
HARDWARE UPDATES: APACHE, BLACK HAWK, V-22 OSPREY

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ARMY AVIATION

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Boots, Tanks and Things That Fly

by General Glenn K. Otis
Commander-in-Chief
U.S. Army Europe
and Seventh Army

WE are just now at the threshold of a revolutionary era in warfare in which the union of technology and doctrine in Army Aviation is ushering in dimensions in combat no less significant than that caused by the introduction of 381 tanks on November 20, 1917 at the Battle of Cambrai. In fact, Brigadier Richard Simpkin in his book *"Red Armor"* got it absolutely correct when he stated: "Rotor is to track as track is to boot".

The impact of technology

Technology and man's insight in recognizing its impact on the battlefield have to be understood in their historical context. For instance, Bernard and Fawn Brodie, in their classic *"From Crossbow to H-Bomb"*, explain the way in which the tank came to be used in World War One. They note the tank was:

"An invention relatively simple in conception, relying upon no new scientific ideas and no radically new technology but simply upon the proper assembly of technical devices already long in use — this was the weapon that finally revolutionized land warfare and brought an end to the stalemate."

The many pieces of a "tank" — the idea of an armored vehicle, a mobile machine gun, the jointed track, turreted armor, and caterpillar tracks — were already long known before the first World War. It was COL Swinton's idea and Churchill's foresight that brought the first crude tank to combat. Although locally decisive, the lack of doc-

trine for its use limited its overall impact. Proof in battle had to await new believers a generation later when Germany exposed the Blitzkrieg.

The years since 1917 have seen vast improvements in the basic concept, so that one can hardly compare the 3.7 miles per hour of the first versions with the cross country speed and mobility of today's fighting vehicles. This same refinement is underway in the case of the helicopter. Technical "devices" already in use are being mounted on the helicopter in such a way as to demand insight and new doctrine.

More than transportation

The helicopter is a platform for sensors, for weapons, and for missions. It is the mover upon which one mounts electronic warfare equipment, anti-tank missiles, and with which one transports troops and material. Much the same expansion took place to the basic tracked vehicle; but the helicopter is a quantum leap ahead in the comparison. It is freed from the obstacles of terrain that delay or stop a tracked vehicle. For a helicopter, the very ground obstacles become protection. In addition, the flexibility introduced by the vertical dimension is unique in maneuver warfare. This applies both at the operational and the tactical levels.

At the operational level, the true sophistication of Army Aviation is the capability to put fire power, troops and material rapidly into action over the entire battlefield. This might be flank to flank in
(Otis — Continued on Page 41)

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FRONT COVER

The McDonnell Douglas Helicopter AH-64A Apache attack helicopter hovering above the Mississippi River and in front of the Gateway Arch in St. Louis, Missouri.

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Working hard to remain "Above the Best"

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

AS Branch Chief, I believe I echo the sentiments of the men and women — both civilian and military — of the Aviation Branch when I say we are looking forward to the new year. In 1986, we accomplished a great deal with the development, fielding, and enhancement of new and existing equipment, technology, and doctrine. However, we can ill afford to either look retrospectively at our past achievements or to rest on our laurels; to do so is to fall prey to the past and to miss the opportunities and challenges which are before us. At the same time we cannot take a naive attitude and think there will not be problems or shortfalls which will have to be addressed. I am confident, however, that we have the personnel and capabilities to meet any difficulty that might beset us. The year 1987 will be an exciting one, and I know that we will work long and hard to remain "Above the Best."

Air Traffic Control Activity

Effective October 1, 1986, proponentry for Air Traffic Control (ATC) transferred from the Information Systems Command (ISC) to the U.S. Army Aviation Center, U.S. Army Training and Doctrine Command (TRADOC). I welcome the mission and the dedicated men and women associated with it. This talented team comes from all walks of air traffic control within the Army family, as well as highly technical personnel from the Aviation Center. The U.S. Army ATC Activity (USAATCA) under the direction of COL Melvin J. McLemore, in coordination with the Director, Combat Developments (COL Frank Mayer), is working hard to continue the fine work and efforts of ISC. I am confident it will flourish and serve the needs of the Branch, the Army, DOD, and allied users.

On January 13, 1987, I had the privilege of giving the opening remarks at the initial USAATCA Conference held here at Ft. Rucker. The conferees were from TRADOC, all MACOMs in CONUS and OCONUS, the National Guard, other support commands, and from the ATC School. I was impressed by the enthusiasm of the men and women attending. I know they all had busy schedules, and many of them came long distances to be here. Some of the significant topics which were discussed included systems evaluation and maintenance, tactical ATC problems throughout MACOM units, operations and procedures, ATC forces structure, and construction projects. The conference went extremely well, and in the future I will provide a further update as to its conclusions.

CMF 28

CMF 28 is the career management field for aviation communications-electronic systems. This entails training in avionics which takes place at Ft. Gordon, GA. At one time it was feasible to train aviation soldiers to do just avionics work on aircraft while maintenance work on the same aircraft would be done by soldiers who received training in CMF 67 which is the career management field for aircraft maintenance. However, with the advent of the AH-64 APACHE and OH-58D AHIP into the aviation inventory, avionics has become integrated into the flight and weapons systems of the aircraft. Therefore the Aviation Branch has decided to combine CMF 28 with CMF 67. One reason for this is the fact that future aircraft such as the LHX will have totally integrated systems, and the aviation soldier must have a working knowledge of both avionics

and aircraft maintenance systems. We also have to deal with the fact that doctrine and tactics for avionics NCOs presently emanates from the Signal Corps, where they take their BNCOC and ANCOC training at Ft. Gordon.

Since the roll-up of CMF 28 into CMF 67 will allow senior avionics NCOs to serve as first sergeants and command sergeant majors in aviation units, they must receive aviation doctrine and tactics in their leadership training. The restructuring will also allow the avionic soldier to employ his or her technical skills for a longer period of time by changing the supervisory level from SSG to SFC. This will mitigate the tendency to move the avionic soldier out of a technical skill area into supervisory positions, where his or her technical expertise is no longer fully utilized.

Although the Aviation Branch is the proponent

for CMF 28 training, it is being taught by the Signal Corps at Ft. Gordon in shared facilities. This situation does not allow the Aviation Branch to exercise complete control over a key portion of the CMF 28 training, that being the integration of the NCOs into the tactical aspects of the Aviation Brigade.

Failure to provide facilities at Ft. Rucker to support the CMF 28 move from Ft. Gordon would severely limit our ability to provide proper training due to the lack of special physical facility requirements. The news however is not all bad; an avionics training facility is scheduled to be built at Ft. Rucker in 1990 — with a completion date of 1991. This facility will support CMF 28 avionics training, and hopefully, will be ready for the transfer of instructional support from Ft. Gordon in FY 92. ■■■■

Army Aviation pioneer memorialized



The memory of the man generally recognized as the founding father of the U.S. Army Aviation Systems Command (AVSCOM) was memorialized AVSCOM employees at the St. Louis, Missouri, location on January 23, 1987.

LTG William B. Bunker served in St. Louis from 1955 to 1962, when the forerunner of today's AVSCOM had fewer than 500 employees. Under his command, AVSCOM was formed, moved to a larger location, and grew to employ more than 3,000 people.

As part of the memorialization, Major General Richard E. Stephenson, AVSCOM's current commander, dedicated a room in LTG Bunker's memory. The room, located in AVSCOM's headquarters building, contains memorabilia of the era in which LTG Bunker headed the command.

AVSCOM today is responsible for managing the Army's fleet of nearly 9,000 aircraft and for developing new aviation systems. AVSCOM now employs over 5,300 civilian and 360 military personnel and has an annual program budget of \$5.2 billion.

AVSCOM changes

There have been some recent changes to the AVSCOM organization structure.

The Directorate for Life Cycle Software Engineering (AMSAVW) has been formed. It's Director is Dr. Vernon D. Allen and he can be contacted at (314) 263-2817.

The office of the AVSCOM Comptroller and the Force Development office have been merged into the Directorate for Resource Management (AMSAV-C). The Director is COL Wayne W. Wright, and the Directorate's phone number is (314) 263-1200. The telephone for the Force Development Division within the Directorate is (314) 263-2175.

LHX:

The LHX Request for Proposal (RFP)

by Major (P) Joseph L. Bergantz and Robert E. Hahn

ST. LOUIS, MO — The LHX Aircraft System Request for Proposal (RFP) process began in October 1985 with formation of an RFP working group.

This RFP working group operated under the direction of a steering committee which was chaired by the AVSCOM Technical Director. Committee members included major AVSCOM laboratory directors, key directors from the acquisition areas, as well as representatives from the Department of the Army and the user community.

The purpose of the working group was to prepare drafts of the LHX RFP while the steering committee assured that the requirements of the RFP reflected the ROC requirements and that the policies of DOD Directive 5000.43, "Acquisition Streamlining" were implemented.

Lessons learned from the T800 Engine RFP process were used as the starting point for the development of the Air Vehicle System RFP.

Specific guidance from senior Army leadership and the steering committee stated that:

- (1) the LHX shall be of metric design;
- (2) the RFP should be streamlined, in that, performance-oriented requirements shall be established and use of

specifications and data items are to be minimized and if included, must be tailored;

- (3) the RFP must be a concise document; and
- (4) the draft RFP and ROC shall be used by industry to aid in identifying high risk areas of the program.

The first draft RFP was released for comment to government and industry in December 1985.

Structure/Philosophy — the fundamental structure of the RFP is unique. It was selected to enhance the evaluation process and emphasize the program goals of affordability, competition, and supportability. In addition to the traditional evaluation areas (cost and technical), MAN-PRINT/Training, RAM/ILS, and Production Competition will be evaluated as separate and distinct areas. Accordingly, a system specification was created that was divided into five separate, but interrelated sections. The content of these sections allows industry maximum flexibility in design and trade-offs.

To uphold this philosophy, contractual imposition of military specifications and standards and other referenced documents was minimized.

Specification Tailoring/Data Requirements Reduction — The Document Summary List, an attachment to the RFP, contains a listing of all referenced documents in the five main sections of the RFP. The majority of

the documents listed therein are "for guidance only" with the intent of obtaining desired results without imposing strict contractual requirements and formats.

Where requirements are contractually firm, the documents are annotated with a category indicating the level of tiering (categories taken from AR 700-70). In many cases, specification tailoring was accomplished by referencing only a particular page, paragraph, table, etc., of a referenced specification in lieu of requiring compliance with the total specification.

During the RFP preparation, a "murder board" was established to challenge each specification and data item incorporated. Each responsible individual had to justify in writing and later verbally, why the specification/data item was required and how it was tailored if appropriate. The intent of this review was to determine if requested information was really necessary and to establish the acceptable format for receipt of information by the government.

As a result of this review, unnecessary data items were eliminated, duplication of requested information was reduced, and restrictive or unnecessary formats were adjusted accordingly or abolished. This effort resulted in a reduction of fifty percent of the data items required. In addition, the Army is attempting to have data submitted electronically to the maximum extent possible.

Industry/Government Interchange — Nearly 2,400 comments (of which 1,800 were from industry) were received in response to the first draft RFP release. These comments were submitted in early February 1986, along with a general overview briefing by each contractor team.

MAJ (P) Bergantz is the Research & Development Coordinator for the LHX Project Manager's Office; Mr. Hahn is an LHX Systems Engineer with the Development Projects Division for the Directorate of Engineering at AVSCOM.

THE THREAT.



THE RESPONSE.

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IBM Federal Systems Division.

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Kaiser Electronics.

Wide field of view helmet-mounted display system.

Martin Marietta.

Automatic target acquisition/recognition, and sensor fusion systems; electro-optical sensors and night vision piloting systems.

Northrop Electro-Mechanical Division.

Advanced FLIR techniques, electro-optical sensors and night vision piloting system.

Rockwell International, Collins Government Avionics Division.

Integrated communication, navigation, identification avionics (ICNIA); cockpit multi-function displays and controls; and high-speed data bus.

Sanders Associates.

Aircraft survivability equipment system.

Singer Training Systems.

Integrated aircrew training systems.

TRW Military Electronics & Avionics Division.

VHSIC-based signal and data processors, and ICNIA.

Westinghouse Defense.

VHSIC-based computers and signal processors, target acquisition/recognition, and sensor fusion systems.

BOEING SIKORSKY
THE FIRST TEAM FOR LHX

Each comment was catalogued and assigned to the appropriate working group representative for resolution.

In the March/April timeframe face-to-face discussions were held with participation from contractor and government individuals. These discussions were a valuable forum to assure that contractors understood the government's requirements in substance and intent while allowing the government to understand contractor concerns and alternate approaches being considered. Based upon early analysis of written comments, a first rewrite, second draft RFP was used as the starting point for these discussions. Thus, in many cases contractor ideas had already been incorporated and the discussion could move on to other areas.

Due to time constraints, user/developer discussions were held after the industry-government meetings. However, it appears that based on lessons learned, user/developer discussions should precede industry-

government meetings in the future and user representation should be involved with the industry-government meetings when appropriate.

In handling the massive load of comments, a system of assigning a status was developed. Status structure ranged from one to four, representing the categories of: fully incorporated, partially incorporated, rejected, and open issues requiring further clarification. It is noteworthy that of the total comments received from industry, sixty-nine percent were either fully or partially incorporated.

The final outcome of this review and interchange cycle was the release of the second draft RFP on November 24, 1986.

The government-industry review cycle addressing this second draft began on January 12, 1987 with the receipt of industry's written comments. User/developer and government-industry discussions are planned for the March 1987 time-frame.

Current LHX program strategy calls for the formal release of the

LHX RFP in late April 1987. At that time contractors will initiate their proposal preparation/submission.

Conclusion — The formulation of the LHX RFP was an iterative process based upon the user's Letter of Agreement (LOA) through the draft Required Operational Capability (ROC) requirements, the developer's interpretation of these requirements, and industry's assessment of the technical feasibility and risk associated with achieving these requirements.

Throughout the process, the LHX acquisition strategy has changed considerably. As a result, the RFP has adapted to this change while still maintaining overall program goals and initial guidance.

The thrust of the RFP is and still remains to translate the user's requirements into a negotiable contract in the January 1988 timeframe. The ultimate objective is the development of an aircraft system which meets all the goals of the program and is affordable.

IIII

Coming next month in *Army Aviation*

The March-April, 1987 issue of *Army Aviation* is the annual Army Aviation Association of America (AAAA) convention issue. It will contain complete program details on the convention (being held this year in Ft. Worth, Texas). It will also contain the announcement of the winners of the CY1986 Army Aviation awards.

In addition, there will be Overviews from:

- MG Ellis D. Parker, Commanding General, U.S. Army Aviation Center & Fort Rucker, Alabama and Aviation Branch Chief;
- MG Richard E. Stephenson, Commanding



MG Parker



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General of the U.S. Army Aviation Systems Command (AVSCOM);

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LHX:

T800 Competition: A year into the program

by Lt. Colonel Willie A. Lawson



ST. LOUIS, MO — The LHX T800 engine full scale development (FSD) program, initiated in July 1985, has completed more than a year of development effort.

The competitive contracts let to AVCO/United (AVCO Lycoming and Pratt & Whitney) and LHTEC (Allison and Garrett) for the first time provided the Government unprecedented guarantees for acquisition and operation and support costs while transferring as much risk as possible to the contractors. The new initiatives implemented in this program over a year ago are alive and working.

After one year of effort, both teams are performing well against these new initiatives and each team has fully embraced this "new way of doing business". Contractor financial risks, absorption of tooling and facilities costs, production ceilings, RAM guarantees and predetermined corrective actions are now accepted terms and conditions for future Government contracts.

Both teams have begun full engine testing and have moved the program into the Preliminary Flight Rating Test (PFRT) phase. During this next year, the program will be in a test-fix-test mode in which all their innovative design solutions in meeting contract com-

mitments, will be thoroughly tested. As with all development programs, we expect anomalies to occur. After all, it is better to have test failures now in test cells, rather than later in the field. We need to learn what changes are required, make them, and then test those changes. It's an evolutionary process.

Both teams, have made their teaming arrangement work. They have demonstrated the professionalism necessary to overcome individual company parochialism and are making bilateral rather than unilateral decisions for the total team effort. The togetherness is unprecedented, and execution against requirements continues without major difficulties. Clearly, the upfront agreements have permitted team members to capitalize on each other's strengths and provide a better product than would have been possible without teaming.

Both teams experienced early start-up difficulties in meeting the Government production competition requirements. They have never had to deal with so many new facets so early in a program. However, after one year, these elements are being accomplished through effective implementation and execution of early production analysis on the design, transfer of technologies between the sources, understanding the early transition to pro-

duction and working at the sub-component vendor level to ensure their commitments.

Implementation of the Government's objective within this area has met with considerable success. The biggest problems facing the designer were the implementation of metrics, ILS/ RAM/MANPRINT and producibility requirements into the initial design rather than "later on" as had been done in previous programs.

The designer has performed the necessary trade-offs to optimize the initial engine design to all requirements rather than just performance. Despite all the initial arm waving, the metric design requirement is being met with surprisingly little effort and the contractors now view metrics as workable without difficulty.

ILS/RAM programs have functioned extremely well during the first year. With continued emphasis on their importance and status as an equal, we are now seeing the desired impact the Government wanted to accomplish on the upfront planning and design. Improved and simplified failure detection and isolation of field replaceable items will provide the user-maintainer the ability to return the system to mission status more rapidly. Designed-in simplicity also means the field maintainer will require less equipment and can have a lower skill level. Their current design effort to accommodate the two-level maintenance concept has resulted in a system which puts the field maintainer first.

MANPRINT within the engine teams has taken on a whole new meaning. For the first time, management is truly

LTC Lawson is the Assistant LHX PM for the T800 Engine, at the LHX Project Manager's Office at AVSCOM.

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BUT ARE WE MAKING HER STRONG?**

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Avco Lycoming and Pratt & Whitney. The power of LHX.

involved in coordinating and integrating the full range of human factors engineering, manpower, personnel, training, health hazards, and safety requirements. MANPRINT training courses are being attended. Maximum understanding and familiarization of MANPRINT policies is the norm within each engine team. Each team is proactive and totally committed to make MANPRINT work.

With cost as a major discriminator in the RFP and proposal evaluation, both contractor teams were forced early on to address issues that normally would not be faced until well into production and fielding of engines. The three elements that demanded all-out attention, as never before, were:

- (a) Fixed Price Development,
- (b) Not-to-Exceed Production Prices, and
- (c) Guarantees in Operating and Support Costs.

All responded favorably with full awareness of the risks involved, and the teams are well into the task of ensuring that their designs will not place them in financial jeopardy. However, the manufacturers believe that overall success will be highly dependent on quantifiable measures of field operation (Army's reporting and data retrieval systems) and the Government's ability to keep the program on track to ensure a fair return on the contractors' investment.

Prior to T800 engine development contract award, the CDRL was scrubbed to reduce the number of data items to the bare minimum deemed required to accommodate Dept. of Defense (DoD) requirements and efficiently monitor progress of the engine program. After the design process began and the data items were being delivered, it became apparent that with the introduction of RAM, MANPRINT, ILS, and producibility ear-

ly into the initial design of the engine, there was no one document which reflected that integrated effort. The overall progress of the engine design could only be assessed by reading and cross referring four different reports.

The LHX Program Manager Office (PMO) took it upon itself to create a new data item, the Program Accomplishment Report (PAR), which combined the salient features of the four aforementioned reports and combined them in one report thereby creating a better document for management. The PAR required that the contractors specifically address the interaction of the various disciplines on the design of the engine and that all effects of the design be traceable to the LSA/LSAR inputs.

Industry reaction to the PAR was mixed. The main objection was the scope and initial effort to create the report. As the re-

T800 NEW INITIATIVES — COMPARISONS WITH PAST PRACTICES

	PAST PRACTICES	T800	GOVERNMENT BENEFITS
COST	• Cost plus incentive fee development • Production cost goal • Support cost goal • Government facilitates	• Firm fixed price development • Production guarantee • Support guarantee • Contractor facilitates	• No change in development cost or guarantees • Ceiling price protection • Government protection/Shifts risk • Shifts responsibility/risk
COMPETITION	• 2nd production source not required • Alternative sources for spares not required • Small business plan	• 2nd production source required • Alternative sources for spares required • Small business participation required	• Best contractor performance • Reduced acquisition cost • Expanded industrial base • Best contractor performance • Reduced acquisition cost • Expanded industrial base • Expanded industrial base
PRODUCT PERFORMANCE	• Detailed Government spec • Performance/Reliability goals demo after development • Fragmented Logistics Support • English measure	• Government Requirement/Contract Spec • Performance/Reliability Rqmt Demo in Development • Early Contractor Commitment • Metric Measure	• Design flexibility/Trade-offs • Early validation prior to full production • Manpower personnel integration/Logistics plans in place • Implements DoD policy/enhances foreign use

port evolved, the advantages of reporting in this manner became apparent. Duplication of data was reduced to a minimum, format became a checklist for the component manager to assess progress, interaction of the design with the overall engine system became more apparent, and data generated was more consistent since a common data base was being used. Both teams have now embraced the PAR and are using it as a management tool. The PMO not only reduced the volume of paper which had to be read by approximately 40% and eliminated four data items, but established a report that truly shows the integration of the total system.

The cost area is the single, most critical area of risk assumption by the contractor and, as such, the Government should not change the character or

agreements reached through competition. The funding has been acknowledged and the business relationships must be recognized and accommodated. In other words, if you have a good thing, don't change it.

After one year, industry has kept their part of the bargain. The Army, DoD, and Congress must be willing to accept their share of that bargain. We, indeed, have shifted to a "new way of doing business" and the Government now has put those contractual tools in place. The eventual success of this new approach rests squarely with the Government. The Army, DoD, and Congress, must not allow the program to vacillate and change continuously. As with all contractors, profit is a motivator. The fact they were willing to assume such high financial risks was brought about by competi-

tion and the belief the Government would keep the program on track with a timely, high volume of production engines and a fair return on the contractors' investment. Failure of the Government to keep its commitment (i.e., sufficient development and production funding) would put all contractors, even those who win at downselect in a very poor business posture.

These T800 contracts serve as a model for subsequent Industry/Government contracts and are in response to congressional guidance for reform of DoD procurement practices. The Government must fulfill its obligation and hold the contractors to the conditions of their guarantees. Anything less would only weaken the Army's position for future Government contracts and cast a shadow on the sincerity of efforts to obtain these reforms. |||||

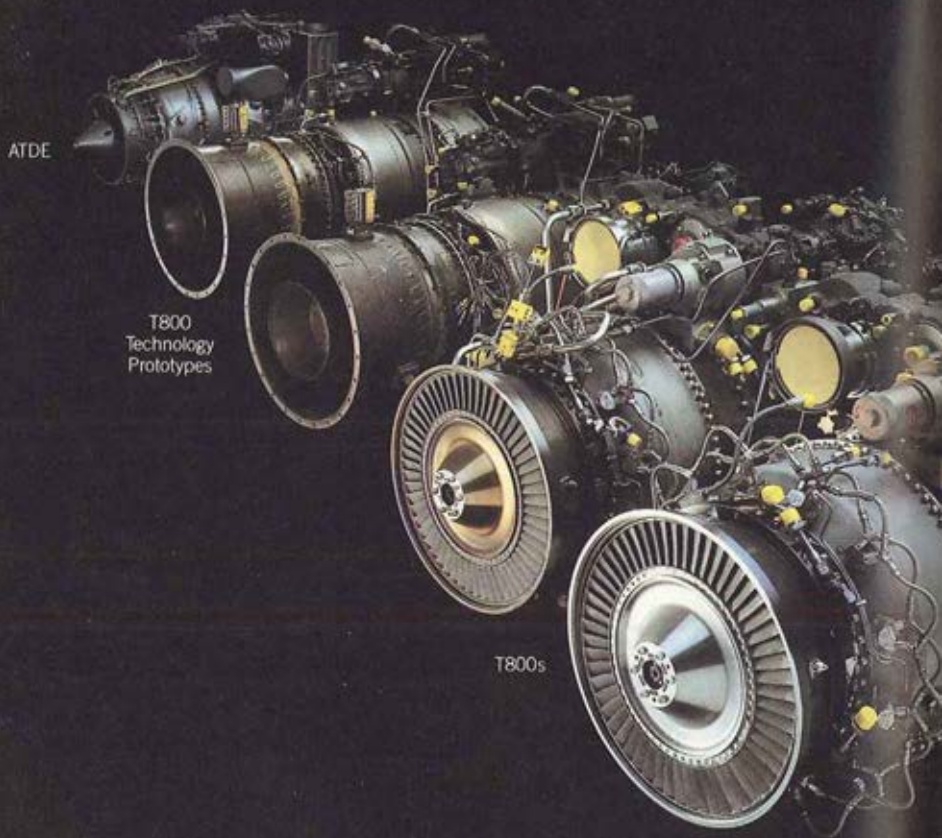


LEFT: Final arrangements being made to an Avco Lycoming/Pratt & Whitney T-800-APW-800 engine prior to testing.

BELOW: The LHTEC (Allison/Garrett) T800 engine in a generic air vehicle mockup of twin T800 compartment in support of advanced installation studies.



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Air Traffic Control:

USAATCA: Assessing ATC units worldwide

by Colonel Melvin J. McLemore



FT. RUCKER, AL — On October 1, 1986, Army Air Traffic Control (ATC), an old member (unofficially) of Army Aviation, became the new kid on the Aviation "block". On that date, ATC proponentcy and the U.S. Army Air Traffic Control Activity (USAATCA) were officially transferred to the U.S. Army Aviation Center (USAAVNC) at Ft. Rucker, AL.

Shortly thereafter, the Activity received a charge from the Aviation Branch Chief, MG Ellis D. Parker, to conduct a "posture assessment" of ATC components worldwide. This would be a total analysis dedicated to determining the who, what, when, where and why of Army ATC activities worldwide. It would establish the prioritization of resource needs and provide emphasis for organizational enhancement. This assessment would also serve as a vehicle to better inform Army leaders concerned with ATC and update current members of the ATC cadre.

As Director of USAATCA, I immediately established an ATC Functional Area Assessment team comprised of four members of the organization. This team developed an ATC assessment model and selected modules seen as critical to total ATC analysis. Modules selected were:

- Fixed ATC Systems, Subsystems and Equipment;
- ATC Personnel Issues and

Programs;

- Tactical (Cbt Support) ATC;
- Reserve Components;
- Aeronautical Services Office (ASO);
- Dept. of the Army Regional Representatives (DARR);
- Federal Aviation Administration (FAA) Liaison; and
- Simulation (for perishable skills).

With modules of this nature, a total assessment will obviously require the input of various USAAVNC elements such as the Directorates of Evaluation and Standardization, Resource Management and Combat Developments. The team also will be seeking input from various major Army commands (MACOMs), their staff members, and all ATC battalions — as a minimum.

Briefly, each module will address the following:

Fixed Base ATC will address systems, subsystems, and equipment presently in use by ATC, new equipment which is replacing this old hardware, and the new technology which is or may be needed to project Army ATC into the 21st century. It will look at Army ATC's role in the National Airspace System (NAS) and articulate what is perceived to be the future of ATC in regard to interfacing with the National Airspace System Plan (NASP). Finally, a product of this analysis will be a data file on all ATC systems, subsystems, and equipment at each Army Airfield or Heliport.

ATC Personnel Issues and

Programs will speak to "faces and spaces" (TDA and TOE). All programs and issues (with recommendations and comments) which may impact the Army ATC community, and data accumulated here will be added to the above computer file to provide a more complete "snapshot" of each installation and unit.

Tactical (Combat Support)

ATC will concentrate on the concepts and doctrine relative to the ATC role in support of the Aviation community now and during mobilization, and to any or all other tasks and/or functions associated with mobile and tactical ATC.

ASO/DARR/FAA Liaison will focus on the present functions and relationships of these elements of the USAATCA and translate these into actions which would best serve Army Aviation, airspace, and ATC in the year 2000 and beyond.

Reserve Components will address Army Reserve and National Guard issues relevant to the readiness training and support systems and programs which will be needed to assure mission accomplishment during exercise and mobilization actions.

It is intended that this ATC Functional Area Assessment and Analysis will culminate with an ATC Annex to the Aviation Modernization Plan. It will assist in fostering the joint acquisition of ATC systems throughout DOD and FAA, facilitating a harmonious transition with the "plan" for the National Airspace System.

Finally, it will present Army ATC priorities in a manner capable of prompting HQDA, DOD, FAA, and Congressional support for those systems and programs which may be essential to the survival of Army ATC and Aviation on the battlefield and into the 21st century.

IIII

COL McLemore is the Commander of the U.S. Army Air Traffic Control Activity at the U.S. Army Aviation Center.

Avionics:

PLS: A new system to the rescue

by Bobbi C. Campbell & Tim Ryder

FT. MONMOUTH, NJ — Army Combat Search and Rescue (CSAR) capabilities will receive a huge boost in the early 1990's with the fielding of a new search and rescue system.

The system, also called the Personnel Locator System (PLS), is actually an Airborne Radio Set AN/ARS-6 (V) coupled with a 26 ounce Survival Radio-Transponder AN/PRC-112 (V) that fits in an airman's survival vest pocket.

In February 1986, AMC assigned Army management responsibility for the tri-service survival radio to AVRADA, consolidating CSAR components. By this action, interoperability between the ground and airborne portions of the CSAR system will be assured, resulting in a fully operational capability. AVRADA had previously initiated a competitive Non-Developmental Item (NDI) program to procure the new Search and Rescue avionics for Army utility rotary wing aircraft. A companion program for initial production of the AN/PRC-112 was approved in June 1986 and will be awarded in June 1987. These two programs will accelerate Army fielding of the SAR capability and relieve survival radio shortages.

The transponder is activated by a downed air crew member who is then detected and rescued by a PLS equipped aircraft. The PLS activates the transpon-

der of the survivor's radio with a coded message which, in turn, causes the radio to transmit an "uplink" code, recognized by the PLS. The PLS then computes an "off-course" steering command and range to the survivor and displays its findings to the pilot.

The magnitude of improvement over the current CSAR approach is dramatic, as downed aircrew members can now only be detected by flying extensive search patterns while communicating in-the-clear between the current survival radio, AN/PRC-90, and the aircraft UHF set.

In its unique location modes, PLS uses spread-spectrum burst pseudo-noise signals to interrogate the AN/PRC-112 survival radio transponder to determine steering commands and precise

range information. In its "HOME" mode, PLS operates as a simple direction finding receiver and is capable of homing on any transmitter operating in the frequency range of 225 to 300 MHz.

Steering commands are displayed on a night-vision goggle compatible liquid crystal display mounted on the aircraft instrument panel. Using a phase monopulse angle measuring technique, PLS produces steering commands reliable to 90 degrees from aircraft nose or tail. This angle measuring technique also resists multipath interference and is not affected by tone modulations on swept tone beacon signals. In combat location modes, this information is augmented by a digital display of the range to target. In any mode, PLS's simple controls and logical sequence of operation make the system easy to use, even under combat or night flying conditions.

The PLS provides range and steering information to distances of up to 100 nautical miles (line

BELOW: An artist's conception of the Personnel Locator System (PLS) in the field.



Mrs. Campbell is in the Plans & Resource Management Div. of AVRADA, while Mr. Ryder is the PLS Program Manager.

of sight permitting), precise terminal guidance, even to a hover, and interrogates up to nine pre-set AN/PRC-112 transponder codes. By programming the airborne PLS control unit with selected codes during preflight, the pilot can detect and locate each AN/PRC-112 with a single key stroke, picking the most efficient nap-of-the-earth route to each location.

Additionally, the PLS provides two-way voice communication between the AN/PRC-112 or any other UHF transceiver and the PLS-equipped aircraft. No other system provides voice communication and radio location in such a single lightweight, compact package.

The PLS is designed for quick and easy installation on utility helicopters and may also be

used in fixed-wing aircraft. The control unit, which is only three inches high, can be adapted to any U.S. military airborne FM radio provisions, using the radio's power, dimming bus and communications connections.

The compact remote steering and range display and the antenna group with its pair of standard AT-450 blade antennas are designed for simple installation without aircraft modification. Since no calibration or aircraft modification is required, an aircraft can be equipped with PLS in less than 30 minutes, fly its mission and be quickly returned to its original mission status.

The Cubic Corporation of San Diego, CA, was selected as the Army's supplier for the Personnel Locator System (PLS). The initial phase of the contractual

program is a repackaging effort to reduce weight, cost and complexity of the supplier's previous generation equipment in order to meet Required Operational Capability (ROC) requirements.

Five preproduction samples will undergo contractor First Article test and a government follow-on test and evaluation, validating suitability for production and fielding. Through the following production phase of the program, the Army intends to procure more than 420 systems for CSAR use.

Together, the AN/PRC-112 survival radio and the AN/ARS-6 Personnel Locator System will provide the Army with an operational capability extending beyond combat search and rescue, affecting tactics and mission effectiveness. ■■■■

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Hardware:

APACHE: Warrior on the move

by Brig. General William H. Forster



ST. LOUIS, MO — On July 13, 1986, the 6th Cavalry Brigade's 3rd Squadron, stationed at Ft. Hood, successfully completed its Army Training and Evaluation Program (ARTEP). This event distinguished the 3/6th Cavalry as the first APACHE unit to field and achieve initial operating capability.

On November 10, 1986, the 1/6th Cavalry became the second unit to successfully complete its ARTEP. Since then, the 2/6th Cavalry has received their full contingent of aircraft and is scheduled to begin training on February 2, 1987.

Ft. Hood soldiers continue to give the aircraft high marks and it performs consistently better than expected. A measure of success for the AH-64 has been the operational ready rate of over 80 percent during this rigorous training period. Over 2,800 hours were flown during the 3/6th and 1/6th training periods. Thirty-six percent of these hours were night and low level nap-of-the-earth flights.

Since our sealift deployment exercise and European tour in the fall (see MG Parker's column in the December 31, 1986 issue of *Army Aviation*) the APACHE team has been busy.

BG Forster is the APACHE Attack Helicopter Program Manager at AVSCOM.

Recently, the 3/6th Cavalry participated in their first off-post exercise. The exercise, called "APACHE THUNDER," was conducted at Nellis AFB, Nevada. It was a joint Army-Air Force exercise designed to assess the impact of the APACHE systems capability with current Joint Air Attack Team (JAAT) tactics in a high threat environment.

Target acquisition techniques and weapons delivery tactics were developed and evaluated.



The introduction of the AH-64A into JAAT operations provides better stand off capability, and complete compatibility with the existing Air Force systems. The airborne helicopter laser designation proved more than adequate for target identification, and was particularly effective in coordination with fixed wing aircraft.

The exercise was successfully completed with no major problems. The "Fighting 6th" is setting the standard for all future APACHE units by establishing a baseline for an aviation doctrine

that is changing the way the U.S. Army fights.

Upcoming Events — The APACHE Program Manager's office in coordination with FORSCOM and Ft. Hood is making plans for the APACHE to participate in a cold weather exercise this winter and is discussing the possibility of participating in the FY87 REFORGER exercise. The major challenge here will be in planning for the sustaining support requirements for the AH-64 during any extended exercise. Pre-exercise planning and logistics issues are now being addressed to ensure the success of any future deployments.

Hardware — You have probably heard some rumors about a B model APACHE. Currently, the Army has no B model APA-

CHE program. However, the McDonnell Douglas Helicopter Company (MDHC) is funding an Independent Research and Development (IRAD) Program for development of an Advanced APACHE.

The McDonnell Douglas effort consists of hardware integration and software development involved in simplifying the aircraft wiring and cockpit design to improve reliability and reduce operation and sustainability cost as well as reduce pilot workload.

The focus of the MDHC effort is to introduce several new features. These include dual 1553 B data buses, generic computers to replace the Fire Control Computer, reduced cockpit instrumentation with touch control dual multifunction displays in both seats and the incorporation of a single data entry keyboard with a rapid system loading cap-

ability (i.e., cassette tape or EPROM plug in). Aircraft Survivability Equipment control and display is to be integrated on the multifunction displays.

The MDHC IRAD program is not to be confused with ongoing Army Product Improvement Programs such as the Wire Strike Protection System (WSPS), Airborne Target Handoff System (ATHS), and Integrated Flight Information Data System (IFIDS).

The Airborne Target Handoff System, (ATHS) could be integrated into the APACHE AH-64A aircraft as early as FY 89. The ATHS provides for the reliable transfer of target data in digital "burst" form between AH-64As, or a Scout aircraft and an AH-64A, or between a ground station and the AH-64.

The Engineering Change Proposal, which implements ATHS, will include provisions for improved cockpit management. A Control Display Unit (CDU) will control the ATHS, and Doppler navigation system, and will replace the functions of the two different existing Data Entry Keyboards.

There are presently 10 prototype ATHS systems on Task Force 1-112 APACHES. These systems will be "wrung out" in testing at Ft. Hunter-Liggett this spring. Pending the receipt of the user inputs, the engineers will determine what needs to be revised prior to incorporation into the AH-64 fleet.

When fully implemented, the buss compatible AN/ASN-137 Doppler will greatly enhance the accuracy of the navigation system, while allowing the CDU to access the AH-64A Fault Detection/Location System (FD/LS).

A Data Transfer Unit (DTU) capability is also being investigated as part of the ATHS equipped AH-64A. Ideally this DTU will permit aircrews to make a single batch preflight data entry into the aircraft system which will take care of Doppler waypoint and initialization position data, target locations, laser code presets and pointing data for ATHS.

This batch type data entry will permit the aircrew to receive operational data from a ground terminal, improving data accuracy and enhancing tactical capability. The integration of the ATHS into the AH-64A will result in an attack helicopter with significantly increased capabilities without increasing pilot workload.

In the near term, the Wire Strike Protection System (WSPS) development is progressing well. A preliminary design and mock-up are complete and swing tests are scheduled to begin in April. We expect the field retrofit program to begin in this October.

The Integrated Flight Information Data System (IFIDS) program is moving rapidly with AVSCOM's procurement of crashworthy flight data recorders intended for APACHE production line incorporation as well as retrofit. Production crash recorders will be moving toward the APACHE line beginning in January 1988. Pre-production units will be qualified beginning in December 1987.

As USAREUR fieldings are getting closer, we will begin forming the USAREUR APACHE Materiel Fielding Team this month. The full contingent is scheduled to be on site by June. This detachment will coordinate all the handoffs of new units from the FORSCOM Fielding Team at Ft. Hood into the European Theatre.

It's an exciting time for APACHE, as we strive to provide the soldiers in the field with the world's most Advanced Attack Helicopter System. We are certain APACHE is destined to become "The Decisive Edge". IIIII

Hardware:

TADS/PNVS update: Providing the training

by Michael S. Lykens



ST. LOUIS, MO — The Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS) provides the APACHE with the capability for flight during day, night and adverse weather conditions. The TADS allows the crew to detect, recognize and engage enemy targets at a sur-

Mr. Lykens is a Program Analyst in the TADS/PNVS Project Manager's Office.

vivable standoff range during day, night and/or adverse weather. The PNVS affords the crew the ability to fly to the battle area at NOE altitudes and engage the enemy at night regardless of illumination.

The successful fielding of the first two APACHE squadrons at Ft. Hood has highlighted a need for more extensive Forward

Looking Infrared (FLIR) image interpretation and performance training. It was discovered during fielding that the APACHE pilots could "over-fly" their headlights and place too much reliance on the FLIR imagery during night operations.

The TADS/PNVs Project Management Office (PMO), in conjunction with Ft. Rucker and the Center for Night Vision Electro-Optics (CNVEO), is developing a program which will counteract this problem by providing improved FLIR training. The program schedule is outlined in the chart.

The first facet involves preparation of a video tape based on past evaluations, with a tutorial on the impacts of delta T (difference in temperature of the object versus ambient) on FLIR imagery by CNVEO.

Upon completion of this phase, a generic trainer using displays, symbol generators and controls similar to those in the APACHE will be utilized for instructing students in proper procedures for setting up and adjusting displays.

The third facet involves an ad-

FLIR TRAINING 1987 PROGRAM SCHEDULE

Video Tape - Delta T Input Available

FLIR Handbook (Draft)

F E B	M A R	A P R	M A Y	J U N	J U L	A U G	S E P
-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------

Generic Trainer Available

FLIR Training Video Tape Available

ditional video tape made for the purpose of training the student in control adjustment for properly setting up the FLIR for pilotage, obstacle avoidance and navigation. The training provides to the student the impact on performance when the system (FLIR and displays) is improperly adjusted.

The final facet of the FLIR training program will be the development of a training book which provides the student with photos of different targets at a variety of ranges and environmental conditions. This training program will not only help resolve FLIR training shortfalls, but also provide a forum for interaction and positive feedback between trainers and

students.

The PMO is also considering CNVEOs Universal IR/Multi-Sensor Trainer program for adaptation to TADS/PNVs for training. This is a long range effort to support infrared (IR) classroom training. This program, when completed, would provide realistic FLIR training conditions that simulate actual tactical systems used on the battlefield. It also has the capability for providing adjustable scenarios and environmental conditions.

We have therefore recognized a need for FLIR training based on field experiences and have implemented a program which will improve the training provided APACHE pilots. ■■■■

101st Aviation Group (Combat) Redesignated



ABOVE: COL Jacob B. Couch, Jr., (center) Aviation Brigade commander, looks on as MG Burton D. Patrick, Commanding General, 101st Airborne Division (Air Assault), and CSM Robert G. Oates unfurl the new Aviation Brigade guidon.

Under its Army of Excellence reorganization, the 101st Aviation Group (Combat) was redesignated Aviation Brigade, 101st Airborne Division (Air Assault) on November 13, 1986.

The redesignation took place in front of the Brigade Headquarters building at Fort Campbell, KY. The 101st Aviation Group (Combat) had been in effect since June 25, 1969.

The Aviation Brigade is the largest of its type in the Army. It consists of three Attack Helicopter Battalions (the 55th, the 229th and 309th); two BLACK HAWK Battalions (the 101st and 158th); one CH-47 Battalion (the 159th); one Command Aviation Battalion (the 123rd); and one Cavalry Squadron (the 2/17th). With the redesignation, COL Jacob B. Couch, Jr., Aviation Group commander, became the first Brigade commander.

Personnel:

How to become an Army Astronaut

by Major Jimmy Rabon



ALEXANDRIA, VA — Many Army personnel have shown interest in applying for positions as astronaut candidates in the space program at the Johnson Space Center. In some cases, their interest is often blunted by a lack of information concerning the application procedure, qualifications needed to apply and selection criteria. This was evidenced by the low number of applications received by MILPERCEN in 1986.

If the Army is to continue its expansion into the space program, qualified personnel must be encouraged to step forward and state their desire to participate in this highly technical field.

In 1976 the Under Secretary of the Army approved a Memorandum of Understanding between the Army and the NASA which provided for participation by Army members in the nationwide selection program for potential astronauts. To support the continuing space shuttle effort, NASA selects astronaut candidates on an annual basis as a function of need and anticipated personnel attrition. The Army's nomination program is open to soldiers of all ranks in both active and reserve components.

Nominees are chosen from the best qualified applicants by an annual Army Astronaut Candidate Selection Board. Successful Army nominees who are chosen by NASA can expect a

six-year tour. They would then be required to complete a three-year service obligation with the Army upon release from NASA.

Few Army personnel are in a position to compete for astronaut-pilot positions, due to the requirement of 1,000 hours of pilot-in-command time in high performance jet aircraft. However, Army personnel are very competitive for mission specialist positions, and there has been one Army candidate chosen in each of the last four selections.

Currently COL Sherwood "Woody" Spring, LTC Jim Adamson and CPT Charles "Sam" Gemar are serving as astronauts at the Johnson Space Center in Houston, TX. COL (P) Robert Stewart is the senior Army astronaut and is awaiting promotion, at which time his nine years of service at NASA will end.

The 1986 Army Astronaut Candidate Selection Board nominated 45 officers to represent the Army in NASA's 1987 astronaut selection process. These officers came from several branches, but Aviation, with 28 selected had the largest representa-

tion. Any of the 45 Army nominees selected by NASA as astronaut candidates this year will report for training at the Johnson Space Center in July 1987.

From July 1 until October 1, 1987, the Army will again accept applications for the astronaut candidate program. Nominees selected by the Army in 1987 will be considered by NASA for duty as astronaut candidates beginning in 1988. NASA is looking for candidates who have an adventurous nature, a degree in engineering, physical science, biological science, or mathematics, with at least three years of related experience and proven leadership and communication skills.

NASA is very liberal in their interpretation of "related experience" and generally considers Army personnel who have served at least three years in their military occupational skill to be qualified. An advanced degree or equivalent in one of these academic disciplines is desirable.

In addition, applicants must be able to pass a NASA Class II flight physical (which is similar to an Army Class II), to include:

1. Visual acuity 20/100 or better uncorrected; correctable to 20/20.

2. Hearing not to exceed maximum dB loss in each ear (ISO standards).

Freq (Hz)	500	1,000	2,000
Loss (dB)	30	25	25

(NASA — Cont. on Page 38)

NASA's Army Astronauts



COL (P) Stewart



COL Spring



LTC Adamson



CPT Gemar

MAJ Rabon is an Aviation Management Officer with MILPERCEN.

International:

Canadian Army Aviation: 10 Tactical Air Group

by Brigadier General J.R. Chisolm



ST. HUBERT, QUEBEC — In some respects 10 Tactical Air Group — or 10 TAG as it is better known — is the equivalent of the Aviation Branch of the U.S. Army or the British Army Air Corps. While it is similar, it is also very different in view of the fact that the Group is an "Air Force" formation permanently assigned to support the "Army".

I've deliberately emphasized the terms Air Force and Army because as a result of unification such organizations no longer exist in the Canadian Armed Forces and have been replaced within the geographical limits of Canada by Air Command and Mobile Command.

10 TAG was formed in 1968 as a part of the newly created Mobile Command which made it the air branch of the Army with the status of a brigade. It was created by amalgamating all of the elements of Army Aviation. Assets included the scout helicopters of the Armoured Corps, the fixed wing L-19s of the Artillery, and the CH-46 helicopters of the Service Corps, plus some traditional Air Force squadrons consisting of Buffalo transport aircraft, F-5 fighters, and a tactical air control system.

The remainder of the Air Force was divided into functional commands, such as transport, air defence, maritime patrol and air training, under the overall command of Canadian Forces Head-

quarters. Thus, 10 TAG was a unique air formation with a number of roles, belonging to the Army.

In 1971, 10 TAG formed a number of tactical helicopter squadrons equipped with the OH-58A Kiowa and the UH-1N Twin Huey. These units were co-located with Army brigades across Canada to provide both regional support and tactical aviation training. At the same time, two medium transport squadrons were formed and equipped with the CH-47C Chinook. This was, and still is, a peacetime arrangement.

In 1975, as part of the restructuring process within the Canadian Forces, Air Command was formed and assumed command of all air and aviation resources within Canada. This included 10 TAG, that had by this time lost the fixed wing transport aircraft to Air Transport Group, which was removed from the Army but was left under the operational control of Mobile Command. Finally, in 1982, the F-5 fighter squadrons were taken out of the Group and given to the newly formed Fighter Group, and 10 TAG became what it is today — a purely rotary wing aviation organization working in support of the land battle. It currently consists of approximately 100 helicopters and 1,500 regular and reserve personnel.

Training — As 10 TAG evolved, it changed from the traditional organic Army Aviation organization into a specialized aviation organization. One of the

beneficial aspects of creating a unified armed force was the opportunity to create new organizations without concern for service boundaries. Consequently, 10 TAG was formed by integrating new recruits as well as a wide variety of trained personnel with backgrounds in the Army, Navy and Air Force into one organization in order to create a new type of formation. This fostered the need for specialized training both on new aircraft types and in the field of land operations.

To meet this requirement, 10 TAG established a special school for aircraft technicians and an operational training unit for tactical aviators. The latter was co-located with the Army's Combat Training Center to take advantage of the training resources available and to enable tactical aviators to be trained alongside their peers in the combat arms.

One unique aspect of the Canadian system is the fact that helicopter observers who are part of the crew of light reconnaissance helicopters are specially trained NCOs from the artillery and armour branches who normally serve with tactical aviation units for approximately three years before returning to their original trades. Over the years, as the 10 TAG training system was developed there has been a close liaison and interchange of ideas with the U.S. Army Aviation Center at Ft. Rucker. It has been mutually beneficial, although I suspect that we gained more than we gave.

Peacetime commitments — To meet a wide variety of peacetime commitments, including support to Army training, 10 TAG units are widely dispersed across Canada. Regional tasks range from supporting provincial government agencies in fighting

BG Chisolm is the commander of the 10 Tactical Air Group, Canadian Forces.

forest fires to civilian medical evacuations. Federal government tasks include security of national events such as heads of state conferences, support to the RCMP anti-terrorist units, and civilian VIP airlift. The most significant defence related tasks involve annual deployments to the Arctic to support and service a variety of defence installations. 10 TAG is also committed to maintaining a helicopter unit in support of the peacekeeping duties of the Multi-National Force in the Sinai desert. This task is a significant drain on 10 TAG resources.

War tasks — To meet its wartime tasks, 10 TAG regroups its resources to suit the commitment. For example, to support a Division, an aviation wing would be created consisting of reconnaissance, utility transport, medium transport, attack and medical evacuation units.

To practice this in peacetime, war establishment units are set up every two years in conjunc-

tion with major Army exercises using the resources of the tactical helicopter squadrons. This allows the personnel to work and train together in large composite units. While it would obviously be preferable to maintain such units in being in peacetime, both financial constraints and regional commitments preclude such an arrangement.

Fortunately, with practice 10 TAG has become rather adept at creating and operating with composite units. The acid test was the Group's highly successful participation in a major NATO exercise in Northern Norway in the fall of 1986 which required that an aviation unit comprising equipment and personnel from several squadrons deploy to Norway by sea. The unit exceeded both its serviceability goals and its wartime flying rate.

Specialized aviation group — Since its inception 18 years ago, 10 TAG has evolved into a highly specialized aviation component of the Air Force perman-

ently assigned in support of the Army. It includes both regular and reserve personnel, which is perhaps unique in that units which were once part time air reserve organizations now consist of both full time regular force personnel and reservists integrated into one unit — often with the reservists in charge.

The Group is heavily committed in peacetime to a wide variety of either civil or defence tasks which are not related to land force operations. Consequently, in order to maintain operational readiness in the tactical aviation roles, 10 TAG must take advantage of every opportunity to train with the Army. This training is often enhanced by the presence and participation of both U.S. Army and U.S. Marine Corps aviation units.

Finally, a word about the future. All of the helicopters used by 10 TAG are beginning to show their age and must be either upgraded or replaced. Another (10 TAG — Cont. on Page 38)



ABOVE: A 10 TAG Twin Huey in Northern Norway, September 1986 during Exercise BRAVE LION.

LEFT: 10 TAG personnel defrosting a KIOWA during a winter exercise.

RIGHT: A KIOWA with an Emerson mini-Tat machine gun installed.



Operations:

The 1 Corps Aviation Brigade: In the Forge

by Lt. Colonel Buryl E. Dooley



FT. LEWIS, WA — 1 Corps was "Forged in Fire" on January 15, 1918 in Neufchateau, France, and has served with distinction in twenty campaigns spanning two world wars and the Korean Conflict. On October 1, 1981, after a short inactivation, 1 Corps was reborn when its colors were unfurled at Ft. Lewis, WA.

1 Corps is unique and can truly be called America's Corps. The majority of its subordinate mobilization units come from Reserve Component (RC) organizations which are located in forty four of the fifty states. Until recently the corps' organic aviation assets consisted of only an RC aviation battalion, capable of providing limited combat support and combat service support. That is now history, as the corps is in the process of bringing on line the 66th Aviation Brigade (Corps).

Paralleling the rest of the 1 Corps force structure, the 66th Aviation Brigade is composed of ninety percent RC units coming from 12 different states. The Headquarters and Headquarters Company (HHC) of the brigade was provisionally activated on 1 November 1986 from assets of the Washington ARNG. Due to the geographic diversity and organizational complexity of the brigade structure, the decision was made that the peacetime commander be a brigadier general (doctrinally a colonel).

Whether the 1 Corps Aviation Brigade is employed to supple-

LTC Dooley is the 1 Corps Aviation Officer.

ment the divisions for key battles or retained at corps level, it will contribute greatly to the Corps Commander's ability to pursue and influence the operational and tactical levels of war.

With 434 aircraft organic to the corps base, the commander has a much greater capability to generate decisive combat power in minimal time for close, deep, and rear operations on the Air-Land Battlefield.

Many doctrinal issues confront the brigade. Basic doctrine for the Corps Aviation Brigade can be found in Annex B of FM 1-111. Later this year the U.S. Army Aviation Center (USAAVNC) will publish FC 1-119, "The Corps Aviation Brigade". But even then the 66th Aviation Brigade will face many new and unique issues since it will be unlike any other Corps Aviation Brigade.

It will be FY 89 before the Brigade is fully formed and even then it will not be equipped with UH-60s, OH-58Ds, or AH-64s. Because of the Army wide shortage of attack helicopters, the brigade's attack helicopter battalions will initially be equipped with 15 AH-1Ss each (five per company). The intent is to fully man these attack battalions as if they had their full authorization of 21 AH-1Ss each. Training will be with the assets on hand and then as the required airframes become available, flesh out the attack battalions to their full authorization. CH-47s will initially vary from B to D models.

The Aviation Intermediate Maintenance (AVIM) support for the brigade, when mobilized, will be provided by a RC aviation maintenance battalion, organic to the Corps' RC support command. This also creates command and control problems that must be resolved.

With the majority of 1 Corps' subordinate units in the RC, 1 Corps is extremely active in the Forces Command (FORSCOM) CAPSTONE program. This program is the conduit that allows the corps to provide trace units with the mission and training guidance necessary for development of training programs that facilitate their capability to execute wartime missions.

In addition, 1 Corps has an extensive exercise program in which subordinate CAPSTONE trace units are encouraged to participate. This allows subordinate active and RC units the opportunity to train with 1 Corps in both the Continental United States (CONUS) and overseas. The 66th Aviation Brigade is being integrated into the exercise schedule and will be a full player in the next CONUS corps level exercise.

The activation of the 66th Aviation Brigade requires the close and willing cooperation of National Guard Bureau, FORSCOM, USAAVNC, 6th Army, 1 Corps, participating U.S. Army Reserve Commands, and the state Adjutants General. Without exception, all are working towards the common goal of providing 1 Corps with a fully operational aviation brigade in the minimum amount of time. The spirit of cooperation, professionalism, and dedication are phenomenal as 1 Corps continues to take the lead in proving the One Army concept a reality. ■■■■

Operations:

Ft. Carson update: The Iron Eagles

by Colonel Peter H. Carr



FT. CARSON, CO — On August 15, 1986, the Aviation Brigade of the 4th Infantry Division (Mech), the "Iron Horse Division", was officially activated. I assumed command with the leadership of the Division, local dignitaries and aviation supporters from the surrounding area in attendance. It was a great beginning.

All the assigned units were organized under the new "J-Series" TOE configuration. The assignment of 1st Squadron, 10th Cavalry, to the Brigade was on the horizon but their official welcome didn't take place until mid-September.

The units that make up the 4th Aviation Brigade are:

- 1st Squadron, 10th Cavalry, LTC Gayle Smith, Cdr;
- 4th Attack Helicopter Battalion, LTC Wayne Hansom, Cdr;
- 131st Combat Support Aviation Company, MAJ Paul O'Sullivan, Cdr;
- 191st General Support Aviation Company, CPT (P) Jim Lawson, Cdr;
- 179th Assault Support Helicopter Company, MAJ Ron Rice, Cdr (attached unit); and
- an Air Traffic Platoon from the 57th ATC Company, commanded by CPT Al Smith.

The training schedule for the Brigade is extremely energetic, with deployments to the National Training Center, Pinion Canyon Maneuver Site, local Ft. Carson operations, and a Hon-

duras rotation, not to mention external evaluations and concentrated aerial and tank gunnery qualifications.

The 4th Attack Battalion and major slices from all other units in the Brigade have become experts at fighting and winning at the NTC. The superb fighting skills of the entire Brigade are to be tested four times in 13 months at the NTC. Although the NTC deployments are numerous, they are by far the finest training exercises available.

When the Brigade does deploy, it keeps the OPFOR alert by distributing leaflets with messages such as "Happiness is having you in our sights" and "Remember us from our last rotation?" Any levity at the NTC is welcome because the entire NTC rotation is serious business.

In addition to the NTC, Ft. Carson units have access to a major training area called Pinion Canyon Maneuver Site (PCMS) which is located approximately

150 miles to the south of Ft. Carson. PCMS is an excellent training opportunity with more than 200 thousand acres for maneuver and tactical play.

The PCMS area is not used for live fire, so MILES engagements are the order of the day. Actions are under way within the division to increase the use of this unique training area. It is being offered to the Reserves, the National Guard, and other active units that might want to take advantage of the high desert training environment. PCMS easily handles a maneuver Brigade, its support slice, two air attack companies, an air assault company, and general support assets. It permits Ft. Carson units to train as they are expected to fight.

The Brigade's active training schedule has prepared our soldiers for deployment worldwide. The skills developed during our numerous field exercises will be put to the test on an upcoming rotation to Honduras. A task force of "Iron Eagle" soldiers, made up mostly from the 131st Combat Support Aviation Company, are anxiously preparing for this mission and the opportunity to demonstrate their skills and professionalism.

The fact that all Ft. Carson air (Eagles — Cont. on Page 38)

**The 4ID (M) Aviation
Brigade in the Rockies:
Above the Rest!**



COL Carr is the Commander of the Aviation Brigade of the 4th ID (Mechanized).

Operations:

The Wings of the Red Devils

by Colonel John C. Parrish



FT. POLK, LA — The 5th Infantry Division (Mechanized) took a giant step forward in its Force Modernization efforts with the activation of the Aviation Brigade on September 22, 1986. This culminated years of planning and reorganization which included relocation of the 214th Attack Helicopter Battalion from Ft. Lewis, WA. The unit was redesignated the 5th Attack Helicopter Battalion, bringing to the division the mobile firepower of fully modernized AH-1S COBRAS.

Every effort is being made to develop the full potential of the Aviation Brigade, including the possible attachment of armor and mechanized forces. In effect, the goal is to provide the division with a third active duty maneuver brigade headquarters. The blending of ground holding forces with the inherent mobility and firepower of aviation make this

goal extremely attractive.

The objective was developed six months earlier, as the 5th Infantry Division explored the strengths and weaknesses of the J Series TO&E during intensive CPX play. Cross-attachment of ground forces to the Aviation Brigade was found to develop a more coordinated effort than had been otherwise possible. The sharing of technical skills also raised the learning curve of all commanders and staff officers involved. Greater flexibility in operational planning was evident in the scheme of maneuver.

Recent CPX and FTX training has enhanced the possibility of serving as a controlling headquarters at the National Training Center at Ft. Irwin, CA. This commitment demands detailed and continuous training to maintain the Brigade in the "Band of Excellence."

The first hurdle was in the area of personnel expertise. The mission was to operate as a maneuver brigade headquarters controlling both ground and air

maneuver units. Finding the right people with an adequate blend of ground and air experience to play in key positions in the brigade was not easy.

Monthly CPX play was used to enhance the staff process, explore the new doctrine and begin working combined and joint operations. Emphasis was also placed on combat support and combat service support functions. A close look was taken at the logistics necessary to make resupply operations effective.

Our next problem was equipment. Track vehicles and personnel were required to develop and man a survivable Tactical Operation Center. Once established, obtaining radios to monitor all required nets became a priority. Having sufficient vehicles to move this brigade into combat was another problem. However, Force Modernization efforts will provide HEMTT trucks to the brigade beginning March 1987. This will significantly increase haul capability and the logistics and resupply posture.

The heavy vegetation and predominantly flat terrain of Ft. Polk is not highly conducive to attack helicopter operations. Thus, we look forward to joint operations with III Corps and possible deployments to Europe, along with regular rotations to NTC. Also, ef-

(Devils — Cont. on Page 38)

COL John C. Parrish, 5th ID (M) Aviation Brigade Commander, (center), is flanked by MG K.C. Leuer, CG of the 5th ID (right) and Brigade Executive Officer LTC J.B. Alden (left) as they review the soldiers during the Brigade activation ceremonies.



Operations:

JAAT Week: A combined arms training tool

by Colonel James P. Hunt



APO NY — Attack helicopter employment concepts are currently changing in the Aviation Brigade of the 8th Infantry Division (Mechanized) due to evolving Aviation Branch doctrine.

Ground maneuver commanders today recognize the vulnerability of the attack helicopter in "head on" attacks against enemy armor. They recognize that the "pile on tactic" of previous years will provide unacceptable loss ratios. The Pathfinder Division and its maneuver brigades are now concerned with employment concepts that take advantage of the capabilities of the attack aircraft while enhancing its survivability.

A tactic often utilized to enhance the survivability of attack helicopters, as well as close air support (CAS) assets, is Joint Air Attack Team (JAAT) operations, which is trained in the 4th Brigade, 8th ID (M). The Brigade hosts semi-annual JAAT Weeks in a local maneuver area. It also coordinates smaller scale JAAT training for its 8th and 18th attack helicopter battalions (AHB).

JAAT Week Training begins on Monday with a series of briefings designed to acquaint aviators and staff officers of both ground and aviation units with JAAT operations and some of the considerations prior to its employment. Lectures varied from the most recent Soviet Air Defense assessment in the area of opera-

tions to A-10 Characteristics, Capabilities and Limitations.

These briefings last until noon, allowing the two AHB's an opportunity to address JAAT training to greater detail within their own unit during the afternoon.

OPFOR for the JAAT Week, includes a task-organized SHORAD battery from the 1-59 Air Defense Artillery Battalion, supported by a Tactical Radar Threat Generator (TRTG) from the 7th Army Training Command (7 ATC) at Grafenwoehr, a mechanized company from one of the other maneuver brigades of the Division, and actual Warsaw Pact Vehicles, also from 7 ATC (when available). All participants in the exercise, ground and air, are MILES/AGES equipped.

The Brigade Tactical Operations Center (TOC) is established during the initial day and manned throughout the exercise by the Fire Support Element

(FSE), S2 and S3 sections. A TACFIRE shelter from the DIVARTY colocalizes with the Brigade TOC, representing a 155 FA Battalion in Direct Support (DS) of the 4th Brigade.

The shelter assists the Brigade FSE in building fire support plans for both maneuver and Suppression of Enemy Air Defense (SEAD) missions. The shelter also receives both digital artillery missions from the DIVARTY Support Platoon and voice calls-for-fire from the aeroscouts in the AHB's. The expertise brought to the training by these DIVARTY personnel and actual exercise of voice and TACFIRE-to-TACFIRE interfaces highlights strengths and weaknesses in call-for-fire and fire support planning procedures, and identifies hardware compatibility problems involved with aerial Digital Message Device (DMD) to TACFIRE interface.

During the August 1986 JAAT Week, the 78th Tactical Fighter Squadron, from RAF Woodbridge, England provided the dedicated support of six A-10's and crews. Coordination was accomplished early in the exercise planning process to allow the (JAAT — Cont. on Page 39)



LEFT: COBRAs from the 8th Attack Helicopter Battalion engage targets as part of the JAAT operation.

BELOW: An A-10 THUNDERBOLT II from the 78th Tactical Fighter Squadron touches down on the short runway at Mainz-Finthen.



COL Hunt is the commander of the 4th Brigade, 8th Infantry Div. (Mechanized).

Operations:

Wings of Lightning One year later

by Colonel Ronald E. Adams



SCHOFIELD BARRACKS, HI —

The Aviation Brigade of the 25th Infantry Division (Light) recently celebrated the first anniversary of its activation. The commemoration was low key because most of the brigade was away from their home bases at Schofield Barracks and Wheeler AFB.

Our soldiers were involved in PALEX's in the Philippines and Hong Kong; a Long Range Reconnaissance Unit (LRSU) training program at Ft. Benning, and in a unit exchange at Ft. Ord.

The 3rd Squadron, 4th Cavalry commanded by LTC Jack Maher, and the 17th Assault Helicopter Company commanded by CPT John McGee, were "off island" for joint exercise "Opportunity Journey 1-87". The 25th Aviation Battalion (Attack), under LTC Bob Metzger, was in Hokkaido, Japan, participating in Orient Shield '87. The 56th Aviation Maintenance Co., commanded by MAJ Bob Raichle, and the Brigade's HHC, commanded by CPT Ray Rippel, were supporting both deployments.

The 25th Infantry Division's Aviation Brigade received its colors in an activation ceremony on 15 October 1985. We were the Tropic Lightning's first unit to convert to J series TOE's and the first to complete "Light Fighter" training, the rigorous rites of passage that indoctrinates the spirit of light infantry. It was a year filled with thousands of per-

sonnel and equipment transactions, of forming new staffs, developing policies and SOP's and of training and deployments.

The pace started fast and never slowed. A week after our activation, we dispatched Task Force SOHEI to Camp Fuji, Japan for Orient Shield '86. The task force, led by Jack Maher, consisted of the Cavalry squadron, two platoons of BLACK HAWKS, and a support slice from HHC. They participated in a U.S. brigade size field exercise and in joint bilateral training with the Japanese Ground Self Defense Force at a training area in the shadow of Mount Fuji.

Right after the new year, we conducted gunnery exercises on Kahoolawe and Kauai and the 25th Attack Battalion began the first in a series of joint exercises with the U.S. Navy. The highlight of the exercise was deck landing qualification on various ships of the Pacific Fleet. Those exercises have now grown into a quarterly effort in which all elements of the brigade participate.

In late February, we loaded our equipment on ships and our soldiers on MAC charter flights and deployed, along with a large portion of the division, to Korea for Team Spirit '86. It was a great exercise. Not only did we conduct operations across the entire spectrum of combat, combat support and combat service support functions, but we also tested our newly developed policies and SOP's. Team Spirit also pro-

vided us an opportunity to compare notes with COL Frank Estes and his 17th Aviation Group. That sharing is so vital to a new organization such as ours and does much to help focus the maturing process.

In late spring, we were involved in several joint exercises; aerial gunnery, battalion FTX's, and participation in an external evaluation program with COL Jerry Childers' 7th Aviation Brigade. From its inception last May, that exchange program has blossomed into a full partnership which appears to be paying big dividends for both units.

An exchange program with the Singapore Air Force and Army and an exercise with Australia's Royal Queensland Regiment, and the first airborne operations by our LRSD, highlighted the summer months. We also moved into a new motor pool, consolidated our troop billets in one central location and realigned our flight line activities to optimize operation.

In August, it was time to hit the road again, this time to Thailand for Cobra Gold '86. The 184th Assault Helicopter Company, commanded by MAJ Skip Lam, deployed with a 25th Division task force by C5A and C141 to Uthapao and spent a month training with the Royal Thai Army. It was an exciting exercise capped by a ceremony in which the participating aircrews all received Thai Army Flight Wings.

As the brigade's first year drew to a close, we were already packing for Orient Shield and another Opportunity Journey. We looked back with pride in what we had accomplished. In one short year we had become full members of the Tropic Lightning's Light Strike Force and were well "on the road to excellence." ■■■■

COL Adams is the Commander of the Aviation Brigade of the 25th ID (L).

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Research & Development:

The ADOCS user demonstration program

by Major (P) Paul J. Fardink



FT. EUSTIS, VA — The Advanced Digital Optical Control System (ADOCS) Program has moved into the User Demonstration Phase. Under an Aviation Applied Technology Directorate (AATD) contractual effort with Boeing Vertol, the U.S. Army Aviation Systems Command (AVSCOM) will gain valuable information from a wide variety of pilots representing the Army, Navy, Air Force, NASA, and industry.

The objective of the ADOCS program is to advance flight control technology for Army aircraft. This is done through development, verification, and validation of improved flight control concepts. Improved mission capability, reliability, maintainability and survivability of the control system in the natural and manmade

electromagnetic environment of the future battlefield are all real benefits of the ADOCS concept.

The principal goal of the program is to permit pilots to perform demanding nap-of-the-earth (NOE) in adverse weather, and night operational missions without degradation due to excessive pilot workload. This allows the pilots to concentrate on tactical mission needs. Mission-tailored handling qualities and control laws combined with improved soldier-machine interfaces will significantly improve rotorcraft mission performance.

The ADOCS design uses limited-motion sidearm controllers, digital computers, and actuators all controlled by fiber optic paths.

A UH-60A BLACK HAWK was modified to accept the ADOCS components. The pilot in the right seat (photo below) has on-

ly the ADOCS digital/optical control system (DOCS) limited motion controllers. Because of the new technology of fiber optic controls, the safety pilot, in the left seat, has the standard UH-60A flight control system with only minor modification for the flight test program. A second sidearm controller was installed on the flight test engineer's seat in the cabin area to perform pilot-to-pilot transfer of controls since this had not been previously demonstrated.

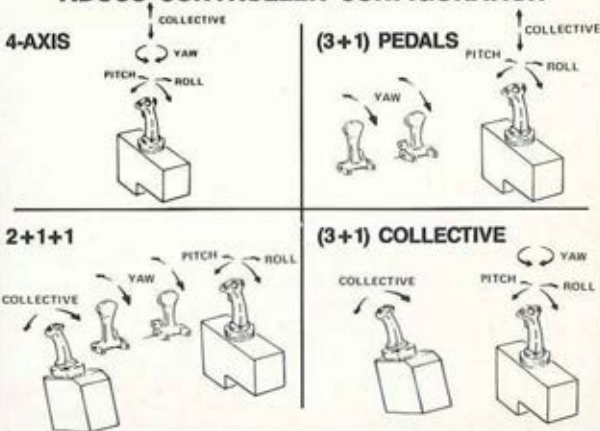
The first JUH-60 ADOCS flight with the DOCS engaged occurred in November 1985. As work progressed into 1986, the DOCS primary flight control system performance with unaugmented handling qualities equal to the SAS-Off UH-60 was achieved in February of 1986.

The DOCS Automatic Flight Control System tests were completed in December 1986, in which level 1 handling qualities (1 being best on a scale of 3) in the three axis + one axis (collective) sidearm controller configuration were achieved. A total of 205 flight test hours were (ADOCS — Cont. on Page 39)

MAJ (P) Fardink is acting Chief of the Aeromechanics Technical Area, AATD.



ADOCS CONTROLLER CONFIGURATION



Hardware:

Developing the mission for the V-22 OSPREY

by Colonel Michael B. Howe &
Major James O'Connor



ST. LOUIS, MO — The joint V-22 OSPREY Program continues to move ahead at full steam as we move into 1987. Last year was a major turning point for the Navy, Marines, Air Force, and especially the Army.

Under the executive leadership of the U.S. Navy, the program successfully completed the Defense Systems Acquisition Review Council (DSARC) III milestone on April 17, 1986, and a follow-on Joint Resources Management and Review Board (JRMB, formerly DSARC). The JRMB met December 18, 1986, to consider not-to-exceed production prices and the Navy's Anti-Submarine Warfare (ASW) variant of the V-22.

Approval was granted for continuation of Full-Scale Development and funding approved to define the ASW configuration. The last of 25 design reviews was held in December 1986. This review set the aircraft configuration and culminated a busy year of Critical Design Reviews.

During 1986, the Army accomplished the establishment of a V-22 Project Manager's Office in the Aviation Systems Command (AVSCOM) in September; the approval of the Operational and Organization (O&O) Plan in October; and the reinvolvement of the Army in the program.

The new year is off to a run-

ning start with the establishment of an Army Mission Equipment Package, completion of the First Logistics Review, initiation of an aeromedical kit and placement of Army personnel at contractor sites and NAVAIR. Army requirements for training, training devices, support equipment and automatic test equipment continue to be reviewed and finalized at an increased pace.



The aeromedical kit will be developed by the Army's Medical Research and Development Community. A working group has been formed to define the configuration, funding requirements and develop an acquisition and development strategy for the kit. The purpose of the kit is to supplement those items already included in the 12 litter Marine configuration. The V-22 greatly enhances the Medevac mission with its speed, range, on-board oxygen generating capability, low airframe vibration levels and near level fuselage attitude in all flight modes.

The program continues to be blessed with the assignment of dedicated people to the V-22. In December 1986, enlisted personnel from AVSCOM and the U.S. Army Aviation Logistics School (USAALS) were permanently assigned to the tri-service Resident

Integrated Logistics Support Detachments at Bell Helicopter Textron and Boeing Vertol. A third team at Allison Gas Turbine Engine will be formed in March.

These experienced senior NCOs have the responsibility of working directly with the contractors and the materiel developer (U.S. Navy) to properly develop the Logistical Support Analysis (LSA) data base. This early involvement in the LSA process contributes to fielding a supportable total aircraft system.

Three Army officers have been assigned as liaison officers at NAVAIR. They report directly to the Army V-22 Project Manager. LTC Rick Diamond heads the team with duty in the joint program office. CPT (P) Pete Notarianni works in the logistical area and CPT Matt Granger in engineering.

LTC Diamond and CPT Notarianni are assigned to AVSCOM and CPT Granger to the Surgeon General's Office. Their day-to-day contact with the other services at NAVAIR will enhance the Army's acquisition process.

Later this year an engineering test pilot and two flight test engineers will be assigned to the V-22 Multi-service Test Team (MTT). In January 1988, they will report to the MTT at the Naval Air Test Center, Patuxent River, MD, for involvement in the four-year Developmental Test phase.

This year will see an increased pace in the program as we get closer to first flight in June 1988. Flight test hardware is being manufactured, training concepts finalized, test plans written and plans for production developed. The Army's challenge is to develop plans for fielding a supportable aircraft system — the next aircraft to be fielded in the Army.

IIII

COL Howe (pictured above) is the dual PM for the CH-47D Modernization Program and the Army's V-22 Program. MAJ O'Connor is the Asst. PM for the V-22.

Hardware:

Volcano: The BLACK HAWK scatters mines

by Colonel William E. Turner



ST. LOUIS, MO — The dependence of Soviet-bloc forces on armored vehicles for mobility and combat power has been well established. To counter this threat, the Department of Defense has placed continued emphasis on the development and fielding of effective anti-armor systems, including the AH-64A APACHE attack helicopter, the M-1 Abrams main battle tank, and the TOW and Maverick missiles.

Augmenting these systems is the family of scatterable mines (FASCAM), currently being developed for both ground and aerial delivery systems.

At present, the only operational helicopter-dispersed scatterable mining system is the M-56, designed for use with the UH-1. Two of these dispensers mounted on a single Huey can emplace a 20 x 300 meter minefield in a single pass, which is evidence of the tremendous potential of aerial delivery systems.

Shortcomings of the M-56 system, however, include a minimum dispensing altitude of 100 feet and the limited anti-armor effectiveness of the mines themselves. To improve on these limitations, the U.S. Army initiated the Volcano program and awarded a development contract to Honeywell in 1983.

Specifications for the Volcano system included modular design, high reliability, and the use of expendable mine canisters. In ad-

dition, the system features focused warheads which penetrate and destroy armored vehicles rather than simply breaking track and temporarily immobilizing them. Volcano is designed to be mounted on various wheeled vehicles as well as on the external stores support system (ESSS) hardpoints of the UH-60 BLACK HAWK helicopter.

Mounting hardware for the Volcano provides support for a total of four canister racks, each of which provides mounting for 40 mine canisters. Each canister contains six mines, five being anti-tank and one anti-personnel. The system can dispense up to 960 mines when in a fully loaded four-rack configuration.

The heart of the Volcano system is the dispenser control unit (DCU) which provides the firing control function and sequences the canister firing. The DCU is programmed by the operator with the selected dispensing speed and mine self-

destruct time. The pilot then aligns his aircraft with the delivery axis, manually maintains the designated speed, and initiates dispensing with a cyclic or hand controller switch. The DCU automatically fires canisters in a prescribed sequence on alternating sides of the aircraft to achieve the desired minefield density.

As the mines clear the end of the canister, the arming signal and self-destruct time signals are sent to the mines through a strap-like web that is interlaced between the mines. As the mines continue away from the canister, the web pulls tight and flips the mines into a dispersed pattern.

A major advantage provided by the UH-60 Volcano system is the ability to deliver up to 960 mines at altitudes down to and including nap-of-the-earth while traveling at airspeeds of 20 to 120 knots. For example, a 1,000 meter-long minefield with a frontal density of almost one mine per meter can be emplaced in less than 17 seconds from a single UH-60 flying at 120 knots. This rapid dispensing capability offers great tactical utility to ground and combat aviation commanders.

Developmental testing/operational testing (DT/OT) II for the (Volcano — Cont. on Page 39)

The UH-60A BLACK HAWK helicopter equipped with Volcano scatterable mine system.



COL Turner is the BLACK HAWK Project Manager at AVSCOM.

Operations:

The Tribal Order of the Athapaskan

by Lt. Colonel Charles M. Burke



FT. HOOD, TX — The Athapaskan Indian family was the last migratory wave from Asia to reach the Pacific Northwest nearly one thousand years ago, scattering from Northern Canada to Northern Mexico. One of the tribes of Athapaskan to settle in the Southwest was the Apache.

The Apaches were known as the fiercest of Indian warriors. They lived like nomads, roaming free in the rugged and barren deserts of the Great American Southwest where they became as brutal and hostile as the land they lived on. They traveled in small bands attacking their prey when and where they chose with deadly results. Although the tribe of Apache has long since become civilized, their warrior spirit lies sleeping — dormant, just below the surface, ready to be reawakened.

It's ironic that the U.S. Cavalry, which fought so hard to destroy the Apache in the old West, is now working so diligently to rekindle the fires of that warrior spirit. That is precisely what the new Apache forces of the U.S. 6th Cavalry have accomplished at Ft. Hood, Texas.

Ft. Hood is the birthplace and the home of the Army's new Apache fighting forces. The Commander of III Corps and Ft. Hood, LTG Crosbie E. Saint, directed that an Apache Award of Excellence be established to recognize the significant achieve-

ments of individuals and units within the Apache fighting forces. Armor has its St. George's Medal, and Artillery its St. Barber's Medal. Cavalry now has the Tribal Order of the Athapaskan.

The Tribal Order of the Athapaskan, which has been recognized and approved by Forces Command, is divided into two orders; the Order of the Chief and the Order of the Brave.

The Honorable Order of the Chief is further divided into two categories; one recognizing individuals and the other units for their professional contribution to the Apache fighting force.

Individuals inducted into the Order will be given a gold medallion and a certificate signed by the Commanding General of III Corps and Ft. Hood. Units are honored with a silver medallion and signed certificate.

Two AH-64 Apache Squadrons have been inducted into the higher Order of the Chief. The 1st and 3d Squadrons of the 6th Cavalry Regiment received their

awards upon completion of their AH-64 Unit Training Programs in the summer and fall of 1986.

The Order of the Brave has a single category and serves to recognize individuals who have demonstrated the highest professional ideals of the Apache fighting force. Soldiers honored with this award are presented a bronze medallion and a certificate signed by the Commanding General.

To date, two soldiers have been nominated and inducted into the Honorable Order of the Brave: LTG Crosbie E. Saint, the originator of the award, and LTC Thomas A. Swindell, the designer and developer of the award.

Like the ancestral family of the Athapaskan, the modern warfare techniques of the AH-64 Apache fighting forces are quick, silent, and ready. Like their ancient warrior spirit, the recipients of these awards are recognized not only for their elan but for their sense of sacrifice and their commitment to military excellence epitomized in this unique role of aerial combat.

Though the tribes no longer roam the badlands of West Texas, their spirit is reborn at Ft. Hood. Soldiers and units who meet these standards of excellence carry on the tradition of the Apache warrior spirit. ■■■■



LEFT:
LTG Crosbie E. Saint, Commanding General of III Corps, receives the Honorable Order of the Brave in ceremonies at Ft. Hood on December 15, 1986.

LTC Burke is the Deputy Brigade Commander of the 6th Cav Brigade (AC).

NASA - Cont. from Page 25

3. Blood pressure not to exceed 140/90, measured in a sitting position.

4. Height: 60 and 76 inches.

All prerequisites are established by NASA and cannot be waived by the Army. As for specific skills sought by the NASA selection committee, mission specialists are considered in six categories: space science, earth science, life science, materials science, general engineering, and flight test engineering.

Factors which will be considered include the level and quality of academic achievement; applicability of education; amount, applicability and quality of work experience; and other demonstrated practical and applicable experience and references.

The Army is continually trying to increase the number of astronaut candidates selected by NASA, and all qualified personnel are encouraged to apply. Application letters generally take three to four weeks to complete and should be started as soon as possible. Interested personnel should write to the address below prior to 1 July 1987 for an Army astronaut application packet:

Commander,
USAMILPERCEN,
ATTN: DAPC-OPZ-AV,
200 Stovall Street,
Alexandria, VA 22332-0400.

10 TAG - Cont. from P. 28

anomaly of the Canadian system is the fact that although 10 TAG is an Air Force organization, the Army must pay for the replacement equipment. Consequently, studies are underway to determine the number and types of helicopters required for the future. They must, however, com-

pete with other land force equipment for funds.

What is apparent to date is that the nature of any future battlefield is such that helicopters which operate in forward areas will need a sophisticated self-defence capability. This, plus the need to increase the Army's firepower, will likely dictate the nature of 10 TAG's future roles in support of the land battle. ■■■■

Eagles - Cont. from P. 29

activities begin at 5,780 feet presents many new and unique challenges. In order to take advantage of the high terrain of the Colorado Rockies, all aviators of the 4th Brigade will, as a minimum, become mountain oriented. This requires eight hours of classes, two hours of flight above 8,000 feet and a landing at the town of Leadville, CO, which has the highest airport in North America (10,000+ feet). Because all aviators at Ft. Carson fly to Leadville, the 4th Brigade has become affiliated with the town of Leadville and the home of the original 10th Mountain Division.

Most of the missions that are flown at the high mountain elevations are flown by the CH-47's of the 179th. The limited performance of the UH-1 in the mountains severely restricts its use in search and rescue so the "hooks" perform that mission. The high OGE hover work, strong, tricky winds and the life or death situation makes this a very demanding mission. The acceptance of the CH-47D this spring will add a new dimension to both the support of the 4th Division and the numerous search and rescue missions.

As indicated, the schedules for the 4th Infantry Division (Mech) and the 4th Aviation Brigade are extremely full. Other missions

such as Reserve Component support, support for NORAD, the Air Force Academy, the Space Operations Center and Peterson Air Force Base fill in any free time. No matter how busy the schedules become, the soldiers of the 4th Aviation Brigade, "IRON EAGLES", will be equal to the task. Tough, demanding, and safe air operations are the standard at Ft. Carson. Unquestionably, we are "ABOVE THE REST". ■■■■

Devils - Cont. from Page 30

forts are being made to increase the size of current training areas to accommodate multi-ship and air assault training.

Of prime consideration here is that all actions mentioned can be instituted within the excellent standards previously maintained. Our safety record is an impressive 4 2/3 years and 47,000 hours without class A or B mishap; this record led to the presentation of the FORSCOM Commander's Trophy in August 1986.

Our safety strengths are a reflection of the command emphasis placed on aviation safety by MG K.C. Leuer, the Commanding General of the 5th Infantry Division (Mechanized). With such command influence, improved airspace management, better maintained facilities and the insistence on "Doing What's Right," Ft. Polk continues to be a safe place to train.

The mission following activation has been to aggressively pursue the full potential of the Brigade's doctrinal capabilities. To this end, each member of the command is working diligently to make this the most versatile Aviation Brigade in the Army and the cornerstone of maneuverable combat power for the 5th ID (M) "Red Devils." ■■■■

JAAT - Cont. from Page 31

78th to conduct short-field operations on Finthen Army Airfield's 3,300 foot runway as an added training opportunity. Although daily joint briefings were impossible, the squadron's aviators and staff conducted one joint brief with each AHB during the four days of maneuver.

These briefings provide a forum for an exchange of ideas on JAAT tactics and give each service's aviators an opportunity to gain the perspective of the other. Gun camera and TRTG films highlight action from both the aerial and ground perspectives of the engagement. Gun camera films are later provided to the deployed OPFOR so that an appreciation for their vulnerability to air attack can be gained.

The 8th and 18th AHB's are either employed in direct support of a notional ground maneuver brigade or under control of the 4th Brigade. Sections of the DIVARTY Support Platoon were placed OPCON to the AHB's as well as a section from the Brigade's 4th Assault Helicopter Company to support FARP movement. JAAT operations are practiced against the deployed OPFOR in deep, close-in, and rear operations scenarios.

Maneuver throughout the exercise is "controlled" for both sides by an Exercise Control and Evaluation Cell through a series of FRAGO's and operations reports. Engagement of OPFOR systems (ADA and maneuver) by indirect and direct fires results in their required displacement to new locations. Due to the training value which would be lost, there is no "kill removal" of aviation elements. MILES/AGES, supplemented by an FM control net adjudicates direct fire battles,

with only the FM control net used for indirect fire engagements.

These intense JAAT training events are required to periodically hone this perishable skill. They attempt to combine all the assets necessary to plan, coordinate and execute JAAT missions in a battlefield environment. Where possible, simulation is replaced by the actual system which performs the wartime function (i.e., TACFIRE shelter for fire missions). Although not essential, a MILES/AGES-equipped OPFOR provides realism to the training.

Other USAREUR aviation units have recently adopted the JAAT Week idea while Pathfinder aviators of the 4th Brigade prepare for JAAT Week VI this Spring. ■■■■

ADOCS - Cont. from Page 34

flown in this development phase through 1 January 1987.

During the User Demonstration Phase, a wide variety of aviators representing the Army, Navy, Marines, Air Force, NASA, the rotorcraft industry, and media will be invited to participate in the ADOCS flights. This cross section will include senior and general officers, junior commissioned and warrant officers, operational pilots, as well as staff officers from various commands.

A detailed Pilot Qualification Questionnaire will serve to define the pilot baseline as well as screen qualifications such as military, sidearm controller, and NOE experience. Demonstration flights will be preceded by both a detailed DOCS system hardware description and control law/handling qualities flight briefing.

All aspects of the DOCS system, the demonstrator aircraft, the flight plan and maneuvers to be flown will be briefed in accordance with all current directives, safety being of paramount impor-

tance in all operations.

During the flight, the guest aviator will fly in the three axis + one axis (collective) configuration, i.e., no pedals. Yaw control is accomplished by twisting the right sidearm controller grip. The control laws he will experience were designed for the Scout/Attack (LHX type) mission tasks. He will experience stability in an aerial platform at hover and low speed flight unparalleled by any aircraft in the current inventory. Altitude hold, velocity stability, and automation never before experienced by most of these pilots will be flown during up-and-away and instrument work. The "hands-off" capability demonstrated during all modes of flight (including hover) will prove to be a real "workload reducer".

Following these flights, a very important detailed debriefing will occur. Aviators will comment on cockpit design features such as controller placement and comfort, aircraft controllability, and task performance. Each task flown will be rated and overall comments solicited. This information will be consolidated and sorted, providing valuable input to the evolving Army efforts in the advanced flight control research and development insuring our success in future programs and more importantly, success on the battlefield of tomorrow! ■■■■

Volcano - Cont. from P. 36

BLACK HAWK Volcano system is scheduled to be completed by September 1987. Standard type classification and a production decision will be made in November 1987, with initial deliveries to the 9th Infantry Division projected for late 1989. Current plans call for the procurement of 170 BLACK HAWK Volcano systems. ■■■■

BRIEFINGS

The U.S. Army Aviation System's Command's Aviation Applied Technology Directorate at Ft. Eustis, Virginia, has awarded a contract to **Aerolift Inc.**, to evaluate new applications for blimps in Army service. The contract is for the preliminary design of a heavy-lift derivative of the company's lighter-than-air concept known as the Cyclo-Crane. The design resulting from this effort will be evaluated for cost effectiveness in meeting the Army's cargo handling missions.



ABOVE: An AH-64A APACHE clad in glove-tight polyethylene ready for shipment to Germany. The plastic covering, originally designed to cover boats for winter storage, is applied to the APACHES using heat-shrink guns. The process takes four people four hours to complete.

The U.S. Army Armament Research and Development Center awarded a \$175 'smart' weapons contract to the **Lockheed-Georgia Company**. The contract is to define, design, develop, and demonstrate a pilotless aircraft that can fly over battle areas too dangerous for manned systems, then launch so-called 'smart' weapons.

The **Hughes Aircraft Company** recently dedicated a \$3 million repair operation which will support the use of the U.S. Roland air defense system by the New Mexico Army National Guard. The Hughes Consolidated Repair Facility is expected to save an estimated \$1 million annually for the U.S. Army Missile Command (MICOM).

Two contracts have been awarded to the **General Electric Co.** and **Sundstrand Turbomach** for the evaluation of emerging materials for cold section of small gas turbine engines. The contract should provide the groundwork for future material applications pertaining to components for small Army gas turbine engines.

The first flight of **Beech Aircraft Corporation's** third Starship prototype occurred on January 5, 1987 near Wichita, Kansas. Two earlier Starships have accumulated well over 300 hours of flight test time. FAA certification is expected this year.

AVIATION COMMAND CHANGES

The following changes from MILPERCEN are subject to change:

COL Haspard R. Murphy — Commander, Aviation Training Brigade, Ft. Rucker, AL. To become Area Commander, 1st ROTC region, Ft. Bragg, N.C. Effective May 1987.

COL Bobby R. Adams — Staff Specialist, OSD. To become Aviation Officer, HQ, AMC, Alexandria, VA. Effective January 1987.

LTC (P) Robert D. Kerr — to become Aviation Officer, HQ, TRADOC. Effective July 1987.

LTC (P) Thomas R. Genetti — to become Aviation Officer, 6th Army, Presidio of S.F. Effective August 1987.

LTC (P) Gary D. Johnson — Aviation Weapon System

Logistics Officer, ODCSLOG. To become Director of Maintenance, AVSCOM. Effective January 1988.

COL Larry Snook — Inspector General, AVSCOM. To become AH-64 Fielding Liaison Officer, Ft. Hood. Effective Jan. 1987.

LTC (P) Theodore A. Duck — to become Director of Evaluation and Standardization, Ft. Rucker, AL. Effective Nov. 1987.

COL William J. Blair — Director, Red River Army Depot. To become Commander, Corpus Christi Army Depot. Effective January 1987.

COL Thomas A. Walker — Commander, Corpus Christi Army Depot. To become Asst. Commandant, USA Logistics School, Ft. Eustis, VA. Effective January 1987.

Otis (Continued from Page 2)

an Army Group. It could involve movements of troops into rear areas, or in reaction to enemy penetrations. All the while the proper mix of Army Aviation assets allows the protection of troops in contact along the FLOT.

At the tactical level, the system is virtually unconstrained by geography within its radius of operation. This allows the utilization of terrain to decrease vulnerabilities and to increase surprise. Technology is producing generations of weapons with massive shock power and immediate effect, and under all weather conditions. Held in reserve and committed at the decisive point, aviation assets can defeat breakthroughs or rear area attacks. Whether viewed from the operational or tactical perspective, the key is to develop the doctrine to maximize all the "devices" technology gives the commanders. The issue is one of maneuver — that is, firepower and movement. The helicopter is the twentieth century version of the desire to influence the battle with shock action at the time and place desired.

Historical perspective

These were the same considerations demonstrated at the operational level by Frederick the Great with his "lightning" attack on Silesia in 1740; and at tactical level by his emphasis on disciplined drill and flanking movements. Greatly outnumbered by his collective opponents, Frederick was driven to rapid shifts across his area of operation. On the battlefield, his emphasis on drill gave him the ability to maneuver otherwise unwieldy massed battalions that his enemies could only marvel at. But his revolution dealt with the "boot". The mechanized version of the quest for this flexibility is of course realized in the tank and related fighting vehicles. Although not exploited, the allied Spring offensive of 1918 — using tanks — showed the potential for mobility, surprise and hitting power that was grasped by a following generation of commanders. The culmination of the evolution has been the addition of the vertical dimension.

The tendency could be to see aviation as the solution to all problems. This, of course, is not the case. As with any system, counters are developed. Tanks cannot operate alone other than

in exceptional situations. This is a lesson demonstrated again in the initial counterattacks of the 1973 Israeli-Egyptian War.

The helicopter has the fire power of a tank, the range and mobility of an aircraft, and the versatility in missions of a tracked vehicle. But alone it cannot succeed. We need the vision to see how best to fit this system into the combined arms team. I say "we" because the solution is hardly restricted to Army Aviators.

The key has to be the education and training of battle commanders and their staffs. The aviators are believers. In the case of England and the tank, it is today incredulous that the war of attrition turned down COL Swinton's proposals. American history before World War Two shows that the U.S. tank program also met opposition from portions of the military establishment.

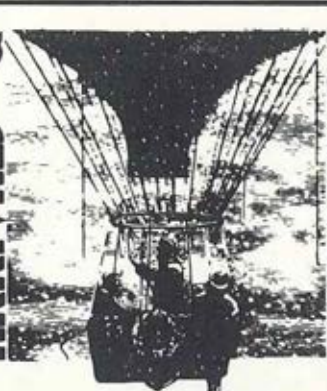
Integrating new technology

In the time of Frederick the Great, the other major issue of battle was the integration of artillery into the cavalry and infantry forces. Artillery was very expensive, and not easily transported. Even though Frederick knew the value of artillery, it took the genius of Napoleon to exploit it. As in the case of Army Aviation today, the artillery forces were then capable. The key was to improve technology (decreased weight, increased reliability) and to employ "devices" already existing (horses and wagons for mobility), while working out and teaching commanders the doctrine for bringing the system to bear on the battle in a timely and massive way. Army Aviation does have its limitations. It also has revolutionary potential that is up to this generation of commanders to understand.

The future for Army Aviation is very bright. I look to the resolution of the factors related to the battlefield integration and use of aviation as an exciting challenge. We have hardly begun. We are today in the development of Army Aviation where the tank was in the 1930s. The principal difference now is that we are fully committed to the concept of aviation as a full member of the combined arms team. Let's work on the details of its employment in this role at the tactical and operational levels to exploit its full potential.

Let's also not be complacent. As Richard Simpkin explained, it was from Soviet practice that he drew the linkage among Rotor, Track, and Boot. ■■■■

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PRINT NAME OF RECRUITER

Chapter Speakers



**LTG
Crosbie
E.
Saint
Feb. 4**

**MG
Fred
E.
Elam
Feb. 19**



**COL
Sherwood
C.
Spring
Feb. 3**

**COL
Jack
E.
Easton
Feb. 25**



**Brennan
"Ray"
Swindell
Mar. 9**

Each month, some six to ten key military, industry, and government leaders address AAAA's 54 worldwide Chapters professionally.



AAAA Calendar

February, 1987

■ ■ Feb. 3. Colonial Virginia Chapter. Professional luncheon meeting. COL Sherwood C. (Woody) Spring, NASA astronaut, guest speaker. Ft. Eustis O-Club.

■ ■ Feb. 3. Delaware Valley Chapter. Late afternoon "social" meeting (Beer and chips). Ponderosa Tavern Marina, Ridley Park, Pa.

■ ■ Feb. 4-5. 13th Annual Joseph P. Cribbins Product Support Symposium sponsored by the Lindbergh Chapter. LTG Crosbie E. Saint, CG, III Corps & Ft. Hood, keynote speaker. Park Terrace Airport Hilton, St. Louis, Mo.

■ ■ Feb. 6-7. AAAA National Awards Committee meetings. Selection of 1987 AAAA National Scholarship Winners and CY86 AAAA National Award Winners. Ft. Myer, Va.

■ ■ Feb. 5. Checkpoint Charlie Chapter. General Membership Meeting. Aviation Detachment Class, TCA.

■ ■ Feb. 15-17. Chesapeake Bay Chapter. 3rd Annual Seven Springs, Pa., Ski Trip.

■ ■ Feb. 19. Colonial Virginia Chapter. Professional luncheon meeting with MG Fred E. Elam, CG, Ft. Eustis, and Commandant, USAALS, as guest speaker. Ft. Eustis O-Club.

■ ■ Feb. 24. Lone Star Chapter. After dinner professional meeting. Presentation on the "Aquila RPV Program" by Lockheed Aircraft Corp. OCS auditorium, Camp Mabry, Austin, Tex.

■ ■ Feb. 25. Edwin A. Link Memorial Chapter. Professional-social dinner meeting. COL Jack E. Easton, Director of Training Development, USA-ANVC, guest speaker. Morey's Restaurant, Binghamton, NY.

■ ■ Feb. 25. Stuttgart Chapter. Mid-afternoon professional-social membership meeting. Ralph E. Pineo, III, Sr. Customer Support Representative, Bell Helicopter Textron, guest speaker. Nellingen (NOSEC) Club.

■ ■ Feb. 27. Corpus Christi Chapter. "Barbecue & Dance." Dancing to the Buckskins. Members only. Moravian Hall, Corpus Christi, Tex.

March, 1987

■ ■ Mar. 9. Rhine Valley Chapter. Professional dinner meeting. Brennan "Ray" Swindell, V.P., Military Business Developments, Bell Helicopter Textron, guest speaker. Mannheim Officers' & Civilians' Club.

■ ■ Mar. 10. Chesapeake Bay Chapter. Professional luncheon meeting. COL Rod Lindsay, Cdr, 29th ATC Gp, MDARNG, guest speaker. Edgewood Officers' Club.

■ ■ Mar. 18-20. 1987 AAAA US-AREUR Region Convention at the Armed Forces Recreation Center, Garmisch, Germany.

April, 1987

■ ■ Apr 8-12. 29th AAAA National Convention. Five Ft. Worth area hotels with the 1987 professional sessions, Membership meeting and Luncheon, Awards Luncheon, Awards Banquet, and military-industry exhibits at the Tarrant County Convention Center. For Registration and Hotel Reservation Forms, write to: AAAA, 1 Crestwood Road, Westport, CT 06880.

NOTE:

AAAA members may reach the Nat'l Office by FAX 24 hours a day by phoning (203) 222-9863.

AAAA Overview



Two of the three front-running Chapters in AAAA's year-long **Membership Enrollment Competition** fell by the wayside in the last 30 days of the Jan 15, 1986-Jan 15, 1987 contest.

Taking over first place with

category with a net gain of 139 new members.

The upstate N.Y. Chapter will receive a \$648 check at the April 9 AAAA Convention General Membership Luncheon in Ft. Worth, Tex. The check includes a \$300 first

Morning Calm, Edwin A. Link, and Lone Star Chapters win "Enrollment" prizes

substantial last month gains, Korea's **Morning Calm Chapter** won the "Master Chapter Competition" open to the 17 Chapters with 225 or more members by posting an annual net gain of 230 members! The payoff? The first prize cash award of \$400, and a \$600 "per member" bonus, calculated at 230 X \$2.50 per enrollee gained.

Also surging in the last month was the **Edwin A. Link Memorial Chapter** (Binghamton, N.Y.) that blew by its three USAREUR competitors and topped the "Senior Chapter"

place cash prize.

The Austin, Tex., **Lone Star Chapter**, ran in first place from pole to pole during the year and won the marbles for the "AAAA Chapter" category that covers the 17 Chapters having between 25 and 111 members.

It wound up the year with a net gain of 92 members and this effort netted the Texans some \$430 — a \$200 first place cash prize and a "per capita" gain of \$230 for its 92-member net gain.

Thirty-three of AAAA's 52 Chapters posted '86-'87 gains.



CHAPTER SLATE: Wings of the Devil Chapter officers are shown after a Ft. Polk, La. meeting. From L-R are LTC John B. Alden (Pres), MAJ Fred E. Brown (SrVP), CPT (P) Michael A. Antonelli (Sec), CPT Joseph L. Bradley, Jr. (Trea), CW3 Bernard Krasowski (VP, Memb), and CPT George R. Smith, III (VP, Prog).

New Chapter

Charter Member LTC Carl E. Bobo, Jr., Ret., reports that he's obtained State of Ohio incorporation papers for a "Wright Brothers Chapter" and that he expects the new membership org'n "to be fully activated in time for the 1987 Convention."

Under discussion

Among the items on the AAAA National Awards Committee's Feb. 6-7 agenda are proposals calling for a "Best Aviation Support Unit of the Year Award", AAAA sponsorship of an "Annual Award to the Outstanding USMA Graduate Selecting the Aviation Branch", and the reinstatement of the awards program providing annual "Certificates of Achievement" and Plaques to "Outstanding Individuals and Units" in the ATC community — a '74-'85 program initiated by the late LTG Allen M. Burdett, Jr., while CG at USAVNC.

New Officers

Alaska's Northern Lights Chapter recently had a "clean sweep and hosedown" electing a full slate of new officers. Now installed are MAJ William L. Vogel (Pres), CW4 Kevin Campbell (Sr VP), 1LT Stephen N. Brace (Sec), CPT George A. Hicks (Trea), MAJ David H. Schock (VP, Memb), and CPT Charles K. Welliver (VP, Prog).

Five new Rhine Valley Chapter officers are "in the saddle". They are CW4 Jerry Shirley (Sr VP), 1LT Jeffory A. Perkins (Sec), CPT Frank S. Petty (Trea), MAJ Larry (Continued on Page 47)



Final Chapter Standings for the '86-'87 Enrollment Competition



The 17 Master Chapters as at Jan. 15, 1986

Prizes: 1st—\$400; 2nd—\$300; 3rd—\$200

#	Name of Chapter	Gain	Bonus
1	Morning Calm.....	+ 240	\$1,000
2	Thunderhorse Chap.....	+ 143	\$658
3	Lindbergh Chapter.....	+ 108	\$470
4	Monmouth Chapter.....	+ 67	\$168
5	Washington DC Chap.....	+ 49	\$123
6	S. California Chapter.....	+ 35	\$88
7	Colonial Va. Chapter.....	+ 21	\$53
8	Delaware Valley Chap.....	+ 15	\$38
9	North Texas Chapter.....	+ 2	\$5
10	Connecticut Chapter.....	+ 0	\$00
11	Phantom Corps Chap.....	- 12	\$00
12	Old Ironside Chapter.....	- 22	\$00
13	Ft. Bragg Chapter.....	- 23	\$00
14	Air Assault Chapter.....	- 30	\$00
15	Rhine Valley Chapter.....	- 99	\$00
16	Aviation Center Chap.....	- 247	\$00
17	Corpus Christi Chap.....	- 606	\$00

The 17 Senior Chapters as at Jan. 15, 1986

Prizes: 1st—\$300; 2nd—\$200; 3rd—\$100

#	Name of Chapter	Gain	Bonus
1	Edwin A. Link Memorial..	+ 139	\$648
2	Hanau Chapter.....	+ 112	\$480
3	Stuttgart Chapter.....	+ 82	\$305
4	Taunus Chapter.....	+ 74	\$185
5	Coastal Empire Chap.....	+ 45	\$113
6	Mt. Rainier Chapter.....	+ 32	\$80
7	Greater Atlanta Chap.....	+ 28	\$70
8	Suncoast Chapter.....	+ 6	\$15
*9	Citadel Chapter.....	+ 3	\$8
*9	Chesapeake Bay Chap...	+ 3	\$8
11	Wings of the Marne.....	+ 2	\$5

12	Chicago Area Chapter....	- 2	\$00
13	Indiantown Gap Chap....	- 8	\$00
14	Schwaebisch Hall Chap..	- 10	\$00
15	Jack H. Dibrell Chapter..	- 14	\$00
15	Monterey Bay Chapter....	- 14	\$00
17	"Follow Me" Chapter....	- 38	\$00

*Tie

The 18 AAAA Chapters as at Jan. 15, 1986

Prizes: 1st—\$200; 2nd—\$100; 3rd—\$50

#	Name of Chapter	Gain	Bonus
1	Lone Star Chapter.....	+ 92	\$430
2	Mainz Chapter.....	+ 82	\$305
3	Arizona Chapter.....	+ 70	\$225
4	Leavenworth Chapter.....	+ 33	\$83
5	Northern Lights Chap....	+ 30	\$75
6	Tennessee Valley Chap..	+ 26	\$65
7	Wings of the Devil.....	+ 20	\$50
8	Cedar Rapids Chapter....	+ 17	\$43
9	Pikes Peak Chapter.....	+ 10	\$25
10	Indianapolis Chapter.....	+ 3	\$8
11	Mid-America Chapter.....	+ 2	\$5
12	Ozark Mountain Chap....	+ 0	\$00
13	Checkpoint Charlie.....	- 1	\$00
14	Nurnburg Chapter.....	- 3	\$00
15	Tar Heel Chapter.....	- 5	\$00
16	Bonn Area Chapter.....	- 6	\$00
17	Aloha Chapter.....	- 7	\$00
18	Tu-Can Chapter.....	- 46	\$00

*Cash prizes are included in the totals appearing above and are based on the Chapter's final Jan. 15, 1987 membership total. The "per capita" bonus is derived by multiplying \$2.50 X the net memberships gained. Bonus totals are rounded out to the next highest dollar.

Individual Enrollment Prizes

Three NEW Enrollment Competitions were initiated on Jan. 15, 1987, and will end on Jan. 15, 1988. The separate contests will return \$300 cash and \$350 in '88 Conven-

tion freebies. The TOP GUN in the "Individual", "Corporate", and "Sustaining" membership categories will be cited at the 1988 Convention's Membership Luncheon.

New Officers (Cont.)

Ginder (VP, Prog), and 1SG Hubert J. Futrell (VP, Enl Aff).

Elected as Sr VP at the Colonial Virginia Chapter was LTC Samuel L. DeLoach.

Ft. Ord's Monterey Bay Chapter has five new officers: COL Billy Hall (Pres), LTC Jay Currin (Sr VP), 1LT Joann Yvon (Sec), 1LT Kerry Tomasevich (Trea), and CPT Cynthia Milla (VP, Prog).

"Aviation Soldiers"

AAAA "Aviation Soldiers of the Month", as selected by its Chapter activities, include:

Aviation Center Chapter: SGT Dale W. Barnes (Nov) (See photo this page).

Hanau Chapter: SGT Bill R. Pope (Dec 86).

Tanus Chapter: SP4 Kevin G. Werry (Dec 86).

Thunderhorse Chapter: SP4 David M. Radue (Dec 86).

Chapter-selected "Soldiers of the Month" receive a complimentary one-year AAAA membership from the National Office.

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NCO Cited

CSM Tilden R. Kirkland (r.), CSM, USA, AVNC and Nat'l Member-at-Large, AAAA Nat'l Executive Board, presents a one-year AAAA membership to SGT Dale W. Barnes, Avn Center Chapter 'Soldier of the Month.'



AAAA Calendar

Late Listings

■ ■ Feb. 25. Tucan Chapter. Late afternoon business-social meeting. Chapter elections, refreshments. Top 3 NCO Club, Howard AFB, Panama.

■ ■ Mar. 4. Monterey Bay Chapter. Late afternoon professional-social meeting. BG Rodney D.

Wolfe, Assistant Commandant, USAAVNC/ President, Avn Cen Chapter-AAAA, guest speaker. Hanson Theater. Ft. Ord, Ca.

■ ■ Mar. 11. Thunderhorse Chapter. Late afternoon business-social meeting. Planning for '87 Garmisch attendance/participation. Wives welcome. Fulda Community Club.

Lindbergh Chapter holds 13th Annual Product Support Symposium



"Excellence in Army Aviation Readiness" served as the theme for AAAA's 13th Annual Joseph P. Cribbins Product Support Symposium sponsored by the Lindbergh (St. Louis) Chapter, Feb. 4-5.

The CG, III Corps and Ft. Hood, LTG Crosbie E. Saint, served as the Symposium's keynote speaker while GEN Maxwell R. Thurman, Vice Chief of Staff, US Army, was the principal speaker at the "Industry Awards Dinner" on Feb. 4.

The day-and-a-half unclassified Symposium covered a variety of topics, to include:

"AH-64 Fielding, Supportability, & Readiness"; BG William H. Forster, PM-AAH; and Jerry Sullivan, VP - Product

Support, MDHC.

"A Status Report on 1986 Items"; Joseph P. Cribbins, Chief, ALO, ODCSLOG; MG Richard E. Stephenson, CG, USAAVSCOM.

"The Prime Contractor's Role in Readiness"; BG John H. Stanford, DCG, AVSCOM; William W. Brown, President, MDHC; William P. Jones, VP, Customer Support & Business Development, Boeing Vertol Company.

Charles C. Crawford, AVSCOM's Technical Director, covered the "Technical Innovations related to Readiness" while BG (P) Ronald K. Andresen, PM-LHX, provided the 1987 Product Support Symposium attendees with an "LHX Program Overview."

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