Conceptually, ATC is undergoing in-depth reviews and analysis to meet the needs of ATC in the fixed base environment and tactical considerations on today's modern battlefield.

Resident training for controllers and maintenance personnel will continue to be the prime mover in procedural ATC, supplemented with the rewrite of training manuals and regulations.

Specific areas that impact on ATC training requirements are acquisition of new equipment, changes in doctrine, mission, policy and procedures, certification and qualification, MOS consolidation, and training simulation.

COL McLemore is Director U.S. Army Air Traffic Control Activity, Ft. Rucker, AL.

"...USAATCA, USAAVNC, and the major Army commands have been agressively engaged in programs to modernize equipment and enhance ATC support and services for U.S. Army Aviation, joint service, and civil aircraft operations worldwide."

USAATCA has been tasked to standardize and evaluate Night Vision Systems (NVS) airspace management for all Army installations worldwide. USAATCA has developed an implementation plan to address the standardization and evaluation of ATC NVS procedures. Changes to appropriate regulations and manuals are forthcoming. The Aviation Training Brigade, USAAVNC, remains the proponent for aircrew training and aircraft systems.

USAATCA is developing and will implement and manage a program that will provide for follow-on training and a means to certify individual maintenance technicians and equipment.

This program will aid in the professional progression and increased competence of ATC maintenance personnel throughout their military career.

As much of the Army's ATC equipment is an integral part of the National Airspace System, this program will not only meet the standards established by the U.S. Army, but will also meet criteria established by the Federal Aviation Administration (FAA).

Tactical ATC

Combat development actions/initiatives have been oriented toward improving our tactical ATC doctrine, organization, and equipment. The necessary steps are being taken by the Air Traffic Services Division of Directorate of Combat Developments to incorporate tactical ATC into the Army's Airland Battle Doctrine and in the Training and Doctrine Command (TRADOC), Concept Based Requirements System (CBRS). As the foundation for combat development initiatives, the Air Traffic Services Interim Operational Concept has been developed and approved at USAAVNC and forwarded to the Combined Arms Center for approval as the conceptual basis for force design, doctrine revi-

(ATC — cont. on p. 55)

Hardware:

TOW COBRA Night Sight Progress Report

by Major Joseph Planchak

ST. LOUIS, MO — The long standing requirement for a true night fighting capability for the COBRA's M65 TOW missile system is approaching production.

Originally conceived as a product improvement in the late 1970's, the integration and testing of a hand built FLIR Augmented COBRA TOW Sight (FACTS) proved out the general concept. This modification gave the COBRA the ability to fire TOW II missiles at night as well as through obscurants (smoke and fog) while combating electro-optical countermeasures.

Although the FACTS system development was shelved due to the high cost associated with its further development and production, the concept was carried forward into what is now called the M65/COBRA Night Sight (C-NITE) TOW missile program.

Objective

The program's objective is to integrate into the existing M65 TOW missile system off-the-shelf FLIR hardware with a minimum of modification to reduce risk, cost, and development time.

A survey and investigation of available FLIRs resulted in the M1 Abrams Tank Thermal Imaging Sight being selected for modification and application to the COBRA. The C-NITE also shares common components with the Bradley Fighting Vehicle video thermal tracker and ground TOW II systems.

MAJ Joseph Planchak is Assistant Project Manager for M65/C-NITE TOW Missile System program, AVSCOM, St. Louis, MO

Missile Launch #3: Aircraft 60 Kts, Roll 25° v2 secs, 60° Heading change, Day Launch, FLIR tracking; missile and guidance TOW-2. Range: 3750. NIR Jam. Result: SUCCESS.

The C-NITE installation involves a modification to the current Telescopic Sight Unit to incorporate the M1 FLIR and the addition of three new Line Replaceable Units [FLIR Missile Tracker (FMT), FLIR Power Supply (FPS) and the FLIR Control Panel (FCP)]. All current daytime tracking, laser ranging, and TOW missile guidance capability is retained.

Program Development

A development contract was awarded in December 1984 and the first of four preproduction prototypes was delivered in January 1986. The M65/C-NITE development program has progressed successfully through Contractor Flight Test, Critical Issues Demonstration (the production decision test), and the Prototype Qualification Test - Government.

The prototype system has successfully fired all versions of the TOW missile currently in the inventory (to include two TOW IIA missiles) under day, night, smoke, burning debris, Near IR/Far IR jamming and combined weapons modes conditions.

The missiles have been fired from hover, forward flight and maneuvering flight conditions at stationary and moving targets out to maximum range.

The system exceeded the detection/recognition ranges required and met or exceeded the probability of hit requirements under all specified conditions. Emerging data from the recent testing strongly confirm the planned reliability growth projected for the system, as agreed to by the RAM community.

The success of the development program was recognized

(COBRA — cont. on p. 56)

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Hardware:

TADS/PNVS Test Equipment

by Donald P. Checkwick

ST. LOUIS, MO — Previous articles on the Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS) addressed training and updating the basic TADS/PNVS program. This article will address the TADS/PNVS test equipment.

The Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS) utilizes detailed and accurate test equipment at the Aviation Intermediate Maintenance (AVIM) level which is installed in an Electronic Equipment Test Facility (EETF).

The EETF consists of two vans, a support van and a 35-foot van, mated together in a "T" configuration. The support van contains the Test Program Set (TPS) components, self test components, and additional equipment that must accompany the electronic station and the Electro Optical Bench (EOB).

Mr. Checkwick is an Electronics Engineer in the TADS/PNVS Project Manager Office, AVSCOM, St. Louis, MO

The 35-foot van contains TADS/PNVS Test Equipment which is interconnected to the AN/USM 410, and the APACHE peculiar equipment.

The purpose of the test equipment is to provide the U.S. Army with the capability to detect TADS/PNVS system LRU/SRU faults at the Aviation Intermediate Maintenance (AVIM) level. TAD/PNVS test equipment consists of two assemblies: the electronic station, the Electro-Optical Test Bench (EOB) and Test Program Sets (TPSs).

> **"The purpose of the test equipment is to provide the U.S. Army with the capability to detect TADS/PNVS system LRU/SRU faults at the Aviation Intermediate Maintenance (AVIM) level."**

Necessary Stimulus

The purpose of the electronic station and EOB is to provide stimulus necessary for TADS/PNVS line replaceable and shop replaceable units. The electronic station is made up of a double rack electronics assembly primarily containing the required power supplies.

The EOB is made up of three test benches: dayside, test console and nightside. The dayside test bench provides the stimulus and fixtures necessary to mount and test UUTs associated with the day sensor and laser subsystems. The test console provides the interface between the dayside and nightside test benches and the electronic station. The nightside test bench provides the stimulus and mounting fixtures necessary to test Units Under Test (UUTs) associated with the night sensor assembly and the PNVS.

Vibration Isolation

The EOB is bolted to a plate that allows it to be floated on a cushion of air for vibration isolation. Any time a UUT test is performed that requires use of the optics of the dayside or the nightside, the EOB must be floated.

Self Test

Self test of the TADS/PNVS Test Equipment contains thirty-four (34) individual tests which verify correct operation of the electronic station, the electro-optical test bench, and the data buses. TM 11-6625-3081-23 gives a list of hardware for self test instructions. Self test modules include fault isolation. The TM provides repair messages and cross-references for replacement procedures.

TPS

A TPS is a group software/hardware kit which contains everything necessary to test a specific UUT. All test program sets contain test programs. They may also contain any or all of the following items:

- Personality cards
- Adapters
- Fixtures
- Self test adapters

"...with the implementation of the A-900 computer modification, this TPS run time was reduced from four hours to 1/2 hour."

• Cable assemblies

There are 15 AVIM level TPSs and 38 depot level TPSs provided by Martin Marietta. The 15 AVIM level TPSs are tested in the EETF either by the TADS/PNVS EOB or by the USM-410. The 38 depot level TPSs are tested in the Martin Marietta Corporation depot in Orlando, Florida.

Field Experience

With regards to field experience, one of the Army's initial concerns with the Electro-Optical (E-O) Bench was whether or not the optical path of the collimators, which consists of a multitude of mirrors, lenses and filters, would be able to stay in alignment when subjected to the harsh environment and vibrations encountered when the EETF van is transported over rough terrain.

These fears were laid to rest when Optical Alignment Data was collected in January 1985 during environmental and mobility testing of the EETF at Eglin AFB and Aberdeen Proving Grounds. Analysis of the collected data indicated that the observed alignment deviations were less than 50% of the allowable maximum. It could then be reasonably assumed that there would be no need to check optical alignments each time the EETF van is relocated.

The original APACHE Fielding Plan called for all of the supporting Automatic Test Equipment, including the Electro-Optical (E-O) Benches, to be fielded immediately prior to the fielding of the aircraft. To meet this objective, several E-O Benches had to be delivered quite early in the program to accomplish various requirements for fielding, such as integration into the EETF van, mobility and environmental testing, Parts Teardown/Logistics Demonstrations, Engineering Development Testing, and training of the ATE Operators.

Upgrade

These early delivery dates, however, precipitated a problem in that the design of these E-O Benches was far from finalized and thus could not test the final configuration of the TADS/PNVS. The best alternative was to accomplish an upgrade modification on these Benches at the various field locations which required that each bench be out of service for only two weeks.

The main modifications which were incorporated were the faster A-900 Model Computer/Controller, the redesigned optical path in the Optical Signal Generator, the additions of a video monitor and shelf-extension, numerous internal electrical/mechanical modifications and replacement of the Optical Signal Analyzer with a simplified control panel.

These modifications not only now permit the testing of the full compliment of TADS/PNVS components, they allowed faster testing and simpler operator actions. For example the TPS for the Night Sensor Assembly (NSA) was developed in accordance with Army requirements and required eight hours to perform the complete test run.

Since this was unacceptable to the field, operator interface was introduced which reduced the run time from eight hours to four hours. However, with the implementation of the A-900 computer modification, this TPS run time was reduced from four hours to 1/2 hour.

There are currently seven complete sets of ATE, that is EO Bench and TPSs fielded at AVIM locations, and the feedback from the field has been very favorable. Perhaps, the most important event to date is the recent successful deployment of one EETF in support of the 6th CBAC during REFORGER 87. IIIII

Operations:

Thunderhorse — 11th ACR Aviation Squadron

by Lt. Colonel Thomas A. Swindell

APO NY — The following is a report to the Aviation Community on the status of Aviation in the 11th Armored Cavalry Regiment (ACR), Fulda, Germany. The Thunderhorse Squadron is comprised of 74 aircraft found in three Air Cavalry Troops, two Attack Helicopter Troops, one Assault Helicopter Troop, Aviation Maintenance Troop, HHT with attachments and the Regimental Combat Electronic Warfare Intelligence Troop.

Past Year

Enough of the background information, now on to the subject at hand. The past year has proved to be an extremely action packed year with the Squadron participating in five major field exercises, two gunnery densities and countless other significant training events. The most important of these was REFORGER '87, "Certain Strike".

During REFORGER, the Squadron's mission changed from its traditional role as the Aviation Squadron of an Armored Cavalry Regiment and we went to work for the 1st Cavalry Division's Aviation Brigade. Needless to say, it was a very interesting learning experience for all involved.

Several important points evolved from our association with the "First Team". First, as long as the aviation community continues its present doctrinal training program, that is if we continue to train to a doctrine standard, then future cross attachments should be relatively easy to effect.

Secondly, the aviation (air) scout continues to be a most important part of the combined arms commander's combat mix. The Squadron's air cavalry often provided the Division's only substantive intelligence reports. This means of course, the aviation squadron must have "staying power" in order to effect the needed surveillance. The Thunderhorse's depth (three Air Cavalry Troops) provides the assets required to effect this.

Thirdly, attack helicopters really must be used "in bunches" in order to gain the needed tactical advantage. We must continue to educate our fellow ground commanders on the advantages of killing large quantities of the enemy vice the often heard plea to "send gunbirds to come kill three tanks".

Maneuver Element

Much, much more was learned for our experience on REFORGER '87 but space limitations prevent amplification. Suffice it to say that in the opinion of those who observed and worked with or against the Thunderhorse, aviation truly is a maneuver element!

Upon the Squadron's return from REFORGER '87, two other significant events occurred worthy of note to you. First, the Squadron established the first and only Air Assault school in USAREUR. The school had been planned since July 1987 and graduated its first class in October 1987. Current plans call for the school to be conducted every quarter.

The "Blackhorse Air Assault" school is programmed to produce 96 Air Assault qualified soldiers per class. The distinct advantage the Squadron enjoys by conducting its own school is that the cadre and aviation assets come directly from the Thunderhorse thus making the overhead costs extremely low.

"Today Show"

The second major event after our return from REFORGER '87 was the NBC "Today Show".

In November 1987, the Thunderhorse along with its sister squadrons of the Blackhorse Regiment hosted the live broadcast of the NBC "Today Show" from Sickles Army Airfield, Fulda Germany. I am sure that many of you saw this great production. The benefits the Army received by this very favorable production can not be overstated. The general consensus is that in two hours the Blackhorse did a millennium worth of goodwill!

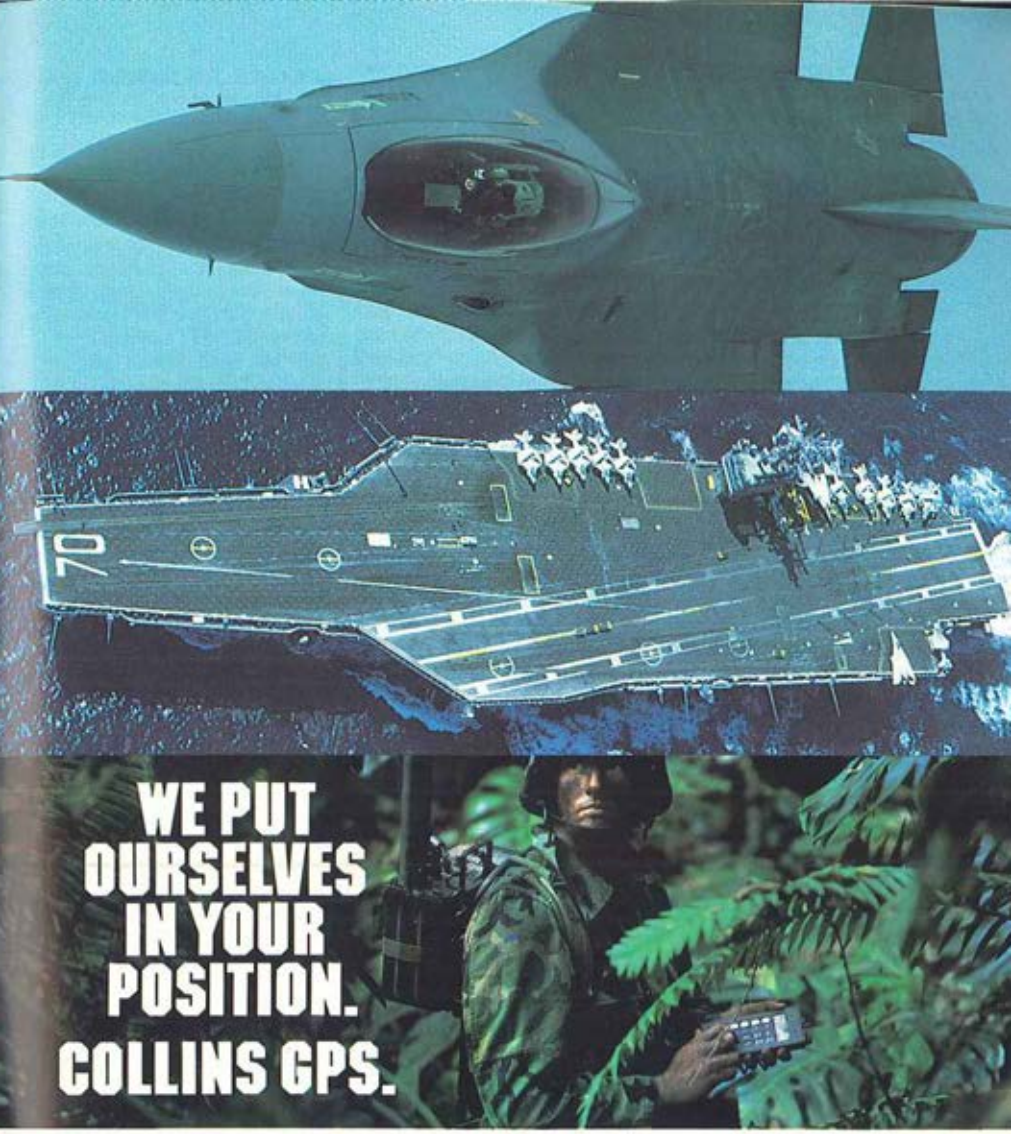
1988 promises to be just as exciting and challenging. Of course, our ever present surveillance mission along the East-West Interzonal German Border will continue.

New Year

Again, 1988 will find the Thunderhorse in the field a ma-

(11th ACR — cont. on p. 54)

LTC Swindell is Commander 11th Regimental Combat Aviation Squadron 11th Armored Cavalry Regiment, V Corps, APO New York.



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Operations:

Keeping Up With the APACHEs

by Captain Bruce Moore

FT. HOOD, TX — The "L" series MTOE for an AH-64 Attack Helicopter Battalion brings eighteen awesome tank killers to the modern battlefield. It also brings an extremely big challenge: How to internally support the APACHEs during field operations.

At the heart of the support structure is the Class III/V Platoon. The platoon, led by a Lieutenant and a Sergeant First Class, is authorized fifteen Aircraft Fuel Handlers, eight ammunition handlers, seven Heavy Expandable Mobility Tactical Truck (HEMTT) tankers, each capable of carrying 2500 gallons, eighteen 500-gallon collapsible drums and six HEMTT cargo carriers.

Three Critical Issues

Three issues are critical to successful attack helicopter operations; First, having fuel and ammunition at the right place and time. Second, servicing aircraft in forward areas and keeping up with their constant and swift movements. Third, reloading armament systems at forward arming and refueling points (FARP).

LTC William S. Reeder Jr. assumed command of the 1st Battalion (Attack Helicopter), 3d Aviation Regiment, Aviation Brigade, 2d Armored Division, Fort Hood, Texas in March 1987 [designated the 5th Squadron, 17th Cavalry, 6th Cavalry Brigade (Air Combat) at that time].

The battalion would undergo its ninety-day unit training plan (UTP), complete a six day ARTEP, graduate as the Army's fourth fully equipped AH-64 battalion, deactivate and leave the 6th Cavalry Brigade (Air Combat), activate as the 1st Bn, 3d Avn Reg, 2AD, the first divisional AH-64 attack helicopter battalion, and occupy the headquarters of 2d Armored Division's Aviation Brigade during REFORGER '87, all within a 130 day period.

"It was clear that a total of five UH-60's are needed to adequately support an APACHE battalion."

The Commander wasted no time in addressing these three critical issues and tasked the III/V Platoon Leader, 1LT Doug Sena and the Battalion S-4, CPT Bruce Moore, to find the solutions.

Fuel and Ammunition

To satisfy The Commander's requirement to support a one-third attack helicopter employment plan, the platoon was broken-down into three fuel squads with five fuel handlers and two HEMTT tankers each, and an ammunition section with eight ammunition handlers and six HEMTT cargo carriers. Each fuel squad can have a four-point system operational within 15 minutes of arrival on-site and is capable of refueling an AH-64 company twice, assuming two hour missions, or the entire battalion once for a one and one-half hour mission.

The first squad establishes its FARP and pumps fuel while the second squad moves its FARP into position. When the first FARP goes "cold" the second FARP can go "hot" on order. When the first squad goes to the rear for resupply, the third squad moves into position and is prepared to go "hot" on order, and the rotation (1/3 rule) is active.

These FARP locations are chosen by the S-4 in close coordination with the S-3 based on the unit's scheme of maneuver. Movement is executed by the III/V platoon leader using the eight troop leading procedures.

The ammunition section is further broken down into two teams, each with three Cargo HEMTT's, which deliver ammunition as required. The necessity to have munitions at the FARP prior to the establishment of refuel points, requires **(APACHEs — cont. on p. 63)**

CPT Moore is S-4 for the 1st Battalion (Attack Helicopter), 3d Aviation Regiment, Aviation Brigade, 2d Admored Division, Ft. Hood, TX.

Hardware:

CHINOOK Ds Arrive in Europe

by Colonel Ronald N. Williams

ST. LOUIS, MO — The fielding of the modernized CH-47D (CHINOOK) helicopter to active CONUS units has been completed on schedule and aircraft are now being sent to United States Army Europe (USAREUR).

In November General Glenn K. Otis, the Commander-in-Chief, USAREUR, accepted eight of the new, advanced helicopters during ceremonies at Finthen Army Airfield at Mainz-Finthen, the Federal Republic of Germany. The aircraft are assigned to the 205th Aviation Company which operates out of Finthen. An additional eight aircraft will be delivered to the 205th in March 1988. CH-47Ds will be assigned to USAREUR, on a one-for-one exchange of C-models.

Delivery Aircraft

The aircraft selected for the delivery ceremony at Finthen was a special one. It was #1674, and had, during its 21 years of service spent two years in Vietnam, including an assignment with the 205th Aviation. It is one of the first A models to be upgraded to the D configuration.

In accepting the aircraft, General Otis praised the Boeing Helicopter Company and the Army's Program Management Office for a consistent history of meeting cost and schedule objectives, and for fielding a system that meets support and technical requirements. He noted that the D model has an enviable safety record.

Transportation

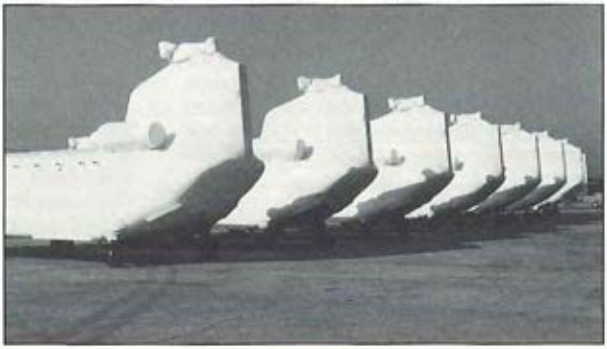
The CHINOOK is being transported to Europe by "roll-on/roll-off" ship between Bayonne, NJ and the port of Rotterdam. From Rotterdam they are moved up the Rhine River on the deck of river barges to Coleman Barracks at Mannheim, where they are flight tested before delivery. The C model CHINOOKs that are being replaced are delivered on the return trip to Norfolk, VA and then delivered to National Guard units who are providing their older B model aircraft to the production line for modernization.

One of the keys to successful movement in both directions is the assistance provided at the CONUS ports by the 89th Aviation Support Facility (USAR), from Olathe, KS. They provide invaluable service by removing the rotor blades and wrapping the fuselage in a cocoon of heat-shrink material, and on the return trip, unwrapping the aircraft and preparing them for flight.

Eighth Year

The CHINOOK modernization program is in the eighth year of production and the fourth year of a five year multi-year firm, fixed price contract. Boeing Helicopter Company is turning out four aircraft per month and continues to be on schedule.

Recently, the Vice Chief of Staff and the Under Secretary of the Army have approved a program change to allow the modernization of the remaining CH-47 airframes in desert storage. This will increase the total airframes upgraded to D configuration to approximately 472, depending on attrition losses and the condition of the desert aircraft.



It is a real pleasure for me to be able to provide this first of what I hope will be many field reports on the CH-47 Modernization Program. This has been one of the Army's consistently excellent modernization efforts and it will remain so until completion in the mid-1990s. IIIII

COL Williams is Project Manager for CH-47D/Army V-22 Aircraft Programs, AVSCOM, St. Louis, MO

A-JAAT (continued from page 22)

are the norm in gaining and maintaining the initiative in the execution of our offensively oriented AirLand Battle doctrine. The III Phantom Corps, the Heavy Corps, is in no way a lethargic, ponderous beast that slowly moves around the battlefield. In cooperation with 12th Air Force, we both have begun to realize our ability to expand the battlefield and give new meaning to mobility, cooperation, and lethality. Of this we have no doubt! Hope we can keep it up.

In sum, we are most satisfied with progress to date but realize that theory and procedures are only part of the equation. Individual weapons system proficiency is a must, and teamwork requires team practice. Attack teams assembled on the run are doable, but face-to-face briefings and practice greatly leverage results in our favor. We are good and will get better as the A-7D upgrade, A-7 plus, and A-16 evolve. We can strike swift and hard and that spells viable AirLand Battle and deterrence! IIIII

Combat (continued from page 31)

programs;

- congressional information and exchange drills;
- official reporting, e.g., the Selected Acquisition Report (SAR), Defense Acquisition Executive Summary (DAES) report, Unit Cost Report (UCR), Program Baselines (PBs) and horseblankets; and Foreign Military Sales (FMSs), for the assigned weapon systems.

Logistics Management

The Deputy for Logistics Management is responsible for managing, coordinating and participating in fielding and defielding; maintenance; review and analysis of Integrated Logistics Support (ILS) and readiness from an avionics, aircraft and other auxiliary support system perspective; special mission projects; and establishing and fostering intra-/inter-command, agency and military department relations, e.g., with AVSCOM, U.S. Army Armament Munition and Chemical Command (AMCCOM), U.S. Army Missile Command (MICOM), U.S. Army Communications Command (CECOM), other commands and agencies, and the other military departments; for the assigned weapon systems.

Systems Management

The Deputy for Systems Management is responsible for successfully managing, coordinating and participating in blue ribbon technical panels; the development, production and maintenance engineering; quality assurance and systems integration; the cross leveling and standardizing of technology and lessons learned; Reliability, Availability and Maintainability-Durability (RAM-D) technology; and the VE programs for the assigned weapon systems.

Liaison

The PEO Liaison Office, to be located in the Pentagon, is to collect information, including questions from DA, OSD and Congress and provide feedback from the PEO; coordinate all Inspector General (IG) reports and audit reports and provide feedback to the PEO and inspection/audit agencies; coordinate budget program changes and what-if exercises within the PEO, DA and OSD; coordinate all report activities within the PEO, DA and OSD, and coordinate Congressional activity for the PEO.

The assigned Program/Project/Product Managers will manage their programs as they have in the past. By concentrating on systemic and cross program issues and picking up the majority of interfaces with the Pentagon, the PEO should relieve PM's of some of their more time consuming tasks and give them more time to spend on managing their programs. IIIII

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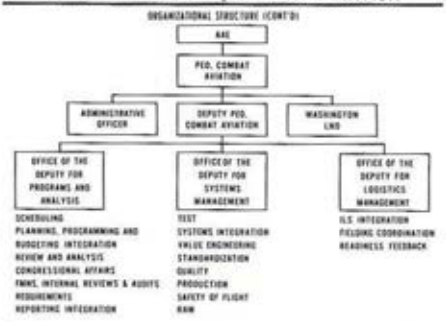


Momentum - cont. from p. 8

Acquisition directed that independent studies into competing airframe technologies for the LHX program be conducted. These studies, completed by the Institute for Defense Analysis and the Rand Corporation, resulted in the Army announcing in November, 1987 that it would continue to pursue LHX as a new, conventional rotary-wing aircraft.

Today the LHX remains an Army priority research and development effort and future key to the modernization of Army aviation. Following a Defense Acquisition Board decision, the LHX will continue in research in 1988. The research will concentrate on the design core of essential mission components for testing and evaluation. The LHX process will continue to pursue scout, utility, and eventually attack helicopter technology, so that when the affordability window once again opens, the research will be accomplished. Because LHX complements AH-64 and UH-60, additional procurements of these helicopters are contemplated in the near term so as to not let America's helicopter base go cold and to continue modernizing Army aviation units.

The Job Ahead

We anticipate that a new family of weapons will be required to meet the threat within the next five to ten years. Our LHX family of light helicopters program is critical to the Army's future. We must continue to move forward. It will take both a continued modernization effort and aggressive R&D program to answer the Army's requirement.

However, there are not adequate resources planned to fulfill both modernization and continued required levels of research. Fortunately for the Army, with the support of OSD, the administration and Congress, we believe we will be able to preserve our most critical aviation programs; but we must all work harder and smarter within the system and budgetary process to garner the required resources to insure that Army aviation truly remains "Above the Best". IIIII

Fixed Wing - cont. from p. 34

craft scheduling purposes only, leaving the aircraft at their beddown locations.

This regional scheduling of OSA assets, along with the necessary computer link-up to support it, is about ready to begin a one-year trial. I'll provide more on this subject in a later issue. That's all for now — happy flying, and be safe. IIIII

LHX – cont. from p. 28

elimination of unnecessary redundancy and goldplating.

An aggressive preplanned product improvement program (P^3I) was specified to ensure that aircraft performance and equipment are upgraded efficiently as advanced technology and mission requirements dictate. Multi-spectral target acquisition sensors, chemical look-ahead detectors, and the programmed 50 percent power increase of the T800 engines are accommodated in this manner.

Aircraft survivability features were meticulously gone over to ensure that LHX will at least equal the APACHE, even when 21st century threat improvements are considered.

Trade Offs

Obviously, there were some "nice-to-have" features that had to be traded when a substantial weight impact was involved. An early rotor vibration goal was relaxed down to APACHE levels, based on user acceptance of the APACHE. The structural provisions that allow rapid preparation of the aircraft for air transport in the C-141 were eliminated due to the exceptional self-deployability capabilities of the LHX and the availability of other more suitable USAF aircraft.

The engines were allowed to operate at 95 percent of their maximum power settings to meet vertical flight performance requirements so that the light weight LHX would be compatible with the developmental T800 engines. This adjustment was acceptable because of the engine's planned power growth previously mentioned.

Other weight savings features include the use of kits for rotor blade ice protection, elimination of the SCAT cargo hook, and changes in reliability and crashworthiness standards predicated on APACHE and BLACK HAWK experience.

These changes netted a savings of approximately 1,700 lb in air vehicle weight and make the resultant 8,100 lb LHX very attractive when compared to alternatives such as the APACHE.

DEM/VAL Program

A very comprehensive DEM/VAL program will ensure that the system with these adjustments, accomplishes its operational objectives and will identify any shortcomings for correction prior to production. All indicators point to a very survivable and operationally effective fighter to defeat threat ground and air systems well into the 21st century. The future of the Army and Army Aviation will be greatly influenced by this new development LHX program. IIII

CH-47D – cont. from p. 39

Rhine River, the aircraft were towed to the 70th Transportation Battalion, Coleman Barracks, for depreservation and test flights. Pilots from the 205th Aviation Company took delivery of aircraft at Coleman Barracks and returned to Finthen Army Airfield.

The Materiel Fielding Team is on site in Germany and will remain until all aircraft are delivered. This team consists of government and contractor representatives who are responsible for the delivery of tools, spare parts, publications, and training prior to and during the arrival of the aircraft on site.

Fielding to Continue

Fielding will continue in Germany with Korea next to receive the "D" model. The new materiel introductory briefing team is continuing to visit future fielding sites in an effort to identify and resolve unit peculiar problems in areas of personnel, tools, spare parts, and maintenance facilities.

The increased readiness, effectiveness, and supportability, continues to provide the user with increased medium lift capability while decreasing maintenance workload and operating and support costs.

The coming years will provide many challenges for the CH-47D program. We feel confident that the Project Manager's Office can meet those challenges with the support of the user, the Army, and the Industry Team to continue to provide the U.S. soldier with the finest medium lift helicopter in the world. IIIII

11th ACR – cont. from p. 48

jority of the time as we continue to fly in excess of 17,000 hours. Also at mid-summer our Squadron and the Regiment will bid farewell to the 52nd Colonel of the Regiment, Colonel Thomas E. White, Jr., a distinguished Armor Aviator, and will welcome COL John Abrams. We look forward to the challenges of fostering the tenets and growth of Army Aviation along Freedom's Frontier. IIIII

ATC – cont. from p. 43

sion, and material development.

NAS Plan

The Federal Aviation Administration (FAA) has funded a multibillion dollar plan to upgrade the National Airspace System (NAS). This plan delineates the improvements in FAA ATC facilities and equipment necessary to upgrade and modernize the NAS through the year 2000, and will have a significant impact upon Army operations.

USAATCA has taken the lead by conducting a detailed analysis of the plan and the development of a three-phased integration strategy for Army ATC systems into the NAS. Additionally, this strategy will consider tactical requirements both in CONUS and OCONUS.

Reserve Component ATC

Reserve and National Guard members form a substantial and important portion of the total air traffic control force. National Guard TOE units currently consist of five detachments, twelve platoons, two companies, two battalion headquarters, and one ATC group. USAR air traffic control personnel are authorized for support at seven mobilization stations.

In mid-April, USAATCA initiated an analysis of these Reserve Component assets which specifically addressed equipment, personnel, and training status.

This assessment provided managers and commanders with an overall view of Reserve Component air traffic control and information which can assist appropriate agencies in targeting resources in the future.

ATC Master Plan

The proposed ATC Master Plan will reflect Army and joint service aviation doctrine and fiscal policy, and will provide basic planning information to all Army fixed base and tactical operation. The Master Plan will focus its efforts in the functional areas of doctrine, equipment modernization and modification. Force structure changes are required because of equipment modernization and development and to align with current aviation structure.

U.S. Army ATC has come a long way in the last year, continuing to build on the momentum initiated by the Information Systems Command.

The improvements that have been made and are planned in the future represent a significant increase in both the quality and quantity of services provided to aviation worldwide by U.S. Army Air Traffic Control.

The USAATCA encourages all personnel in aviation and ATC related fields to submit ideas and concepts to improve air traffic services to the ATC activity.

Our address is: Director U.S. Army ATC Activity, ATTN: ATZQ-ATC, Fort Rucker, AL 36362-5265. IIIII

ATB – cont. from p. 42

of 134,600 pounds. The HLH's maiden flight began at Panama City, FL and culminated a little over a year's worth of preparation to get it to Ft. Rucker, AL.

1-212th Aviation

The 1-212th, commanded by LTC James A. Orahood, continues to train the largest number of initial entry rotary wing students with some 1,700 officers graduating annually in the UH-1. While instructing such a large number of students, the 212th flew in excess of 145,000 accident-free hours in one year. The 212th was also involved in the changeover of UH-1 contact from military instructors to the civilian contract instructors of Pan Am. Some 70 Pan Am IPs now instruct IERW students in the UH-1 contact phase of flight school. Military IPs continue to train students in night, NVG, tactics and UH-1 MOI skills. The 212th mission accomplishment rate has been outstanding and was recently recognized by receipt of the 1987 Daedalian safety award.

I-11th Aviation

LTC Chris Gwin's battalion provides the vital air traffic control support to a 22 hour a day flight training operation. Contending with severe controller shortages, LTC Gwin's unit has capably managed to adequately man five basefields and 16 stagefields with exceptional results. His extremely dedicated and professional soldiers are key ingredients to the overall team effort of ATB.

In May 1988, the 1-11th's responsibility will include the manning of three new stagefields. To complement the opening of these stagefields, three FCC facilities will be consolidated into one with a new state-of-the-art microwave system that will provide flight following for the entire Ft. Rucker flying area.

Finally, the MOS consolidation of 93J and 93H to 93C will result in a better trained controller, and help alleviate some of the current manpower shortages.

The Future

The Aviation Training Brigade anxiously anticipates the new year. Having established an excellent reputation in a short three year time period, we will continue to build on this solid foundation. Basefield/Stagefield Realignment will continue as the CH-47s move from Cairns to Hanchey, the OH-58A/C move from Hanchey to Shell and the TH-55 is retired after 24 years of faithful service.

The implementation of the Multi-Track Program will begin in May 1988 and will result in immediate benefit to the Aviation Training Brigade and Army Aviation. Aviation Training Brigade's role in Army Aviation is significant, vital and unsurpassed. Our goal is to produce the world's finest aviators and certainly 1987 has been no exception. IIIII

AHIP – cont. from p. 37

The second task we're about to launch is a RAM LOG collection with the Ft. Hood unit. Results of this six-month effort will allow us to look at not only reliability issues, but supportability issues which include how we're organized to support. The latter point might be particularly important.

More and more of our aviation products, now and into the future will feature electromechanical sensors, active and passive, and embedded computers. We may well learn from the RAM LOG data collection effort that we want to reallocate the division of labor between the dynamics, engine, and airframe MOSs and the electronics MOSs. TSM Scout will be talking to you about this in subsequent articles.

We look back with great satisfaction at the teamwork amongst TRADOC, OTEA, AVSCOM, the TOE Army and our contractors, that made "the little engine that could" a model for the future. IIIII

COBRA – cont. from p. 44

July 2, 1987, when the Army signed a $67 million production contract with Hughes Aircraft company's Electro Optical Data Systems Group, El Segundo, CA to deliver 52 M65/C-NITE systems.

The contract provides for system procurement and facilitization and is the start of a planned 500 system procurement which will give the Army's AH-1F (Fully Modernized COBRA) a true night fighting capability.

We plan to begin applying the M65/C-NITE to the COBRA Fleet in 1989. The successful fielding of this system will significantly enhance the combat employment capability of the COBRA, making it a full member of the modern 24 hour combined arms team. IIIII

NCO – cont. from p. 14

him to exercise his newly learned skills.

After the FTX, the soldiers return to the 4th Aviation Training Battalion where they undergo Common Task Testing (CTT) which is also conducted under a tactical scenario. MSG Sutton also addressed some changes that are currently under study: increasing the 93P10 course to 11 weeks to include ALSE training, and including Battle Damage Training in all maintenance courses during the FTX.

Sergeant Sutton also briefed on the U.S. Army Aviation NCO Academy. The Academy is currently teaching CMF 93 BNCOC and ANCOC (MOS 93D to begin in Oct. 88). The courses are structured as follows: USASMA Common Core Subjects, Aviation Common Subjects and MOS Technical Subjects.

U.S. Army Safety Center

SGM White's briefing touched on two major changes at the Safety Center. The Commander's position is now an 0-7 (BG) billet and is currently filled by COL (P) Marvin E. Mitchiner Jr., and as of July 1, 1987, the Safety Center has moved from under the direction of the ODCSPER to that of the Chief of Staff. SGM White also touched on a couple of facts and figures I felt were not only important to his briefing but to all of us.

- The highways continue to be the most dangerous places to be. In FY87, 251 soldiers were killed in POV mishaps. Sixty-one per-cent of those mishaps were alcohol related. That's 11% above the national average. Thirty-three percent of those 251 deaths were motorcycle related,

FIGURE 3

NCOES = PROMOTIONS

CURRENT POLICY

FOR PROMOTION TO	REQUIRED SCHOOL
E6	PLDC
E8	ANCOC
CSM	USASMA

PROPOSED POLICY

FOR PROMOTION TO	REQUIRED SCHOOL
E5	PLDC
E6	BNCOC
E8	ANCOC
E9	USASMA

FIGURE 4

CURRENT 93 P

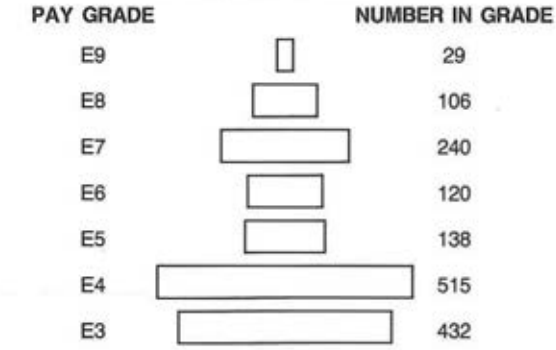


FIGURE 5

PROPOSED 93 P

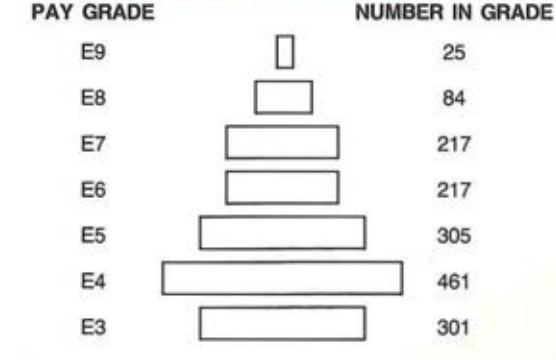
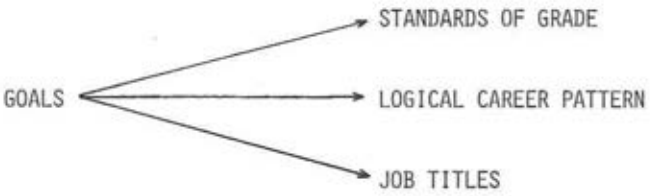


FIGURE 6

93P RESTRUCTURE



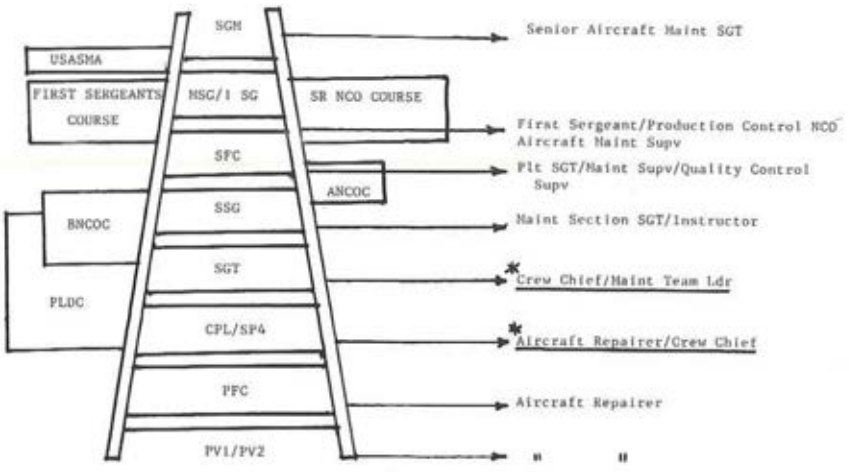
CAREER FOCUS

↓

AVIATION BRIGADE OPERATIONS SERGEANT MAJOR

FIGURE 7

CMF 67



* Not a crew chief until E4/5. E1-E3 are aircraft repairers. In MOS 67U duties begins at E5 and flight engineer duties at E6.

and most of the soldiers died from head injuries (Helmets?).

The most injury prone situation for soldiers other than the highway is the training environment, and the most prevalent contributing factor is Poor Supervision. Sound familiar?

The symposium was a resounding success and the folks at USAAVNC did a super job in putting it together. As I said earlier, and as is indicated by the itinerary, it was a very busy, but extremely productive two days. I can only hope that this was not the last one to be held. It should not only continue, but be broadened in scope. Hope to see everyone at next year's Aviation NCO Symposium. IIIII

SFC(P) Hawkins is the Operations Chief, 1st Battalion, 4th Aviation Regiment, Ft. Carson, CO.

ABOVE: CSM Traylor chairs the panel discussion.

BELOW: NCO Symposium attendees receive a brief on the OH-58D AHIP.

JAAT – cont. from p. 27

to clearly observe the target area. This took them away from what they were doing with their gun teams, and put them in exposed positions. The guns are either firing, masked, or repositioning to another firing position which negates their ability to provide the close control needed for the A-10s.

In other words, because of the preoccupation of helicopters with the ground fight, an airborne FAC was deemed as the best possible solution. Being airborne rather than on the ground lessens communication problems and allows the FAC to concentrate exclusively on control of the A-10s from wherever he chooses.

Regardless of who controlled the A-10s, the JAAT Eagle missions showed that controlling CAS aircraft takes time; time that must be spent stationary observing the target area. The more time the helicopter spends this way the greater the danger to it.

Timing Nearly Impossible

The word "pre-planned" should NEVER be associated with the word "JAAT". The two missions a day that were flown were based on peacetime constrained Air Force Time-On-Target times (TOT). Therefore all mission planning and JAAT battle execution had to be centered around these specific times.

The timing was next to impossible to achieve because of several factors: First, the terrain that the Army helicopter pilots operated in was not their normal training area, it was totally new to them.

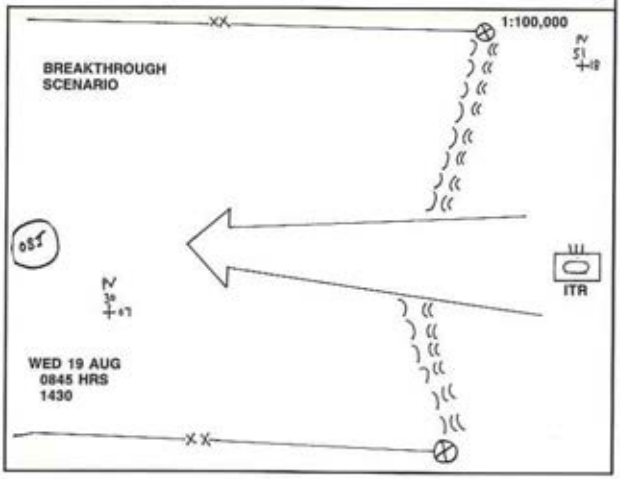
Because of the TOT constraints, there was not time for pre-mission aerial reconnaissance by the Army scouts to find the enemy and develop the situation as needed for a successful JAAT engagement. It is estimated that it took twice the amount of time it would have in our own general defense plan (GDP) area.

Second, there were only a few OPFOR vehicles and they had considerable freedom of movement to operate in, unlike the restrictive boundaries of a training center. There were never any prescribed boundaries for this exercise.

Third, the TRTGs and ADA Stinger teams set themselves up on controlling terrain and excelled in the employment of their systems through proper planning and synchronization. They prevented the Army Aviators from developing the situation as they would have preferred, and instead forced them into reaction.

Lastly, throw in the natural German weather and the most challenging and realistic scenarios ever experienced by this unit.

Taken in combination, the variables needed for the proper coordination and timing to set up the "pre-planned" JAAT were simply not there the majority of the time. The Air Force would have to hold time and time again while the Army maneuvered to get the battle area "ready"



Value of the OPFOR

The value of the OPFOR in this exercise cannot be overstated. It ran the exercise. The synchronized employment of the TRTGs and the ADA Stinger teams posed a severe threat to the aviators. The TRTG systems represented were the SA-8 and ZSU 23-4, therefore giving both the Air Force and Army pilots something specific to look for and worry about.

The TRTG's positioned themselves on the higher and more commanding terrain throughout the area. Stationed nearby each TRTG was a man-

portable Stinger Team equipped with a Miles/IFF interrogator. The Army aeroscouts took heavy losses in the first few missions from a unique tactic of the TRTGs and Stinger.

The TRTGs would not turn on their generators until the helicopters were in close proximity. When close, the TRTGs would turn on their radars; acquire, track, and fire in a matter of what seemed like seconds to the aviators. This tactic prevented the Army pilots from using their AN-APR 39s to track and locate the radars first. In addition, the TRTGs would notify the Stingers of the azimuth of an approaching aircraft which put them more at the ready.

This tactic was eventually defeated by the Army Aviators through proper pre-mission planning and an in-depth Intelligence Preparation of the Battlefield for likely terrain for a threat ADA system. They then searched early, located, and identified these systems for targets of opportunity by engaging them with artillery or one of the COBRA gun teams. They did this before developing the situation for the enemy main body.

Specific highlights of the ADA engagements were:

IFF was largely effective in proper interrogation/feedback procedures.

Scout helicopters were harder to detect than AH-1s, and A-10s were the easiest to detect overall. (The scouts were sometimes upon the Stinger Teams before they knew it).

To re-emphasize, the ADA threat was one of the main reasons the timing for a JAAT could never be fully achieved. A very realistic point of vulnerability for the helicopter was proven. It does not need to be killed to keep it from doing its job. It just needs to be threatened enough to be prevented from doing what it originally intended.

To do something unintended or unplanned creates additional time factors during a mission. In the case of the JAAT Eagle missions, the additional time it took to kill or maneuver away from the ADA helped prevent the exact timing of the JAATs.

Air Battle Captain

Normal attack helicopter missions by themselves keep the ABC extremely busy; but having also to do the extra coordination with the A-10s sometimes proved overwhelming to the ABC. Four radio reports became five, and fourteen things to do in the cockpit became fifteen. Trying to shift the artillery in a timely manner, position the scout and gun elements, and brief the A-10 aircraft was not always workable at the same time. It sounds easy in the JAAT SOP, but in reality is not.

The only way smooth coordination was ensured among all the elements participating was to divide up the responsibilities among the scout aircraft and have the COBRAs act on their own by listening to the situation at hand. And, as mentioned previously, having the CAS assets controlled directly by an Air Force controller. The Air Force controller then simply waits for the ABC to give the go ahead to enter the battle and keeps him advised of their status of ammo and fuel and time on target remaining.

To the ABC, the A-10s although important, were seen as transient and yet overly time-consuming. They could only be worked in when the time and situation permitted. They simply could not show up on station, check in, receive an update, and enter the fray. Holding times for the A-10s were frequently 20 minutes or more. This proved to be a hard learning point for the A-10 pilots. In reality though, it is their ability to loiter that is one of the things that makes them so suitable for the JAAT mission.

After Action Reviews

The after action review was what made the exercise unique. The benefits of the joint after-action review cannot be over emphasized. With the availability of the video tape from the TRTGs and the airborne controller, the seeing of oneself left little doubt in a pilot's mind of the outcome of an engagement with a TRTG, or of his actions in the target area. The terrain feature that one should have used to mask himself, or re-position after an engagement, was readily available on tape in case a not-so-lucky aviator missed it on his way to being engaged.

Conversely, the video tape also showed how hard it can be for an ADA system to acquire, track, and shoot down an aircraft when it is using the proper terrain flight techniques.

The pilots discovered that it was no sure thing that because they were being tracked they would automatically be killed.

They learned that ADA systems could be defeated by ways other than by killing them.

Key Lessons

Although the missions were extremely difficult, and perfect coordination and timing never achieved, it was nevertheless the most realistic training any of the participating units had ever done. Herein lies the real benefits of this kind of training. The Army pilots learned how difficult it was to fly in unknown terrain against a properly employed ADA threat array. It was an array that prevented them from even getting to the battle area, much less developing a situation suitable for the timing of JAATs.

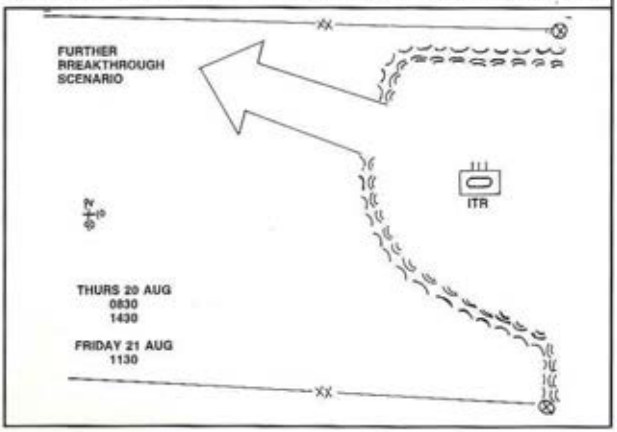
They learned how difficult it is to guide the A-10 pilot into the target area, clearly and quickly identify the target, and give the best attack heading to the highest payoff target on the battlefield.

The Air Force pilots learned of the in-depth and time consuming pre-mission planning the Army Aviator must do before he can even take off on the mission. More importantly, they learned that they are usually transient to a battle, whereas the Army is not. The Army's work does not end when the A-10s egress the battle area.

It also proved to the A-10 pilots that they cannot hold in an area for a lengthy period of time just because they have fuel remaining. The threat does not stand still.

It can be said that the bottom line for the Air Force at JAAT Eagle was that the best possible scenario of having the enemy where you want them, when you want them, and how you want them, can never be pre-planned! The situation must be developed by the Army ground and aviation elements before the Air Force can join in, and there is no sure way to tell when that will be possible.

In the next war, especially in the European scenario, it will not be as difficult a task to at least locate the enemy force in a timely manner . JAATs will be planned against large numbers of armor and mechanized vehicles which will generate battlefield smoke, dust, artillery, and/or illumination in some quantity in the battle area. This will ease the process of finding the enemy main formations by the Army pilots, and target identification for the Air Force pilots.



Future JAAT Training

The benefits of having all the units deploy to Leipheim to live, train, and after action together were invaluable in understanding what a JAAT really is and what it requires to come off successfully. The USAREUR SOP states that JAATs will most likely be spontaneous. JAAT Eagle proved that repeatedly. But whether a JAAT is pre-planned or spontaneous, the Army and Air Force pilots agreed that a JAAT would be devastating if timed and synchronized properly.

It is recommended that Army Aviation and Air Force CAS units work together as a matter of SOP at least once a year on a rotational basis. When an Air Force detachment comes to Leipheim or Sembach for a two week rotation, they should train jointly with Army Aviation units for a week. Incorporating this kind of training into USAREUR Regulation 350-7 would be a sensible place to start.

Given this JAAT training, JAATs would become second nature. Both the Army and Air Force pilots would have a clearer understanding of what has already taken place in the battle as well as what else must happen to insure that a successful JAAT takes place, and USAEUR JAAT SOP will be ratified by their experience. IIIII

APACHEs – cont. from p. 50

operate independent of the fuel squads. As long as communication with the elements of the platoon is maintained, the FARPs can be operational when required.

Forward Areas

The Commander wanted the capability to service all systems in forward areas normally serviced at unit level. The objective was to assemble a diversified team of soldiers with expertise in armament systems, mechanical systems, avionics systems and technical inspection.

Another issue was moving them, along with their equipment, on short notice between main assembly areas; forward assembly areas and FARP's; shadowing the movements of the attack aircraft. These requirements were met with a group referred to as the "fix-it" team. The team was comprised of individuals with the expertise mentioned above and had their equipment placed in a portable container (MOCON), portable meaning sling loaded by a UH-60 BLACK HAWK. The "fix-it" team movement is orchestrated by the S-4, again in conjunction with the unit's scheme of maneuver.

The fuel handlers are busy refueling aircraft, while the ammunition handlers are picking-up or dropping-off munitions and conceivably, the "fix-it" team members are busy troubleshooting and repairing systems. Who loads the munitions? The answer turned out to be a contribution from many sources — a combination of crew chiefs from the three line companies, available "fix-it" team members and front seat Apache pilots. An important ingredient is an armament specialist ensuring that rearming is accomplished safely and efficiently and all equipment is used properly.

"...assigning a maintenance officer or knowledgeable noncommissioned officer to the Admin/Logistics Operation Center (ALOC) facilitated the flow of information and the monitoring of aircraft status."

Lessons Learned

This Battalion was extremely successful in employing and maneuvering its FARP's. We found that due to the limited communication capability of the III/V platoon, it was necessary to have either the S-4, HSC Commander or Battalion Executive Officer UH-60 airborne, ready to deliver instructions and execute movements of the rearm and refuel teams. All three are familiar with support operations and have the capability to sling fuel and equipment and move personnel to have them at the right place and time.

Additionally, assigning a maintenance officer or knowledgeable noncommissioned officer to the Admin/Logistics Operation Center (ALOC) facilitated the flow of information and the monitoring of aircraft status.

It was clear that a total of five UH-60's are needed to adequately support an APACHE Battalion. The requirement to move the "fix-it" team and their equipment; move fuel around the battlefield as well as refueling equipment and personnel; transport repair parts from the rear to forward areas and perform other various logistical missions was more than three UH-60's could handle.

Coordination with the S-3 is critical. The process of following up on recent operations, monitoring and reacting to current operations, and planning future operations requires constant interfacing. This relationship was facilitated by placing the ALOC within the wire in the Battalion Assembly Area, adjacent to the Tactical Operations Center (TOC), creating a command post with all the necessary radio nets and telephone communications coming together in one central location.

This set-up proved extremely beneficial when the S-2, S-3, Battalion Commander and attack aircraft occupied a Forward Assembly Area (FAA), leaving the S-2 and S-3 assistants in the BAA with the ALOC, which then facilitated uninterrupted operations.

The AH-64 Battalion has proven its ability to conduct internally supported, short term field training exercises. The next important test is a sustained exercise such as a 20-30 day National Training Center rotation and if ever necessary, the modern battlefield. IIIII

BRIEFINGS

Army fixed-wing aviators who served in the U.S. Army Alaska O & R Platoon: **Walter Wong, Jesse Forbes, Ken Cardwell, Bill Leach, Charlie Frank, Hap Resor, Orville Labor,** and others who served 1958 through 1963, please contact Jack Evans, 1307 24th Street, Alamogordo, NM 88310 or telephone (505) 437-9001.

COL Robert A. Wagg, Jr., chief of staff at the U.S. Army Aviation Systems Command (AVSCOM) since 1984, retired on Dec. 31, ending a 30-year military career. Pictured above at right, he accepts a Certificate for the Legion of Merit from Deputy Commanding General, **BG Donald R. Williamson,** AVSCOM. Wagg's replacement is **COL Gerald T. "Jerry" Hipp.**

An Ozark, AL resident was honored for his distinguished 27-year carteer at Ft. Rucker November 18 with the Decoration for Exceptional Civilian Service in ceremonies at the Pentagon in Washington, D.C. **Richard K. Tierney** was cited by Secretary of the Army **John O. Marsh, Jr.** for his long dedication and major contributions to Army aviation as a writer, editor and managing editor of *Aviation Digest*.

Kubasaki High School, Okinawa (Ryukyu Islands) was the largest DOD dependent high school in the world at one time graduating over 8,000 students. A reunion is slated for July 1988 in Dallas, Texas. Graduates from any year are welcome. For details, write or call JoAnn Brotman Thomas ('69), 2021 Tanglewood Drive, Grapevine, TX 76051. (817) 481-5299.

More Regimental Activation news: The 307th Avn Bn (AH) 7th Infantry Division (Light), Avn Bde is now **1st Battalion, 123 Aviation (Attack Helicopter) Regiment 7th Infantry (Light), Avn Bde.** Commander: **LTC Michael A. Anastasio.** Executive Officer: **MAJ Ed Quinnan.** Senior NCO: **CSM Thomas G. Graves.**

SEMA User's Conference

April 11-13, 1988
Embassy Suites Hotel
St. Louis, MO

For details, call:
PROTOCOL-AVSCOM
(314) 263-1046

Boeing Helicopter Company technicians recently completed the installation of the canopy (or "cage") for the first **Bell-Boeing V-22 Osprey** Tiltrotor Flight Test Aircraft (FTA). This assembly was one of the final steps in the completion of the FTA, which will be shipped to **Bell Helicopter's** Fort Worth, Texas, facility. At this point the wing and nacelle strucures will be mated to the fuselage and the aircraft prepared for its first flight in mid-1988.

AWARDS AND HONORS

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

Aviation Officer Advanced Course Class 87-5 (12/18/87): CPTs David A Abramowitz, John E. Angevine, Nancy E. Baum, Gary A. Warner, Exceeded Course Standards & Recipient of Master Tactician Award; CPTs Dyfierd A. Harris, LeoNardo Hughes, John F. Schreiner, Wayne S. Simoni, Recipient of Master Tactician Award.

Aviation Officer Initial Entry Rotary Wing Aviator Course Class 87-13 (1/20/88): 1LT Alan K. Bolton, Distinguished Graduate; 1LT Joseph A. Barber, Honor Graduate; 1LT Thomas A. Willmuth, Class Leader.

Aviation WO Officer Initial Entry Rotary Wing Aviator Course Class 87-13 (1/20/88): WO David W. Johnson, Dist. Graduate; WOs Robert J. Antolick, Rodney G. Price, Mark A. Leara, John K. Meehan, Honor Graduates.

Aviation Warrant Officer Advanced Course Class 88-1 (1/21/88): CW2 Mark B. Cuppernull, Dist. Graduate; CW2 Donald P. Parker, Honor Graduate.

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FORT RUCKER, AL 36362
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P.O. BOX 42086
SAVANNAH, GA 31409
BUCHAN, GRADY
125 SURF WAY, NO. 414
MONTEREY, CA 93940
CAMERO, MICHAEL J.
P.O. BOX 752
ROSEPINE, LA 70659
COLLINS, BOYD D.
A CO, 8/158TH AVN, BOX 176
APO NY 09165
COUNTOURIOTIS, STEVE J.
CO C, 6TH BN
159TH AVN REGT
APO NY 09025
DUNN, CLIFTON L.
501 IROQUOIS ST
ENTERPRISE, AL 36330
FAIN, JOHN R.
4201-B WATER STREET
KILLEEN, TX 76543
FORSBERG, PHILIP D.
109-C ARIZONA NBU-10-L
FORT HUACHUCA, AZ 85613
FOSTER, EDWIN D.
P.O. BOX 101
HENLONS, CA 96113
GARRISON, MICHAEL E.
5801 STILLBROOKE AVE, NW
ALBUQUERQUE, NM 87120
GNIADEK, JOHN J.
B CO, 214TH AVN REGT
BARBERS PT. NAS, HI 96862
GREEK, CLEMENT E.
10103 CHESHAM DRIVE
ORLANDO, FL 32817
GUILLOT, ROBERT C.
34 N. BERWICK DRIVE
SAVANNAH, GA 31406
HAYDEN, JOSEPH T.
1217 WESTWAY CIRCLE
KILLEEN, TX 76542
HOLLINGSWORTH, SCOTT W.
113 RICHARD ST
DALEVILLE, AL 36322
HUNGERFORD, DALE A.
5887 FISHER AVE
FORT HOOD, TX 76544
JANCZAK, CHRISTOPHER
HHT, 5/17 CAV
APO SF 96211
KALLAM, BOBBY H.
1953 KINGFISHER
FAIRBANKS, AK 99709
KIMATA, NORMAN W.
HHC 4TH BDE
APO NY 09185
LEGENZA, THOMAS
P.O. BOX 511
FORT GREELY, AK 98733
LONG, KEVIN W.
106 DEER RUN ST
ENTERPRISE, AL 36330
MAJOR, RICHARD K.
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BOX 1635
APO NY 09250
MCKNIGHT, JAMES W.,JR
3845 STUCKY ROAD
BOZEMAN, MT 59715
MOORES, LESLIE C.D.
202 CARRIE, STAR RT. B
LAWTON, OK 73501
SCHNATTERLY, JOHN E.
300 AACHEN
FORT ORD, CA 93941
SEARS, WAYNE R.
224 BITTERSWEET
LANSING, KS 66043
SMIDT, JONATHAN J.
42 BOYCE LANE
FORT RUCKER, AL 36362
STEWART, DANIEL S.
1400 GANDY BLVD, NO. 113
ST. PETERSBURG, FL 33702
TURNER, RODNEY D.
12121 AUDELIA ROAD
APT. 2704
DALLAS, TX 75243
VERES, DANIEL J
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4809 E. HOBART STREET
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1st Lieutenants

ARTERBURN, DAVID R.
6771-4 WILLOWBROOK DRIVE
FAYETTVILLE, NC 28304
BORGERDING, CHRISTOPHER
D TRP, 4/7 CAV
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CERNEY, KENNETH A.
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FORT BRAGG, NC 28307
CONROW, KEVIN S.
HHC 3/4 AVN REGT, BOX 69
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GLANG, FRANK O.
A CO, 3/227TH AVN REGT
APO NY 09165
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LANCE, DOUGLAS S.
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LUNN, ROBERT H.
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APO NY 09140
MARTIN, EDWARD J.
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PANKRATZ, MICHAEL R.
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PARRISH, MICHAEL D.
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2D AD/FWD
GARLSTEDT, GERMANY
APO NY 09355
CARROW, ROBIN P.
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DWYER, MICHAEL K.
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FLEMING, DAVID
230-D RAMAH ROAD
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GEBO, CARL A.
B CO, 309TH AHB
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GILES, CARL L.
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HOPKINSVILLE, KY 42240
HOOPER, CLAUDE L.JR
1410 LINDA LANE
COPPERAS COVE, TX 76522
JOHNSON, CRAIG F.
1869 MCKELVEY ROAD
MARYLAND HTS, MO 63043
MUNRO, STANLEY A.
HHC 9TH AVN BN
FT. LEWIS, WA 98433
ROBINSON, JOHN H.
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16505 S.W. 72ND AVE
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VREEMAN, TIMOTHY J.
A CO, 5/159TH AVN RGT
APO NY 09025
WARDEN, JOHN S.
A/5 159TH AVN
APO NY 09025

CW3's

BOOTH, JAMES R.
A CO, 7/159TH AVN REGT
APO NY 09040
BROWN, HORACE L.
7445 N. CAMINO DE
MAXIMILLIAN
TUCSON, AZ 85704
DALBY, WILLIAM S.
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FORT RILEY, KS 66442
FISHBURN, BILLY W. JR
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HOPKINSVILLE, KY 42240
KOPRIVA, PAUL J.
204 ORIOLE DRIVE
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MOLTENBERRY, JOHN S.
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VAN ETTEN, BEN A. JR.
A CO, 8/158 AVN
APO NY 09165

CW2's

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APT 3-3
OLYMPIA, WA 98503

WO1's

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APO NY 09182
HUTCHESON, BRUCE D.
A CO, 2ND BN 4TH AVN REGT
APO NY 09185
KATONA, MARTIN B.
C CO, 2/1 AVN BOX 2139
APO NY 09250
KIRBY, JEFFREY T.
B CO,3/4 AVN REGT
STRAYCAT
APO NY 09185
LIERLY, DARIN E.
3555 W. BULLARD, NO. 153
FRESNO, CA 93711
MCKEEHAN, CHET D.
C CO, 7/158 AVN REGT
APO NY 09457
MITCHELL, LINDALL P.
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ONORATO, MARK W.
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REYNOLDS, RANDALL L.
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TOMCZYK, TED
1001 TWIN CREEK DRIVE
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RYAN, ANTHONY F.
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COLORADO SPGS, CO 80906

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HEIMBACK, DOUGLAS A. SGT
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159TH AVN REGMT
APO NY 09025
HOWELL, ADRIAN SSG
C CO, 7/158TH AVN RGMT
APO NY 09457
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7 AZALEA DRIVE
ALEXVILLE, AL 36322
MALONE, RAYMOND J. SGT
253 FAIRVIEW CIRCLE
MIDDLE ISLAND, NY 11953
SANTIAGO, CARMEN E5
AHS MED NCO CRSE 91B30
CLASS OF 88
FT SAM HOUSTON, TX 78234
SNYDER, STEVE E4
C CO, 7TH BN
158TH AVN REGT
APO NY 09457
STORY, KEVIN D. SP4
CEDAR CREEK ESTATES
ROUTE 2, BOX 911
COPPERAS COVE, TX 76522
WEAVER, RICHARD A. SSG
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TALLAHASSEE, FL 32301
WOLF, HARALD R. SP4
260 Y STREET
NEWBURGH, NY 12550

Civilian

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ST. LOUIS, MO 63121
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54 ASG, BOX 332
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HAUGERUD, HOWARD E.
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APT. 1106
BAL HARBOUR, FL 33154
HOMZA, JOSEPH L.
90 BERKLEY TERRACE
MILFORD, CT 06460
KELLY, KENNETH J.
885 SPORT HILL ROAD
EASTON, CT 06612
KLEIN, CASSIE
SPERRY FLIGHT SYSTEMS
5800 OSONA NE, NO. 13
ALBUQUERQUE, NM 87109
KOCH, DANIEL B.
SUMMIT RESEARCH
400 DIXIE VIEW
KNOXVILLE, TN 37922
KUBITZ, JOHN
209 LAURELWOOD DRIVE
DOUGLASSVILLE, PA 19518
LEWYCKY, YAROSLAW A.
BOX 14, NORTH ISLAND
SAN DIEGO, CA 92135
PAONE, JOE
IMR SYSTEMS CORP.
1300 N 17TH ST.
STE 1360
ARLINGTON, VA 22209
PARO, EDMUND
AVCO EVERETT RESRCH LAB
57 STAGECOACH ROAD
N. ANDOVER, MA 01845
PAUL, GERALD E.
RT 2, BOX 617
PURCELLVILLE, VA 22132
SIEGEL, ERIC J.
875 STEVENS AVE, NO. 2301
SOLANA BEACH, CA 92075
WESTLIND, DENNIS E.
GENERAL ELECTRIC
5933 W. CENTURY BLVD,800
LOS ANGELES, CA 90045
YARMIE, ALEXANDER J
QUADR. CORPORATION
127 MAIN ST
BINGHAMTON, NY 13905

Retired

BRANSFORD, THOMAS COL
1174 WOODLAND TERR TRL
ALTAMONTE SPGS, FL 32714
CONROY, ARTHUR T.JR COL
6843 BLUE STAR DRIVE
MCLEAN, VA 22101
HOUSTON, STEVEN P. CW3
358 SOUTH 4TH EAST
REXBURG, ID 83440
KEATING, DAVID W. COL
TEXTRON LYCOMING Ste 303
4534 N. LINDBERGH BLVD
BRIDGETON, MO 63044
KLEIN, FRANK J.JR COL
2140 BROKEN CIRCLE ROAD
COLORADO SPGS, CO 80915
MCHENRY, PAUL M. LTC
1920 ALA MOANA BLVD.
APT. 1813
HONOLULU, HI 96815
NUTT, MERWYN L. COL
2208 SHADYDALE DRIVE
ARLINGTON, TX 76012
QUESENBERRY, JOHN R. LTC
6627 EDMONTON AVE
SAN DIEGO, CA 92122
SNYDER, PAUL B. COL
1283 GRANADA STREET
UPLAND, CA 91786
SWEITZER, JERRY R. MAJ
403 ANTLER DRIVE
ENTERPRISE, AL 36330
YOUNG, JAMES S. MAJ
RT 2, BOX 133
ENTERPRISE, AL 36330

AAAA Overview

Meeting January 23 at the Sheraton St. Louis Hotel, AAAA's National Executive Board completed its 1988 National Convention planning as well as closing out its FY87 membership and fiscal year.

MG Story C. Stevens, AAAA's National President, and 23 others, represented 42 of the National Board's 67 members during the four-hour meeting held at the site of the April 13-17, 1988 National Convention.

AAAA's National Executive Board addresses full 29-item winter agenda

The Saturday meeting was preceded on Friday evening by a Lindbergh Chapter professional-social dinner meeting at which **BG Donald R. Williamson**, Chapter President; **MG Stevens;** and **Terry Coakley**, General Chairman of the 1988 National Convention, were guest speakers.

The pay-as-you-go meeting was held in the attractive **Lawyer's Club** on the 36th floor of the St. Louis Mercantile Building, providing all attendees with a panoramic nighttime view of the famed Arch, Ol' Miss, the well-lit city, and the surrounding countryside.

Earlier that day, the Association's **Nominations Committee** and **Executive Committee** convened in separate sessions. In still another gathering, the Board of Governors of the **AAAA Scholarship Foundation** met January 22 at the Sheraton St. Louis Hotel and solidified the Foundation's plans for the CY88 Scholarship Award Program (See Item 10 below).

In separate January 23 actions, the National Executive Board members approved:

(1) **COL John J. Stanko's**, FY87 **fiscal report** as Treasurer, indicating the AAAA had expended all FY87 funds as directed, to include the placement of $7,000 in the Emergency Fund and $4,000 in the FY88 Operating Fund.

(2) the report of **'Bill' Pollard**, Co-Chairman, Industry Affairs Committee, on the **corporate sponsorship** of the AAAA's 'Robert M. Leich Award Program' by the Grumman Corporation and the 'James H. McClellan Aviation Safety Award Program' by the General Electric Company, effective with the awards made at the 1988 National Convention.

(3) the report of **COL 'Sy' Berdux**, Chairman of the **Commemorative Stamp Committee**, indicating that **Congressman William Dickinson** would support the project.

(4) the report of **Terry Coakley**, General Chairman, 1988 AAAA National Convention, that, among other things, 3,500-4,000 persons were expected to attend; **GEN Vuono, GEN Wagner,** and **LTG Saint** were the Awards Banquet,

(Continued on Page 68)

Major AAAA Meetings

Feb. 17-18 - 14th Annual Joseph P. Cribbins Product Support Symposium sponsored by Lindbergh Chap.

Apr. 13-17 - 30th AAAA National Convention. Cervantes Convention Center & selected St. Louis Area hotels.

May 10-11 - 6th Monmouth Chapter Symposium, "Technological and Managerial Thrusts in Army Avionics."

Business Meetings

Apr. 13 - Nat'l Board Quarterly Business Meeting, Sheraton St. Louis Hotel.

Deep Strike!

BG David L. Funk, above right, Military Assistant to the Deputy Under Secretary of Defense, accepts a memento from **COL Lewis J. McConnell, Ret.**, Arizona Chapter President, on the occasion of Funk's presentation at a recent professional-social dinner meeting of the AAAA Chapter.

The DOD Army Aviator spoke on **Deep Strike** - a concept of modern warfare - 'An excellent speech and one that was well received.' reported **Jerry Sullivan**, the Arizona Chapter Treasurer.

The Fall, 1987 meeting was held in the easy-to-enjoy Arizona Golf Resort and Conference Center in the Greater Mesa Area.

USAREUR Noncom wins CY87 'Top Gun' Award

Enrolling 181 new AAAA members during the January 1-December 31, 1987 enrollment period, **1SG Frank Q. Oxendine** of the Redcatcher Chapter was declared AAAA's **'Top Gun'** for CY87.

The senior noncommissioned officer of F Troop, 2d CAS, 2d Armored Cavalry Regiment, APO New York, **1SG Oxendine** won the $650.00 **'Top Gun'** First Prize, including a $300 Cash Award and a $350 Cash-in-Kind Award. The latter covers the winner's 1988 National Convention registration, function tickets, and four-day hotel stay.

Giving **1SG Oxendine** a run for his money was the Association's perennial recruiter, E-7 John H. Bae of Korea's Morning Calm Chapter who enrolled some 129 new members.

In third place in the year-long **'Top Gun'** competition was **CW3 Donald E. Jungell, Jr.** of the Avn LSU/MFO, APO NY, with 98 enrollments.

An additional nine AAAA leaders enrolled more than 25 members during the year. They include:

CW4 Robert S. Chipman, Air Assault Chapter, 71.

CW2 Howell H. Hughes, Jr., Wings of the Marne Chapter, 62.

LTC David L. Kyle, Mainz Chapter, 54.

MAJ Hector E. Topete, Phantom Corps Chapter, 51.

MAJ John R. Lam, Jr., Aloha Chapter, 39.

(Cont. on P. 69)

AAAA Overview

Awards Luncheon, and Keynote Speakers respectively; some ten separate Army and commercial aircraft would be on display in the exhibit hall; all functions, except the Chapter Receptions and the President's Reception, would be held in the Cervantes Convention Center; and that a bus system would be utilized daily to interconnect the AAAA's five downtown hotels with the Convention Center.

(5) the report of **LTG 'Jack' Tolson**, Chairman, Army Aviation Museum Foundation, Inc., on the Museum's funding, the organization and purposes of the Foundation, and an analysis of the Foundation's operating costs.

(6) the report of **LTG 'Jack' Wright**, Chairman of the **Policy and Plans Committee,** that called for the retention of the Association's 30-year-old **'Objectives and Purposes'** as is in light of a poll of the 67-member Board in which only eight of the responding 35 Board members had called for minor revisions in the 'O & P'.

(7) the report of **MG George Putnam**, Chairman of the **Long Range Planning Committee**.

(8) the report of **MG Stevens**, National President, on his attendance at the early November, 1987 **'Aviation Ball'** of the USAREUR Region; the motion that Board members **'Ray' Swindell, 'Bill' Pollard,** and he confer with the USAREUR Region Executive Board members on the continuity associated with the annual AAAA Garmisch meeting and the ways in which the National organization can support that gathering; and the motion that $3,870 (2,580 USAREUR members at $1.50 per member) be provided to the Region to underwrite an 'AAAA President's Reception' at the 1988 USAREUR Aviation Convention sponsored by the AAAA.

(9) the report of **MG 'Dick' Stephenson**, National Member-at-Large, that the initial **'Outstanding Aviation Logistics Support Unit of the Year Award'** would be presented at the Lindbergh Chapter-sponsored February, 1988 **Product Support Symposium** in St. Louis.

(10) the report of **MG 'Jack' Klingenhagen**, President, **AAAA Scholarship Foundation**, indicating that the Foundation would award $50,000 in February, 1988 for twenty-two CY88 AAAA National Scholarships, to include the first time award of a $10,000 scholarship.

(11) the report of **BG Jim Hesson**, Chairman of the Membership Committee, indicating that while Chapter membership in CY87 had decreased by approximately 700 members, the Association enjoyed a Jan. 1, 1987-Jan. 1, 1988 net membership gain of 382 members, and heard the Chairman's challenge to the Board to set the CY88 pace by initiating its own 'One get one!' drive.

(12) the report of **MG George Putnam**, Chairman of the

(Continued on the Opposite Page)

AAAA Overview

Nominating Committee, indicating the names of **James M. Hesson, Sylvester C. Berdux, Jr.,** and **Joseph P. Cribbins** would be placed in nomination by his Committee for 1988-1991 National elective office during the General Membership Meeting held on April 14 at the 1988 National Convention.

(13) the report of **Art Kesten**, Executive Vice President, calling for the conduct of the **1989 Hall of Fame Inductions** in Atlanta, Ga., during the April, 1989 AAAA National Convention, and the motion that **GEN Hamilton H. Howze** be asked to serve as Chairman of the Hall of Fame Board of Trustees during 1988-1989 period.

(14) the National Office report that the CY87 **'Top Chapter Award'** winner would be selected by the AAAA National Awards Committee during its February 5, 1988 meeting in Arlington, Va.

(15) the National Office report that the Ass'n had received and would initiate distribution of **distinctive lapel insignia** for 'Past Chapter, Regional, and National Officers' at the request of the President of the specific AAAA membership activity.

(16) **By-Law amendments** that established a Chapter Vice President for Renewals, and increased the number of National Member-at-Large Presidential appointees from twelve to thirteen.

Industry Affairs

A military unit, two individual industry members, and three corporate firms were honored February 17 at St. Louis, Mo., ceremonies by the Army Aviation Association for their CY87 efforts in aiding Materiel Readiness within Army Aviation.

Cited at an Awards Dinner held during the **1988 Joseph P. Cribbins Product Support Symposium**, the award-winning individuals and companies received Association plaques on being singled out for their CY87 logistic support. The annual sym-

AAAA honors CY87 logistics efforts at '88 Product Support Symposium

posium is sponsored by AAAA's Lindbergh Chapter.

The **Corpus Christi Army Depot (CCAD)** was selected as the winner of AAAA's initial **'Outstanding Aviation Logistics Support Unit Award'** for its ability to immediately support the production and installation of UH-60 stabilator retrofit kits, thereby increasing material readiness by removing performance restrictions. CCAD also demonstrated its ability to react to unknown situations in dealing with other instances of aircraft grounding.

(Continued on Page 70)

'Top Gun' Award
(Cont. from P. 68)

SSG Danny R. Phillips, Rhine Valley Chapter, 32.

MAJ(P) E. Gary Campbell, Mainz Chapter, 28.

LTC Larry R. Sloan, Aviation Center Chapter, 26.

MAJ Michael K. Minich, Aloha Chapter, 25.

'New Chapter Officers'

The following members have been elected to the Executive Boards of their respective Chapters:

North Texas Chapter: Leroy L. Worm (Pres), MAJ James J. Ulakovic, Ret. (SrVP), Ms. Susan C. Ervin (VP, Memb Renewals), LTC Richard Gillingham, Ret. (VP, Prog), and MAJ Rodney A. Adams, Ret. (VP, Indus Aff).

Morning Calm Chapter: LTC Kief Tackaberry (VP, Sust Memb), LTC Michael Thomas (VP, North), and LTC Ruford W. Fowler (VP, South),

Monmouth Chapter: CPT Michael Skaggs (VP, Memb).

Checkpoint Charlie Chapter: 1LT Wilbur E. Wolf, III (SrVP), MSG Thomas Speaks (Secr), CW2 Michael Murray (VP, Prog).

Rhine Valley Chapter: MAJ Ralph W. LeGrow (VP, Prog).

New Industry Members

The following firms joined the AAAA recently as Industry (Corporate) Members. (The Designated Representatives are shown as "DR").

Kollmorgen Corporation Electro Optical Div. (James

New Industry Members

(Cont. from P. 69)

Murnane, Debra Windolowski, DR).

Dynamics Corporation (Robert Smith, Robert Heller, DR).

Schweizer Aircraft Corporation. (Larry Brooks, DR).

HELMOT III

AAAA's Colonial Virginia Chapter, headed by **COL "Tom" Walker**, President, and the Hampton Roads Chapter of the AHS jointly sponsored the 'Third Helicopter Military Operations Technology (HELMOT) Specialists' Meeting at Williamsburg, Va., Nov, 17-19.

The program included presentations and discussion panels made up of representatives from academia, government, and industry, and covered a broad number of topics.

A reception and banquet was highlighted by the recounting of the evolution of the rigid rotor system and development of the Lockheed XH-51A and U.S. Army AH-56 **Cheyenne** compound helicopter by **Jack G. Real** (above), retired Past President of the Hughes Helicopter and McDonnell Douglas Helicopter Company.

Industry Affairs

The '**CY87 Major Company Award**' was won by the **COBRO Corporation** of St. Louis, Mo., through its work on AVSCOM's Unscheduled Maintenance Sample Data Collection (UMSDC) Program. This program involves on-site computers that provide real-time feedback for maintenance and operational support management, and is viewed as an asset by the field unit, instead of a burden.

The '**Team, Group, or Special Unit Industry Award**' was won by the **DynCorp AVIM Maintenance Contract Team** that supported USAREUR's 70th Transportation Battalion during CY87. In addition to completing 60 CH-47 phase inspections, each of which have averaged 1,707 man hours and 38 weeks to completion, the **DynCorp Team** produced 403 major repairs of CH-47 airframe components resulting in over $6.6 million savings from new component costs.

Winner of the '**Small Business Organization Industry Award**' was **Aerodyne Investment Castings, Inc.**, of Tampa, Fla., a producer of T-53 engine blades. The company was cited for its excellent delinquency rate (consistently below 5 per cent), competitive pricing, and consistent responsiveness in expediting critically needed parts.

Co-winners were selected for AAAA's '**Individual Industry Member Award**': **Victor Conner**, the Senior McDonnell Douglas Helicopter Company APACHE Fielding Representative at Ft. Hood, Tex., and **David M. Carpenter**, Senior Logistics Administrator for T700 Army Programs, General Electric Company.

Conner was chosen because of his outstanding individual actions in support of many phases of the AH-64 fielding program underway at Ft. Hood, while **Carpenter** demonstrated initiative and unique ability in being charged with two aggressive retrofits affecting a combined 22 sites and 766 APACHE and 393 BLACK HAWK and meeting the priority BLACK HAWK changeout schedule and exceeding the APACHE's by 40 aircraft.

Monmouth Chapter holds Army Aviati Electronics Symposium May 10-11

With its theme, 'The Technological and Managerial Thrusts in Army Avionics', AAAA's Monmouth Chapter will hold its sixth Army Aviation Electronics Symposium at the Berkeley Carteret Hotel, Asbury Park, N.J., May 10-11.

The two-day unclassified sessions will explore the current developments in avionics and their impact on the management, doctrine, technology, and readiness of Army Aviation.

Among the guest speakers are the **Hon. James R. Ambrose**, Under Secretary of the Army; **GEN Louis C. Wagner**, CG, USAMC; **MG Richard E. Stephenson**, CG, USAAVSCOM; and **MG Ronald K. Andreson**, PM-LHX. The Project Officer for the AAAA Symposium is **Sherman DuBois**, (201) 532-0014 or Autovon 992-0014.

AAAA Overview

North Texas, Redcatcher and Mainz Chapters Win Enrollment honors

Two of the three winning Chapters in AAAA's year-long **Membership Enrollment Competition** were USAREUR Chapters, reflecting the high interest in the Army Aviation Association among the Region's 12 Chapter structure.

The Redcatcher Chapter (2d ACR, APO NY) won the **'AAAA Chapter'** Enrollment Competition with a net membership gain during FY87 of +214 members. The category, which involves 16 AAAA Chapters with membership between 40-141 members, had seven 'AAAA Chapters' post a year-end net gain, three Chapters break even, and six ending the year with net losses.

The Mainz Chapter (8th ID) took top Enrollment Competition honors in the **'Senior Chapter'** category with a FY87 net gain of +134 members. This category involves 16 medium-size Chapters with 142-285 members. At year end, four Senior Chapters posted net gains and 12 ended the year with net losses.

The North Texas Chapter, representing the Dallas-Ft. Worth area, won FY87 honors in the **'Master Chapter'** competition with a net gain of +47 members.

This 18-Chapter category covers AAAA's largest Chapters, those with 286 or more members. Four of the AAAA's 18 Master Chapters posted year end net gains.

The Presidents of the three winning Chapters, accompanied by their attending VPs - Membership and VPs - Renewals, are to receive **Enrollment Competition** Award Plaques at the April 14 Membership Luncheon at the 1988 National Convention. They are **LTC Robert JH Anderson,** Redcatcher Chapter; **COL Richard M. Adams,** Mainz Chapter; and **Leroy L. Worm,** North Texas Chapter.

AAAA Membership as at Jan. 1, 1988

Generals	6	CW2s	731
Lt. Generals	28	WO1s	386
Maj. Generals	65	WOCs	235
Brig. Generals	50	DACs	1,676
Colonels	794	E7s-E9s	518
Lt. Colonels	1,365	E5s-E6s	668
Majors	1,226	E1s-E4s	985
Captains	1,637	**Mil. Total**	**12,832**
1st Lts	691	Indus (Indiv)	1,517
2nd Lts	384	Indus (Corp.)	1,348
CW4s	820	Civ/Other	644
CW3s	567	**Total**	**16,341**

1 + 1 = 1

Arithmetically impossible, you say? . . No! As in any marriage, the hand-in-hand interface and cooperation between the **AAAA** and the **Aviation Branch** are an excellent example of the principle that 1 + 1 = 1.

The Association has supported Army Aviation and the Aviation Branch - the former over a three-decade period, and receives solid membership support from some 8,600 Active Army Branch members, a major membership segment that complements the remaining 46% of its retired, industry, and Reserve Component membership.

The Quad-A has received the constant support of the leaders of the Aviation Branch at its National, Regional, and Chapter professional gatherings, and through the interchange of information provided by members of the Branch in their professional articles appearing in the AAAA's endorsed medium, ARMY AVIATION.

The Aviation Branch and, in particular, the Chief of the Branch, has enjoyed many opportunities to reach the AAAA's large industry and technical-logistical base through its conventions, symposia, and Chapter gatherings. Additionally, the same AAAA-endorsed magazine provides the Branch Chief with a **second medium** to carry his monthly messages to the worldwide Army Aviation audience.

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