Maintenance and Product Support

FOCUS: MAINTENANCE AND PRODUCT SUPPORT

ARMY AVIATION

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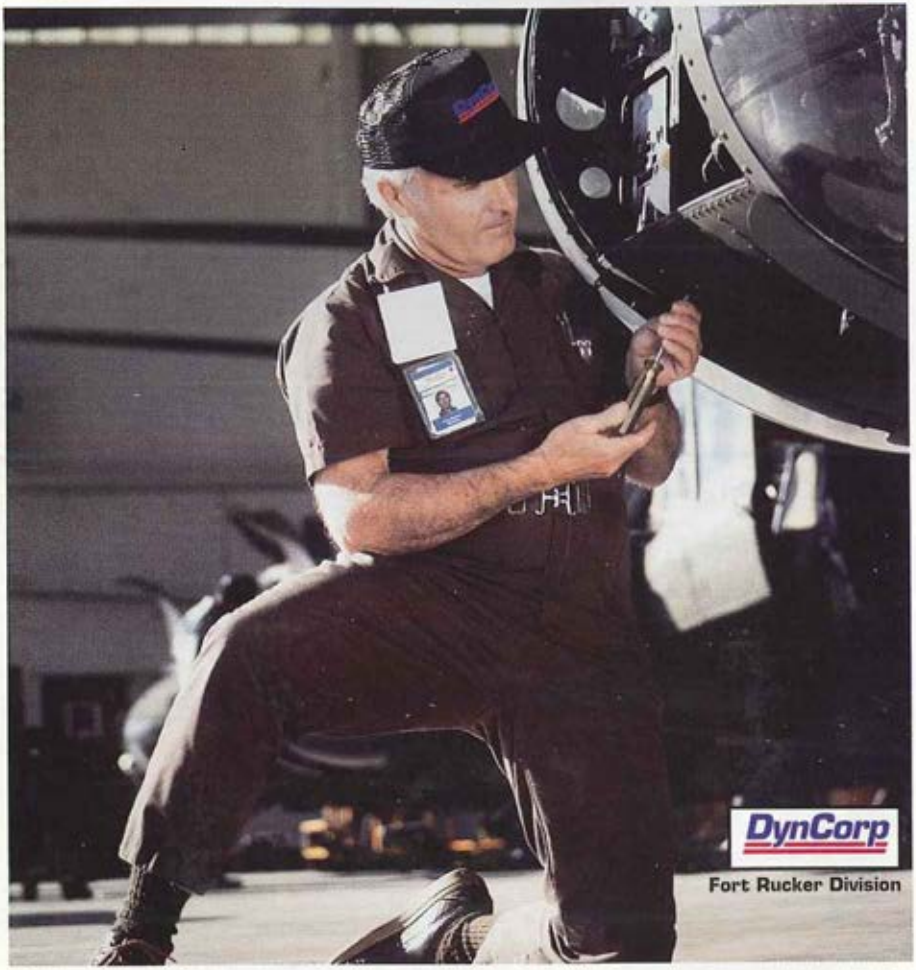

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FEATURE ARTICLES

SPECIAL FOCUS: Maintenance

DEPARTMENTS

FRONT COVER

Paid advertisement: *DynCorp mechanic works on the nose of a CH-47D Chinook at Ft. Rucker, Alabama.*

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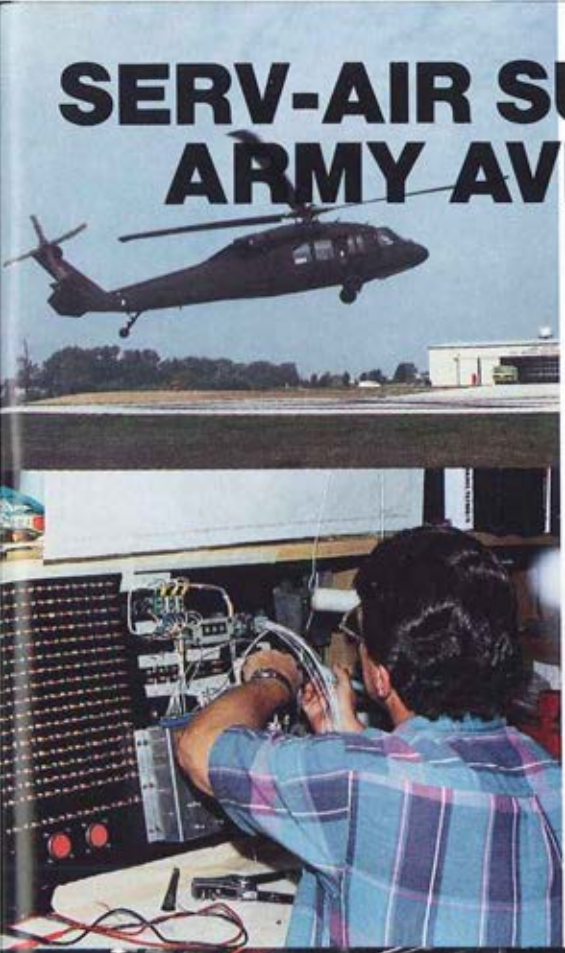

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FORTHCOMING ISSUES

March-April 1993 — AAAA Annual Convention Issue.

May 1993 — AAAA Convention Program Review and Photo Report

Briefings

GEN Hamilton H. Howze, Ret., has authored a new book entitled ***The Tragic Descent: America in 2020***. The book discusses current American trends in areas such as morality, crime, education, pollution, health care, welfare, and government, and projects the impact these trends will have on the future American lifestyle. Featuring a foreword by **GEN William C. Westmoreland**, ***The Tragic Descent*** is available from the Summit Group, 1227 West Magnolia, Suite 500, Fort Worth, TX, 76104, Telephone: (800) 875-3346.

Acme Electric Corporation has received an order for its advanced Fiber Nickel Cadmium (FNC) battery systems to be installed on U.S. Army AH-64A Apache attack helicopters stationed at Ft. Rucker, AL. The order, which was placed by DynCorp, is valued at $306,000. Delivery of the FNC batteries and charger units will take place in the next few months.

Four employees of the **Aviation Applied Technology Directorate**, Ft. Eustis, VA, received the Director's Awards for their outstanding contributions during FY 92. They are **Winston M. Adams**, an aeronautical engineering technician assigned to AATD's Safety and Survivability Division; **Treven E. Baker**, an aerospace engineer assigned to the Reliability, Maintainability, and Mission Technology Division; **Olga M. Gonzalez**, budget assistant assigned to the Management Service Division; and **Mykal S. Ryan**, an aerospace engineer assigned to the Reliability, Maintainability, and Mission Technology Division.

Members of the **123rd Combat Aviation Battalion and 406 TC**, Americal Division, are planning the unit's Vietnam reunion. Interested parties should contact **Leslie Hines**, 2403 E. Madison Avenue, Des Moines, IA 50317-4130, Tel: (515) 266-0858.

Allied-Signal Aerospace will provide a new maintenance service on its Auxiliary Power Units (APUs) as a result of agreements with the U.S. Army and Navy. Under a Contractor Depot Capacity (CDC) service, the company's Garrett Auxiliary Power Division in Phoenix, AZ will provide many of the APU services currently supplied by military depots. The CDC agreements cover the Garrett 36-55[H] used on the AH-64A Apache.

Lockheed Sanders' Defense Systems Division has announced the development and successful flight test of one of the world's smallest, full capability airborne Moving Target Indicator (MTI) radars. Developed entirely with company research and development funds, it is capable of detecting a person walking at a distance of six kilometers and large vehicles from distances up to 17 kilometers. The unit has been flight tested aboard a Bell 206C helicopter. Additional flight tests will be carried out in 1993.

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STRIPES ON THE FLIGHT LINE

Ready forces, experienced mechanics on the flight line, and units capable of mission accomplishment — this is our vision for Army Aviation and its supporting combat logisticians.

A well-equipped aviation warfighting team sustained by highly qualified and motivated mechanics is the key to attaining this vision. Training these mechanics for future wars and operations other than war is the mission of the Aviation Logistics School and the Army Aviation Center.

To accomplish this mission, the Aviation Branch has taken a hard look at our maintenance training strategy. As the Army restructures, we must scrutinize all areas and functions of aviation maintenance to achieve sound, safe, and efficient maintenance practices. To retain a quality force during a period of personnel reduction, units must have highly trained mechanics. Mechanics must be trained in diagnostics and repair; isolating faults by "swapping black boxes" cannot support a high technology force. Newly trained mechanics have top quality supervision along with the opportunity to practice their skills.

Commanders must provide soldiers the resources to accomplish on-sight repairs (materials, sufficient time and minimum distractors).

To properly maintain our increasingly complex aircraft, mechanics must have broadened maintenance skills and the opportunity to garner hands-on experience. The school can


The Army is looking for a new training helicopter. One that fulfills some basic requirements for a reasonable price. One that reduces overall training costs. And one that increases training effectiveness. Among all the contenders, only one can do so today.
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teach aviation maintenance skills but cannot provide the experience that can be gained only through practice.

Under our current force design, skill level 10 soldiers are trained at USAALS and USAAVNC to the apprentice level. Graduates proceed to their initial assignments where they are often assigned as crew chiefs for our modern aircraft. Such an assignment is demanding; most soldiers simply do not possess the experience needed to perform full crewchief duties on these modern flying systems.

The result is inexperienced individuals working on very expensive and technically sophisticated aircraft. The work is particularly complex and demanding in the electronics and armaments areas. Maintaining complex systems requires a lot of experience and technical savvy.

Personnel with more experience on the flight line will provide commanders the requisite senior maintenance personnel to diagnose and repair system components often without evacuation to higher level of repair. The U.S. Army Aviation and Troop Command report, "Investigation and Analysis of the Causes of Aircraft Downtime (UH-60)", dated September 1990, stated "the higher the grade level, the higher the level of experience that is brought to bear on the maintenance workload." This report also addressed the correlation between experience level in the units and faults per flight hour: "units with the higher levels of experience had the fewest number of faults per flight hour..."

"The 'Stripes on the Flight Line' concept was designed to change the way we train and assign aviation maintenance personnel."

The "Stripes on the Flight Line" concept was designed to change the way we train and assign aviation maintenance personnel. The concept is expected to result in more accurate troubleshooting and rapid repair at the AVUM level as we "grow" master diagnosticians. Our goal is to provide more efficient maintenance at the AVUM level. This will decrease the return of serviceable components to depot.

Ultimately, we hope to provide our warfighting assets with a crewchief capable of doing 90 percent of all aircraft repairs (minus armament/electronics) with 50 percent of Non-Mission Capable Main-

AN INTEGRATED TOTAL SYSTEMS APPROACH TO NTH TRAINING

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tenance (NMCM) faults corrected in the first 4 hours. This capability could be further increased to 75 percent in eight hours.

"Stripes on the Flight Line" will bridge the ever widening gap between hardware complexity and available skills. The old concept of fixing by replacement at the organizational level does not work; the deficiency, however, can be corrected by experience. For example, an experienced mechanic will be trained and authorized to perform simple repairs on an engine nose gearbox rather than replacing the engine. The result will be a more economical supply system, a savings of 80 percent of man-hours otherwise expended, and improved operational aircraft readiness.

Currently, 50% of maintenance downtime is attributed to troubleshooting; the amount of time invested in troubleshooting is inversely proportional to experience. To stream line maintenance operations, additional emphasis must be placed on the master troubleshooter; the senior soldier who does not move directly from maintenance into supervision and then into management but rather remains in a "hands-on" position well into his NCO years. Obviously, retaining this soldier at the unit level will carry additional costs; but these costs are offset by decreased aircraft downtime and higher operational readiness rates and improved warfighting capability.

Another spinoff of inexperience is our "false removal rates". This issue is easily understood when compared to automobile repair. A strange noise from the wheel area may actually be caused by the transmission. An inexperienced mechanic may needlessly replace wheel bearings and brakes only to discover later the real cause. This is why having a senior troubleshooter skilled in diagnostics will pay large dividends in our Branch. Faults can be quickly and accurately diagnosed and repaired, and aircraft returned to service.

An illustration of the above occurred during Operations DESERT SHIELD/STORM. Prior to the start of the ground war, we found that our soldiers/mechanics did not always have the experience needed in aircraft repair. Due to their inexperience in troubleshooting and maintenance, there was a high rate of diagnosing (guessing) and fixing by replacing Line Replaceable Units (LRUs).

During Operation DESERT SHIELD, contractors performed aircraft maintenance while soldiers performed details. In all cases, these contractors possessed special skills in one or two areas, while the Army had soldiers with limited skills in troubleshooting.

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- OH-58
- AH-1
- UH-60
- CH-47
- UH-1

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When units deployed at the onset of Operation DESERT STORM, contractors remained behind leaving aircraft maintenance to inexperienced and ill-equipped soldiers. Without the few soldiers experienced in troubleshooting and the contractors who accompanied them, we would have been unable to sustain prolonged operations.

A 5-phase proposal for the elimination of Additional Skill Identifiers (ASI) and the consolidation of MOSs has been developed to improve aviation maintenance effectiveness. This revolutionary approach to maintenance will result in the incorporation of ASI training into basic MOS training and eventually reduce the number of maintenance related MOSs to 14.

The benefits of such reductions include: improved management of Army personnel, enlisted aviation mechanics with broader maintenance skills, and increased flexibility in the assignment of maintenance personnel.

Our proposal for consolidation of MOSs is based on the missions of the aircraft and the projected retirement of the older aircraft. For example, training for the AH-1, the older attack helicopter, would merge with the training for the AH-64. The MOS 67Y would then be consolidated with the MOS 67R. While initial entry training for the 67R would increase, accrued benefits at the unit would far surpass the training costs. The unit commanders would have the flexibility to move their mechanics from aircraft to aircraft as needed, increasing effectiveness.

"Without the few soldiers [and contractors] experienced in troubleshooting, we would have been unable to sustain prolonged operations [during Operation DESERT STORM]."

Past management of ASIs has been relatively ineffective; soldiers were not always assigned where the desired ASI capability was most needed. We have currently incorporated the OH-58D ASI "W5" training into the basic MOS 68D 10 and 30 courses; AH-64 ASI "X1" training will be incorporated into these courses by Fiscal Year (FY) 95.

The schoolhouse will provide units 68D personnel who possess the skills of the present 68D graduate plus the specialized skills to function as mechanics on the OH-58D and the AH-64. This expanded domain will also provide the mechanic the skills to perform

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various tasks and the opportunity to challenge themselves to learn more.

In the past, soldiers with four or more different skill specialties were required to change an engine on an aircraft. Once implemented, we will be able to reduce the number of specialties involved to a maximum of two to perform the same procedure. As we continue to reshape our force structure for the next century, the number of personnel and aircraft in our inventory will be greatly reduced to offset these reductions. Our next generation of aircraft will feature greater technological complexity. Therefore, our soldiers we do train will be required to have a broader range of skills.

"Stripes on the Flight Line is a tool for achieving our goal of 90 percent operational readiness rates."

The "Stripes on the Flight Line" concept will provide technical and tactical proficiency throughout the total force. An observation made during job analysis data collection site visits to Reserve Components was that personnel with multifaceted skills were effective and satisfied in their jobs. Given good management practices, ample opportunity to enhance skills and gain experience, our enlisted personnel can achieve this same level of job satisfaction.

Technical and tactical proficiency does not come without a price. Unit manpower must be sufficient to complete the workload requirements; there must be adequate supervision of newly trained personnel in the unit; and finally, there must be a level of experience in the units to accomplish rapid and accurate diagnosis and decision making. This will require adjustments in our force structure and force modernization.

In the future, Army Aviation will be required to operate across the continuum of military operations. Regardless of where we are called to action, rapid and accurate repair of our aircraft is essential. In these days of diminishing resources, we must continue to strive for the most technically and tactically proficient force possible. For aviation, this means fielding the most sophisticated aircraft available with experienced maintainers.

General Maxwell Thurman, U.S. Army, Ret., discussed in his article, "Today's Victory and Tomorrow's Army," July 1991, the modernization program envisioned in the

mid-1970s, then referred to as "The Big Five." The big five were materiel acquisitions which the Army leadership identified as priorities to enhance our future warfighting capabilities. These systems included: the M-1 Tank, M-2/3 Infantry Vehicle, AH-64 Apache, UH-60 Black Hawk, and the Patriot Air Defense Missile System.

Aviation's Big Five are the modernized fleet of aircraft, two of which were included in the original Big Five. These include: Apache, Black Hawk, Chinook, Kiowa Warrior and the Comanche. The Stripes on the Flight Line concept focuses on the four currently fielded systems.

Stripes on the Flight Line is a tool for achieving our goal of 90% operational readiness rates. In order to maintain our strategic relevance, we must be able to bring all of the power of aviation to bear at a moment's notice. The "stripes" concept will get us there, giving the Army an unbeatable combination to face tomorrow's increasingly complex maintenance challenges.

★★

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

WE'RE STILL HERE!

An update from the Chief, Aviation Logistics Office, Office of the Deputy Chief of Staff for Logistics.

Some people are under the mistaken belief that when Mr. Joseph Cribbins, our long-time leader in Aviation Logistics, retired in August 1992, that the office retired also. This isn't true. I have been assigned as the new office Chief; an assignment I am very pleased to have. Although I am not an alumni of the Aviation Logistics Office, I have been involved in aviation logistics for most of my career.

I have been a helicopter pilot with the 101st Aviation Battalion, Republic of Vietnam; Flight Training Analysis and Instructor at Ft. Wolters, TX; Platoon Leader with the 123d Aviation Battalion, Republic of Vietnam; Aviation Advisor to the Reserve Component; Quality Assurance Branch Chief with the Defense Logistics Agency; Commander, Transportation Company (AVIM); Operations Officer; Commander, Transportation Battalion; Aviation Colonels Assignment Officer; Deputy Chief of Staff for Production at the Army Materiel Command; and prior to my current assignment, Commander, 45th Corps Support Group.

I am particularly pleased to be here at HQDA but I am not alone in the office.

LTC Donovan "Bruce" Bailey is our Aviation Logistic Support Officer who handles such projects as depot transition, aviation maintenance management, force integration, drug interdiction, and jet and fixed wing aircraft.

MAJ "Rick" Hatch is our Aviation Materiel Management Officer and

handles our budgeting, Special Technical Inspection and Repair (STIR) Program, hangar standardization, shelters, Special Operations, Aviation Intensively Managed Items (AIMI), and CH/MH-47 and MH-60 helicopters. Rick is scheduled for a new assignment in Korea this year, and will be replaced by MAJ Jim McGaughey. Another new member to the office this coming fall will be MAJ Versal Spalding.

MAJ Donald "Chip" Bridge is our Aviation Weapons Systems Logistics Officer handling aviation readiness and support systems, night vision devices, avionics, aviation logistics research and development, and the UH-60, UH-1, OH-58A/C, OH-6 and New Training Helicopter systems.

CW4 "Frank" Murtagh is our Aviation Weapon Systems Support and Safety Officer who handles all aviation safety matters, the Worldwide Aviation Logistics Conference, Sample Data Collection, Multinational Force and Observers, and the AH-64, OH- 58D, AH-1, and RAH-66 weapons systems.

Carolyn "Mom" Chapman continues as my Executive Assistant. With 28 years of experience in the office under her belt, Carolyn is the one constant source we all go to for information regarding aviation logistics. She not only knows where "the bones are buried, but also who buried them" and has total control over the functioning of the office. We have a great team — hard working and dedicated to making Army Aviation the best ever.

"The U.S. Army's deployment to Somalia once again highlights how important Army Aviation is to the success of the Army's mission."

The U.S. Army's deployment to Somalia once again highlights how important Army Aviation is to the success of the Army's mission. With aviation units deploying from both CONUS and OCONUS, air crews will be required to operate in a highly demanding environment. For those crews to be successful, Aviation Logistics must be provided on time and in the right quantity. The DA level office that monitors this effort, with a lot of help from the entire logistics community, is the Aviation Logistics Office of the Deputy Chief of Staff for Logistics (DCSLOG). This is the one office that looks at aviation personnel, parts, tools, money, and the other components of aviation readiness on a continuing basis.

The mission of this office is to act as a single point of contact on all

aviation matters for the DCSLOG and as a single point of contact for all aviation logistics matters for the Army Chief of Staff. Our job is to integrate all the logistics functions of aviation logistics personnel, maintenance, and supply into a supportable, sustainable, and maintainable package that supports aviation readiness. We are responsible for aviation logistics policy and those portions of the supply and maintenance regulations that pertain to aviation.

One of the critical functions of the office is to act as the DCSLOG proponent for all aspects of the Army Aviation Safety Program. Most aviation safety of flight involves materiel. Therefore, the Aviation Logistics Office plays an important staff coordination role in aviation safety fixes.

Aviation, like the Army's other branches, is facing exciting challenges as we reshape the force to meet the challenges and realities of the 21st century. We will become more of a CONUS based, power projection aviation force, all the while maintaining a highly trained and ready force to meet the challenges of a DESERT STORM or a RESTORE HOPE. Only Aviation can provide the necessary support in the critical time limits these operations demand.

All of us must become more proficient in logistics. As a power projection Army, we must practice the logistics functions of manning, arming, fueling, fixing, moving, and sustaining the force. If we cannot talk the logistics talk and understand how the logistics system works from the "foxhole" to the "factory" level, we probably will not know why our aircraft parts are not showing up on the flight line. We must all become experts in logistics. Logistics helps win battles.

Aviation is going through an important period in its evolution. Programs such as system modernization, fielding of a new training helicopter, retiring older aircraft, drawing down the force, and redistributing the aircraft still continue. We still have to maintain aircraft readiness and deal with personnel turbulence caused by force reduction programs. This indicates that those of us in Aviation in general and in Aviation Logistics in particular have to lead and manage like never before. Aviation is healthy, but as we reshape the Army, Aviation must and is taking a hard look at itself to ensure it is ready to lead the Army into the next century.

I am pleased to be here in the DCSLOG Aviation Office. The office stands ready to help keep Army Aviation trained and sustained to do its mission wherever and whenever it is called upon.

★★

COL Kindred is Chief, Aviation Logistics Office, Deputy Chief of Staff for Logistics, Washington, D.C.

BY RICHARD L. DARLING

ARMY AIRCRAFT FLEET UPGRADE

A review of ATCOM efforts to upgrade the fleet in the face of declining budgets.

In addition to many aircraft refurbishment programs currently being implemented by the Aviation Program Executive Office (PEO) in St. Louis, the Aviation and Troop Command (ATCOM — previously AVSCOM and TROSCOM) is spearheading a program to accelerate the upgrade of fleet aircraft to their latest war fighting capability.

Aircraft and component modernization becomes more urgent due to the inevitable downsizing of the fleet and limited procurement of new weapon systems. Operations DESERT STORM and DESERT SHIELD re-emphasized that we cannot wait for deployment notification to upgrade our aircraft. We must be prepared to respond to any world-wide crises with the latest fighting power.

Upgrades are being accomplished by incorporating important configuration changes by Modification Work Order (MWO). Currently 97 different MWOs applicable to the fleet have not been incorporated on all aircraft. Included in these are 30 safety related changes, 49 changes that improve the war fighting capability, and 18 that improve sustainment. The safety MWOs include:

- engine crew and flight control protection from in-flight fires on the CH-47D Chinook;
- Electro-Magnetic Environment (EME) modifications to prevent uncommanded flight control movements on the UH-60 Black Hawk;
- fuel filter changes to prevent

fuel starvation on the OH-58 Kiowa;

- Target Acquisition Designation Sight (TADS) Filter Optics Assembly installation to furnish increased eye protection for the co-pilot gunner on the AH-64 Apache.

Important war fighting capability changes include the Target Acquisition Designation Sight/Pilot Night Vision Sensor (TADS/PNVS) and Optical Improvement Program (OIP) on the AH-64 Apache. Significant communication and navigation upgrades to all aircraft also remain unincorporated.

The MWO application program has been adversely impacted by recent policy and procedural changes. The potential serious implication requires decisive action and support by the whole Army Aviation Community. As a result, the MWO Acceleration Program (MAP) has been established within the Directorate for Maintenance.

MAP is a temporary program conceived out of necessity and innovation. The MAP program originated as a result of seemingly insurmountable problems:

- *The MWO application program was 60% behind schedule.* MWO application schedules are normally on MWO priority (Emergency, Urgent, and Routine) and the availability of kits and funding. There are 32,000 MWOs and 1,000,000 manhours of work scheduled for completion on 8,500 aircraft in 1993. The majority of the kits are available for incorporation.
- *A $40 Million application funding shortfall exists.* Approximately $100 Million worth of kits were procured and await installation.
- *Existing funding will expire in Fiscal Year 1993, long before planned program completion.* Congressional full funding policy requires the acquisition, delivery, and installation of MWO kits within a three year window.
- *The Special Technical Inspection and Repair (STIR) program is behind schedule.* STIR was originally scheduled to complete in September 1993. STIR is applying outstanding MWOs while conducting extended Phase Inspections, and removing corrosive sand from structures and components of some 1100 aircraft that participated in Operations DESERT SHIELD and DESERT STORM. The STIR program is modifying less than 15% of the total aircraft fleet.
- *The non-availability of aircraft due to mission requirements and readiness reporting procedures.* Currently all MWOs are being issued as "50" series (Depot) level due to the inherent flight safety implications and the need for better control. Due to a change in AR 700-138 (Army Logistics Readiness and Sustainability), units must report aircraft undergoing Depot

level maintenance as "on hand" on the DA 1352 (Army Aircraft Inventory, Status, and Flying Time). Consequently the Operational Readiness (OR) rate of aviation units is adversely affected if aircraft are grounded for MWO application. Understandably, this makes unit commanders reluctant to down aircraft for MWO application unless the change is perceived as highly desirable.

Our basic approach to these problems includes:

- notify the field of the problem;
- establish a task team to manage the program;
- increase the production of existing application sites;
- use all other application sources.

A message was sent to Headquarters, Department of the Army (DA) and Major Commands (MACOMs) with re-transmissions to all subordinate units and activities advising of the problem, soliciting their support, and requesting comments. The response was unanimously positive: "What can we do to help?" Excellent suggestions and recommendations were also offered with requests to learn more about the problem.

The MAP team, responsible for program management, was formed within the ATCOM Directorate for Maintenance. An initial plan and schedule were developed. On site briefings were scheduled and presented to the MACOMs.

MWOs are currently being applied by seven fixed OLR sites (OLR has no definition. It is a Project Code):

Ft. Lewis, WA;
Ft. Carson, CO;
Ft. Hood, TX;
Ft. Campbell, KY;
Ft. Stewart, GA;
Germany;
and Korea.

The OLR sites are responsible for worldwide MWO applications on a regionalized basis. An ATCOM Project Officer and Quality Assurance Representative are assigned each site.

The work is being done by contract personnel, at each of the OLR sites, with a quick reaction work force of variable size and skills. The Project Officers and Quality Assurance Representatives at the existing OLR sites have made a commitment to meet aggressive application schedules. We are monitoring schedules monthly and conducting frequent in process reviews.

Other application sources initially considered were installation of Directorates of Logistics (DOL), U.S. Army Reserve and National Guard aviation maintenance activities (including Aviation Classification Repair Activity

Depots — AVCRADs), and active duty aviation units. The use of active duty aviation units was not considered feasible based on feedback from the field (our customer) in response to our message.

The funding short fall, funding expiration, and readiness reporting problems still exist; however, the ATCOM command group and the PEO are addressing those problems with DA. The STIR program manager is developing potential solutions to current problems which are causing the delay in program completion. The ATCOM Directorate for Maintenance Program Execution Branch is analyzing the most cost effective and efficient methods of accomplishing our goal under various scenarios.

The MAP Team is visiting various DOLs, Reserve, and National Guard installations and activities to discuss and plan their potential involvement in this program and to ensure that quality is not sacrificed as a result of expediency.

We are also preparing to make contact teams available within units to apply MWOs during Phase Inspections or other extended maintenance actions on a non-interference basis. Low man-hour modifications also can be applied on a non-interference basis during maintenance down days, weekends and off duty hours to preclude the degradation of unit mission readiness.

The program is not fully implemented as of this writing but our efforts have paid handsome dividends in terms of recent increased productivity and beneficial feedback from the field.

Some important thoughts come to mind during our pleasant (and continuing) involvement in this program:

- we exist to support the soldiers in the field;
- people generally devote more time and effort to those tasks that produce a product or service that the boss frequently inspects;
- it's rewarding to be part of a cohesive and responsive team of professional soldiers and DA civilians;
- problems and obstacles should be viewed more optimistically since they frequently suggest beneficial opportunities for improvement. (Total Quality Management);
- we can't wait until the next crises to upgrade our fleet. We must do it now.

Your comments and suggestions concerning this program are invited and may be submitted to: ATCOM, Attn: AMSAT-I-MMPM-(MAP), 4300 Goodfellow Blvd., St. Louis, MO 63120.

★★

Mr. Darling is an Equipment Specialist, (Aircraft), Directorate for Maintenance, U.S. Army ATCOM, St. Louis, MO.

BY WARREN J. SCHNELL

THE PROFESSIONAL'S TOOL

The EIR Digest — what is in it, where to get it, and how to use it.

Our lives have been helped and complicated by technology. In the Sixties, it was considered good if your compact car could get 20 miles to the gallon. At the same time I was attending one of the Army's latest schools: Maintenance of the Pratt & Whitney R2000-7M2 radial engine.

Times and technology have moved on to computer controlled automobile engines and the latest in aircraft propulsion and avionics. A profound change in our expectations of the service we expect and demand has paced the development of hardware.

When we take our own equipment back to the dealer for repair or warranty work, we expect that his shop will have all the latest bulletins and be aware of any failure trends. In the commercial world, aircraft and engine manufacturers issue frequent service bulletins to keep their operators informed. Their systems are generally "fail safe" in that the user is provided with an index of the latest publications at frequent intervals.

There is no doubt that the Army maintains a complex publications distribution and subscription system. It also will not come as any surprise to know that the system is not particularly noted as "user friendly". But while the system

needs improvement there is much you can do to ensure that you get all the manuals you need.

In this vein, two of the most common questions asked are what is the status of a given manual or the status of a unit's account. How do you as a user know what you should have?

Twice a year DA pamphlet 25-30 is revised, you can page through it and everything the Army has published. While this is possible it isn't the most desirable.

Every month this command publishes an EIR Digest for aviation. It lists all Aviation publications sent to print that month. If your account is working right you should receive the listed publications just about the same time as the latest EIR Digest.

If you are not receiving your manuals, the problem may be at your end. Frequently manuals are delivered to an old address, never reaching those who really need them. If a problem is suspected, don't hesitate to contact customer support at the U.S. Army Publications Center in St. Louis, (DSN 693-7305 ext. 370). Take ownership of your account.

"If a problem is suspected, don't hesitate to contact customer support. Take ownership of your account."

Managing of your equipment publication library isn't the only thing the Digest will do for you. Review of the Quality Deficiency Report (QDR) replies provides a quick overview of what is happening to the fleet.

The listing of significant DA 2028s can alert you to a tech manual problem, or perhaps eliminate the need to author a request for a publication change. A monthly summary of safety of flight and aviation safety messages is included to provide a double check that all necessary messages were received.

Starting in the second quarter of FY93, maintenance tips will be added to the regular monthly digest fare. The Digest is available only through pin point distribution, so ensure your account is up to date. Back copies are not available.

The EIR Digest provides a one stop source of information to keep you better informed and to manage your access to data.

★★

Mr. Schnell is a Technical Writer currently serving as the Acting Chief of the Technical Publications Division, U.S. Army ATCOM, St. Louis, MO.

BY WILLIAM S. McDONALD

SUPPORT DATA FOR DECISIONS

The new Field Data Division reports on the needs and uses for quality data from the field.

With changing times and "right sizing", new organizations are replacing old. The merger of the Aviation Systems Command and Troop Support Command in October of 1992 resulted in the Aviation and Troop Command (ATCOM). The merger combined missions and expanded organizational responsibility to take care of collection and processing field reported data of ATCOM materiel. This resulted in the formation of the Field Data Division.

The Field Data Division assumed oversight of The Army Maintenance Management System - Aviation (TAMMS-A), management responsibility for ATCOM Deficiency Tracking System, and management of ATCOM Sample Data Collection effort. All the aforementioned systems have an associated database whose input originates either from the field user/maintainer or manufacturer/overhaul organization.

While a trite and overused phrase, a database is only as good as the quality of its input (garbage in-garbage out). This is true for all databases maintained by ATCOM's Directorate of Maintenance. Because quality data is essential, the field user simply makes or breaks the value of any of the Field Data Division's outputs. Outputs are used to make inferences from quality of materiel fielded by ATCOM to size and skills of personnel manning the list of Tables of Organization and Equipment (TO&E).

It's fairly obvious that if you use,

maintain, manufacture, or overhaul an ATCOM managed item, you will also be active in providing feedback to Field Data Division. There are some recent and ongoing changes occurring in how that feedback will be collected and processed.

Recently, a major change was introduced in TAMMS-A. Aviation Logbook forms have undergone significant changes required for compatibility with Unit Level Logistics System-Aviation (ULLS-A) that is to begin field validation in USAREUR in the next few months. The new forms not only support ULLS-A requirements but will form the basis for eventual automation of logbooks at system level. The ultimate goal of ATCOM is the automated transmission of logistics and maintenance burden data to the National Inventory/Maintenance Points through ULLS-A.

Changes in the Aviation Product Quality Deficiency Reporting System in the near future will include a more informative EIR digest. The monthly EIR Digest will include not only Class II EIRs synopsis but is being expanded to include Class I EIRs and Class II QDRs for all aircraft series. Also, to monitor the submitter's satisfaction with timeliness and accuracy of answers, customer satisfaction surveys will be sent to a random sample of submitters. The Deficiency Reporting System is an invaluable means of direct user feedback of field problems with ATCOM Materiel and our goal is to maximize its effectiveness in problem solutions.

"Annual savings in excess of $100 million dollars are realized through the replacement of lost or corrupted records."

Always a cost reducer, the Component Removal and Repair/Overhaul Tracking System has proven invaluable in reconstructing parts/assemblies usage history. Annual savings in excess of $100 million dollars are realized through the replacement of lost or corrupted records. Efforts are underway to fully automate input of DA Form 2410 data to increase currency of the ATCOM databases. When fully operational ULLS-A should provide automatic input component data.

A long running program to assess fielded equipment is the Sample Data Collection (SDC) System. Selected aviation units **(Data — continued on page 66)**

BY JAMES NEALE
and MARY KELLY

AIRCRAFT TURBINE ENGINE REPAIR – "FIX FORWARD"

Two related but separate initiatives are ongoing within the Maintenance Directorate in support of the Fix Forward Strategy for gas turbine engines. One is to establish Enhanced Engine Repair Activities (EERA) at selected locations, and the second to make available to all EERAs, plus other locations, an off-wing diagnostic capability.

Enhanced Engine Repair Activities save money and time by avoiding premature engine returns.

Based on a joint agreement between the requirer and the Aviation and Troop Command (ATCOM), EERAs are designed to enhance aviation readiness by placing highly qualified contract personnel in selected Aviation Intermediate Maintenance Units (AVIMs) to augment the AVIMs capability and accomplish limited depot tasks. Contractors are contracted through ATCOM but financed by the benefitting post, camp, or station. All authorizations to accomplish depot-level tasks are closely controlled in accordance with the procedures outlined in AR 750-1.

By maximizing the AVIMs capability, premature returns of engines to the depot system are minimized and, in turn, the unit saves scarce flying hour dollars. EERAs routinely report their activity to ATCOM. Based on last month's reports, Ft. Campbell is currently enjoying a 10 to 1 cost avoidance ratio, and in Korea, a five to one. Ratios are expected to become more closely aligned as the EERA concept matures, but from all reports, EERAs are clearly money savers.

EERAs are currently operating at Ft. Campbell, Camp Humphries, Coleman Barracks, and the Connecticut and Missouri Aviation Classification Repair Activity Depots (AVCRADs).

AVCRADs utilize organic full time employees rather than contractors, but the operation and results are the same. The next planned EERAs will be established at Ft. Hood, TX and in Panama. Eventually, we hope to have as many as 20 EERAs operating within Active and Reserve Component AVIMs.

To become a true EERA, the facility must have the capability to accomplish off-wing engine diagnostics, which brings us to the second initiative.

"To become a true EERA, the facility must have the capability to accomplish off-wing engine diagnostics."

Korea, Ft. Campbell, and the Missouri AVCRAD currently have state-of-the-art off-wing diagnostic capability in the form of Command Engine Test System (CETS) or Flexible Engine Diagnostic System (FEDS).

We currently have an ongoing program to upgrade six older Modular Engines Test Systems (METS). They will receive a new instrumentation system which is digital in nature, commercially supportable, and allows automatic data acquisition. This capability reduces run time and provides for error-free data recording. The system also has a computer which will be programmed to automatically indicate pass/fail and show comparisons to the standard.

Two were overhauled on site at Coleman Barracks; the remaining four will be overhauled at Corpus Christi Army Depot (CCAD) and used to establish off-wing diagnostic capabilities at Ft. Hood, Panama, and two other locations yet to be determined.

Receiving organizations are sharing in the cost of the overhaul by performing tasks commonly done at an installation Director of Logistics such as generator, air compressor, and air conditioner repairs and services to the trailer running gear. This aids in conserving scarce maintenance overhaul dollars.

Additionally, ATCOM provided funding for the upgrade of three fixed engine test cells at Ft. Rucker, AL. Work is in progress now and will be completed by 31 March 1993. The upgrade replaced the existing instrumentation **(Fix Forward cont'd. on pg. 66)**

PROJECT STIR: HALFWAY

A status report on the largest Army Aviation field maintenance project ever undertaken

FY93 is here, and where are we on: Special Technical Inspection and Repair (STIR)?

As part of STIR, the Directorate of Maintenance at the Aviation and Troop Command (ATCOM), is responsible for accomplishing the following tasks on those aircraft which saw action in Southwest Asia: MWO incorporation; phase maintenance; STIR discrepancies; and deferred maintenance

We've come a long way, yet we've got a busy year ahead and a long way to go to complete the program on schedule.

What is STIR? It is the process by which we take force modernized aircraft which participated in DESERT SHIELD/STORM, open the aircraft up, complete the maintenance tasks outlined above and return the aircraft to the unit in pre-deployment condition.

We have removed several pounds of sand from the assessment aircraft at Ft. Hood, TX. The sand from South West Asia was as fine as talcum powder! When water was added as in the washing process, this sand turned to a paste or mud compound. If this sand is not removed, the contents of which is highly corrosive, the aircraft will deteriorate to an even worse condition.

Readiness is our goal. We have the momentum going and are marching out smartly. Most of our personnel and facility problems are in the past. We are continually adjusting our assessments and changing induction projections at the STIR sites to meet

WORLDWIDE UPDATE
(Force Modernization System)

TYPE A/C	Total Program	Completed A/C	In Work
AH-64	300	98	54
CH-47D	172	75	31
OH-58D	77	23	18
UH-60	511	170	101
TOTAL	**1,060**	**366**	**204**

the daily challenges of aircraft repair. Aircraft inductions are the real key to completing our overall goal. This facilitates the assembly line process which helps to maintain a shorter turn around time of aircraft.

We have access to a virtually unlimited source of highly trained, technical personnel by taking advantage of a unique USAF maintenance contract. The Air Force administers the contract and the STIR operations center, at ATCOM, in St. Louis, coordinates aircraft movement, repair, and logistics support for the five major STIR sites (CONUS) and Europe.

These STIR sites are:
USAREUR (Germany/Italy)
Mr. Chuck Ameigh
Ft. Campbell, KY,
Mr. Steve Ebersole
Ft. Carson, CO, Mr. Tom Cook
Ft. Hood, TX, Mr. John Evans
Ft. Lewis, WA, Mr. Jim Bush
Hunter A.A.F., Mr. Dale De Roia

The heart and sole of the STIR operation is the central logistics support center in ATCOM, a "one stop" Data Base to requisition, track and expedite the worldwide requirements as initiated by the individual STIR sites.

We maintain a repository of aircraft history and repair parts, of demand data by aircraft tail number. This data is used to forecast current and future materiel requirements. This is the home of the STIR Project Manager, Deputy, Production Control Officer, and STIR Logistics Project Officer. These support officers are as follows: Project Manager, LTC Charles L. Crossan; Deputy, Project Manager, CPT Donald Hazelwood; Production Control Officer, CW3 Mike Fry; and Logistics Project Officer, myself. The

(STIR continued on pg. 34)

BY CW4 CHARLES M. EARWOOD

WHERE DO WE GO FROM HERE?

Some thoughts on converting from the "achievement" to "sustainment" mode of operation.

So, you've just finished your first full fiscal year back from Southwest Asia. It's been a year of turmoil what with all of the personnel turnovers. Aircraft maintenance has been hard enough with recovery from the desert but training all of the new people to work together has really made it a challenging year.

By now you are starting to feel that your maintenance programs are starting to mature. You are meeting DA standards and feel like you have the cat by the tail. But we've been around long enough to know that we can't rest on our laurels. Where do you go from here?

Thinking back on your last year of effort you can see that most things you did were "achievement" oriented. Well, you have now achieved. That last 1352 really made everyone happy. Even the motor pool is looking good. Next month should be a piece of cake.

There are a few worries though. You know that 80% of everything your unit does they do well. It's that 80% that got you to where you are now. But what about that other 20%? That's what keeps creeping up on your thoughts. You know that there are a few areas that you have neglected while in the "achievement" mode of operation. It's time now to convert your thought processes to the "sustainment" mode of operation.

What is the status of your publication's account? Is your publication's NCO in the Quality Control Section? You've put a lot of emphasis on

the quality of work your people have been doing and that has kept all of your TI's busy. Maybe you didn't give your pub's NCO time to do an adequate job. Adequate supplies of current publications will save time and result in better quality of maintenance.

How is your tool room doing? You inventoried everything when you got back from the desert and updated your hand receipts and shortage annex's with the S-4. But your unit has probably changed S-4's at least once since then. What is the status of your replenishment requisitions? If you had everything issued to you today you would be back where you were before deployment. Is that where you want to be?

How many times a week do you lose manhours having a soldier chase down a tool he needs to do his job? How often are they using a tool that gets the job done but is really not the proper tool? Do you have an adequate procedure in place to document and requisition those tools authorized by the repair manual that aren't a part of your shop set? Have you been to the Self-Service Supply Center (SSSC) to see what they have to make your job easier? Do you have adequate cleaning supplies and equipment to effect an adequate cleaning program for your aircraft?

If you answered "no" to any of these questions then there are a few "sustainment" areas that need to be addressed.

Speaking of aircraft cleaning supplies, how is your aircraft corrosion control program doing? I know you have someone on orders and he is probably in the QC Section and you've been keeping them really busy assuring quality maintenance...and this sounds reminiscent of the publications account. Just what is your program, how is it implemented, and how effective is it? If you feel comfortable with the answers then move on. If not, you have just identified another "sustainment" oriented program that pays big benefits.

Who is monitoring the shelf life on those expensive cans of Class II and IV products that we use so often? Are adequate stocks on hand? Are they in a central location so that every section doesn't feel that they have to hoard them if they want to have them available?

Everyone has their own program that works to some extent, but the best I've seen is when all of these products are under the control of the tool room. The tool room attendant is there all day long just waiting to be interrupted. He also deals with the S-4 section on a recurring basis and can submit replenishment requisitions for you. Just give him guidance in how much of what to keep in stock and

you are on your way to solving another sustainment goal.

Who was that guy you had taking care of your lifting devices last year? Is he also your calibration NCO or another TI in the Quality Control Section? We've already been through this. And by the way, maybe it's time to share the wealth. Give a few of those extra duties to some of your more promising NCOs in other sections. They need the experience too. And while you're at it, review your procedures for issuing those lifting devices from the tool room. Do you have an adequate inspection and repair program for them.

Do you feel apprehensive when someone needs an Air Ground Power Unit (AGPU) to do a maintenance task? You used to have everyone properly trained and it was no big deal, but with all of the personnel turmoil of the last year you no longer feel quite as comfortable.

We can't rest on our laurels. This maintenance business we're in is a moving train and you have to keep up. If your maintenance program is "achievement" oriented and you are now "achieving" your goal then it is time to change your approach. A sustainment oriented program will provide better, safer equipment that is better prepared for your mission.

★★

CW4 Earwood is the Brigade Materiel Readiness Officer, 11th Aviation Brigade, Illesheim, Germany.

STIR
(CONTINUED FROM PAGE 31)

phone number and data fax for the STIR Support Center is DSN: 693-9029 (Logistics) 693-1103 (Production). Fax: Comm, (314) 263-2926 DSN: 693-2926.

We are dedicated to provide the best product at cost, on time and not to sacrifice quality.

We have inducted over 55% of our program goals and completed almost 40%. Approximate dollar figures for FY92 were $235 million; $85 million labor, and $150 million parts. With 60% of the aircraft to be completed in FY93, we project a more aggressive and even faster pace will be required to complete the program on schedule.

Readiness to the soldier today equates to mission success tomorrow.

★★

Mr. Yeargain is the Logistics Project Officer for Project STIR, U.S. Army ATCOM, St. Louis, MO.

BY MAJ MICHAEL N. RILEY

WHAT IS AIRCRAFT FLIGHT SYSTEMS TESTING, AND WHY SHOULD I CARE?

An overview of the Aviation Technical Test Center's activities and missions.

In the February 1992 issue of ARMY AVIATION Magazine, COL John Hagen, former commander of the Aviation Technical Test Center (ATTC), authored an article titled "Aviation Technical Testing." In his article, COL Hagen explained what ATTC was, and what its missions were. In the next few paragraphs I hope to answer the questions that the title of this article asks with particular emphasis on why you, the Army aviator, should care.

Teams of test pilots and engineers of the ATTC Flight Systems Test Division (FSTD) conduct aircraft flight systems testing. The FSTD is collocated with ATTC headquarters at Cairns Army Airfield, Ft. Rucker, AL. Some of the test pilots were assigned to ATTC from operational duty assignments, while others received specialized training as engineering test pilots at the U.S. Naval Test Pilot School prior to their assignment.

The engineers are Department of the Army Civilians whose areas of expertise range from aeronautical and electrical engineering to specialty areas such as Reliability, Availability, and Maintainability (RAM) and human factors engineering.

What is aircraft systems testing? This can be a hard question to answer, but consider this: the aircraft with all its weapons/payload, survivability equipment, and its crew is a system. Everything that interacts with that system, or impacts on the ability of the crew to perform

their mission falls into the purview of systems testing. Probably a more accurate descriptor should be "systems integration testing".

Every modification to an existing component or new piece of equipment must be properly integrated into the "system" as a whole. Systems testing ensures not only that the specific component functions properly, but also that the ability of the complete system to conduct its mission has not been adversely altered.

Think about your own particular aircraft, and divide it up into all of its systems. Don't stop at the easy ones listed in every -10. Include RAM, aviation life support equipment (ALSE — that's right, ALSE), safety, and human factors engineering to name a few. Add ground support equipment, the aircrew, and the maintainer. Then combine them all and try to determine how effectively those systems are integrated. How well do they accomplish their mission?

"If the 'system' doesn't work as advertised, then neither do you."

A very good example of aircraft systems testing is the cold weather qualification test of the AH-64A Apache conducted earlier this year. During that test we analyzed every aspect of the aircraft operation in extreme cold weather. It started with an evaluation by our human factors engineer of the newly designed cold weather clothing that the aircrews and ground personnel wore, and answered critical systemic questions including: Could the crew reach and activate all switches? Could the crew successfully and safely egress from both stations while wearing the apparel? Did the equipment hinder the safe operation of the aircraft or limit the crew's accomplishment of the mission?

The test then concentrated on evaluating individual systems performance in the cold environment both separately and as an integrated component.

Test pilots conducted specially designed tests to evaluate specific subsystems. This included the auxiliary power unit/engine starting capability, navigation systems, and weapons integration and performance. The RAM evaluation was conducted concurrently based on maintenance data from the logbook entries and test pilot notes. Anomalies, regardless of how seemingly insignificant, were identified and cataloged. The data were analyzed to determine

both their individual and overall effect on mission performance. In the final report, we were then able to present an account of the individual system performance as well as an evaluation of the entire aircraft and aircrew as a "system".

You may never have considered safety, ALSE, and RAM as systems before, but they are critical elements that affect the crew's ability to perform their mission. The synergy of aircraft systems is really no different than the synergistic effect of combined arms operations. Each system's overall capability is enhanced when it is working in concert with the others.

As we get a better understanding of aircraft systems testing we can see that it includes an assessment of how well a system performs its designed function and its compatibility with the other on-board and external systems, to include the aircrew and the maintainers. The "why" portion of my original question also becomes more obvious. If the "system" doesn't work as advertised, then neither do you.

Other examples of systems testing recently conducted include the addition of the UH-1 fuel filter to the OH-58A/C, composite main rotor blades on the UH-1, the PreProduction Qualification Test (PPQT) of the OH-58D Kiowa Warrior, engine air particle separators on the CH-47, cold weather flight clothing, and improved image autotrack software for the AH-64. Many of these systems required modifications as a result of anomalies identified during testing and several required further testing. Without the knowledge gained through testing, the system would not be acceptable to the user.

At any given time, the FSTD has between 50 and 75 tests in various stages, ranging from plan writing to testing report writing. The vast majority of our work is conducted for the U.S. Army Aviation and Troop Command (ATCOM) (formerly AVSCOM), and the Program Executive Officer (PEO) Aviation. This work can be as simple as evaluating a replacement part from an alternate vendor or as complex as a PPQT for an entire aircraft.

Tests can be as short as one week to as long as the life of the item of equipment.

We are currently becoming more involved in the Kiowa Warrior, Longbow and Comanche programs, and continue our involvement with lead-the-fleet testing of all aircraft, as well as evaluating modifications and upgrades to the entire fleet of aircraft. We are extremely proud of our contributions to Army Aviation, and will continue to uphold our motto to "Test Above the Best."

★★

Major Riley is Chief of Flight Test Branch I, U.S. Army Aviation Technical Test Center (ATTC), Ft. Rucker, AL.

RAH-66 COMANCHE COMBINED TESTING: A NEW CONCEPT

An ATTC update on the testing procedures to be utilized on the RAH-66 Comanche.

In an era of shrinking resources it is important that the material developer look for new and innovative ways to stretch the dollars while ensuring that program quality does not suffer. The Comanche program is no exception. Early in the development of the test strategy it was realized that the Comanche test program offered an opportunity to break the traditional test mold and explore a new approach to testing.

The traditional test methodology is a "heel-to-toe." This approach requires that the contractor conduct his tests; Test and Evaluation Command (TECOM) conducts its tests; and then the Test and Experimentation Command (TEXCOM) finishes with an operational test. In major systems such as the Comanche these steps can be repeated three times, ie. once in the Demonstration/Validation (DEM/VAL) phase; once in the Engineering Manufacturing Development (EMD) phase, and once again in the Production and Deployment phase.

With testing costing millions of dollars and hundreds of days, the traditional approach was deemed to be too inefficient. What was needed was an early Army involvement with the contractor that could help with the design, rather than pursue the old method of testing that "graded" the design after it was built. The test approach used in the Comanche is a unique opportunity to accomplish the goal of early involvement in a very complex development program.

The dilemma that the Comanche

community faced was one of how to preserve the integrity and independence of the test without the luxury of dedicated test time.

A solution emerged that gave birth to the Combined Test Team or CTT as it is called. The CTT is more of a concept than a structured organization. The concept envisions early cooperative involvement of representatives of the contractor, program manager, technical and operational test communities, as well as the independent evaluators. The CTT operates under the umbrella of the traditional Test Integration Working Group (TIWG) organization. It is an informal team that is task organized for the specific function to be accomplished.

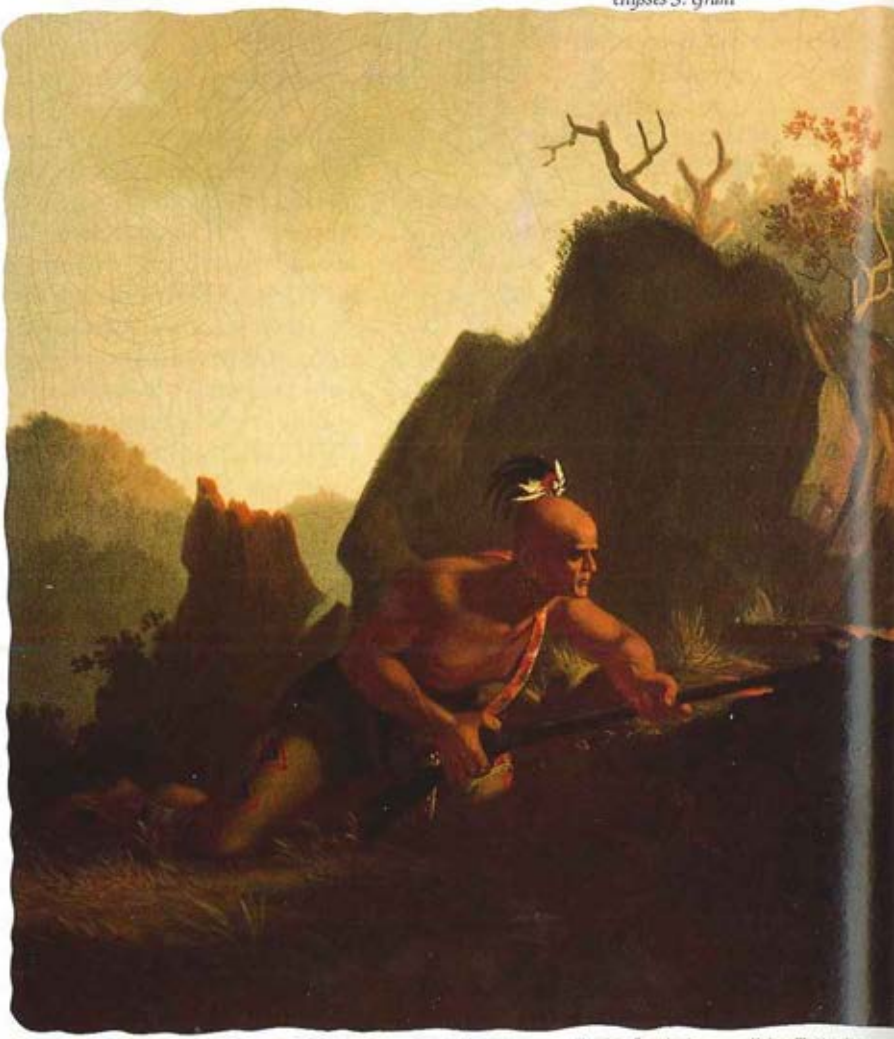
Since the beginning of the Comanche development, personnel from the operational and technical test community have participated with the contractor in evaluation of the system. The current test effort is focused on paper evaluations, coupon, and component evaluations. During this phase the technical and operational test community will participate with the contractor to learn as much as possible about the systems and provide early identification of problems. It is intended that the early problem identification will allow the contractor to make corrections while the component is either in the design stage or at worst the early prototype phase.

In order to accomplish the technical test mission TECOM has mobilized its field testers and assigned specific areas for each to monitor. The Aviation Technical Test Center (ATTC), with the Combined Group and Flight Systems testing at Fort Rucker and Airworthiness testing at Edwards AFB, has a major role in this effort. ATTC will be monitoring air vehicle performance, systems integration, human factors engineering, systems safety, logistics and reliability development. Other TECOM test centers will be involved in armament, communication, chemical protection and other specialties.

ATTC will begin its effort by stationing a full time representative at the contractor's plant to provide government technical input as part of the CTT. This will be accomplished by hands-on participation in test plan development and on site witnessing of contractor efforts. That representative's observations will be provided to the contractor, the Army Program Manager, the Army Material Systems Analysis Activity (AMSAA) and the operational evaluators in addition to the Test and Evaluation Command (TECOM).

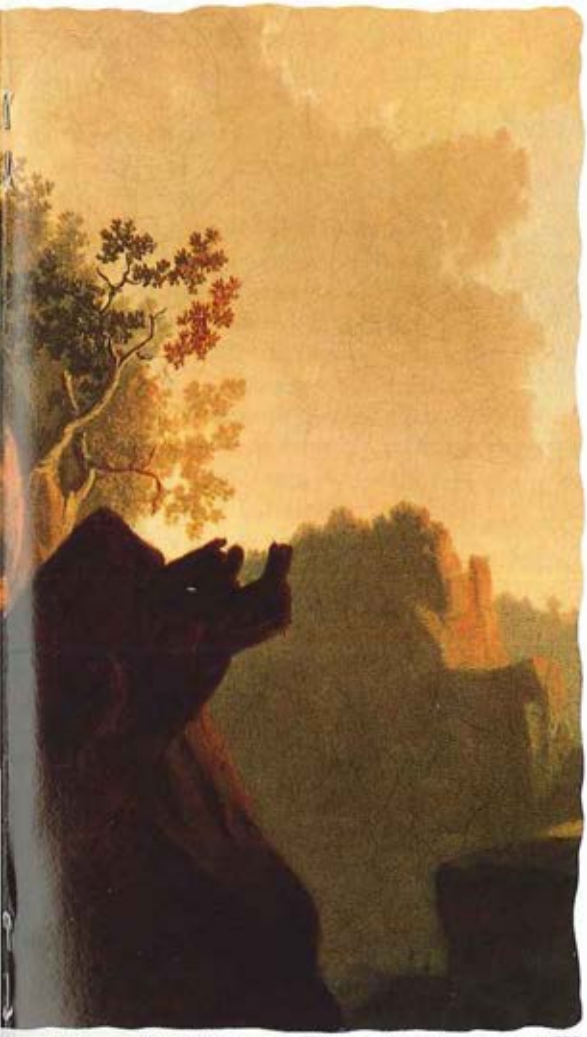
"The art of war is simple enough. Find out where your enemy is..."

Ulysses S. Grant



Boeing Sikorsky Aircraft CAE Link Goneral Electric Hamilton Standard Kaiser Electronics

The Concealed Enemy
George Caleb Bingham, 1845
The Stark Museum of Art, Orange, Texas



Harris Martin Marietta TRW Westinghouse LHTEC

Armed Reconnaissance

The Comanche helicopter can see without being seen.

It can move undetected over hostile territory, rapidly gathering and transmitting reconnaissance data to waiting attack forces.

No other helicopter today can give field commanders the timely intelligence needed for tomorrow's more lethal battlefields.

RAH-66 Comanche. On time and on budget.

BOEING SIKORSKY
RAH-66 COMANCHE TEAM

Now...more than ever

The ATTC representative will also be working closely with the TRADOC Systems Manager (TSM) forward detachment at the contractor facility. The close working relationship that has been established with the TSM will facilitate a cooperative exchange of information between the TSM, the technical tester and the contractor.

The contractor has been very receptive to the government insights on system design. In addition to the TSM personnel, the ATTC on site person will call on other ATTC subject matter experts to assist in tests in specialty areas such as logistics, human factors and system safety.

Later in the DEM/VAL Prototype phase ATTC will add additional on site personnel. Approximately one year prior to the first flight a detachment of ATTC experimental test pilots and engineers will move to the contractor flight test facility at West Palm Beach, FL. Those ATTC pilots will jointly crew Comanche flights with the contractor test pilots. This will afford insights into the development program well before the Army would ordinarily have access to the aircraft. It will also provide welcome feedback to the contractor on design improvements well before they would normally receive this type of information.

One very positive aspect of this program that is truly unique is that there will not be a dedicated Army developmental test during the DEM/VAL phase. The traditional approach would be for ATTC to conduct a dedicated Preliminary Airworthiness Evaluation (PAE) over a 2-4 week period. This would be followed by a 30-60 day developmental test.

Neither of these events will occur with the Comanche. The PAE requirement will be satisfied through the collection of data during the contractor test flights by use of joint government/contractor aircrews.

Similarly, the remaining developmental test issues will be addressed by flights on systems equipped aircraft with joint crews. This is all a first in Army Aviation testing and provides an unprecedented opportunity to impact the system design early in the prototype development. Our involvement with the prototype aircraft, which are really flying "test beds," is an opportunity for the Army to influence the design rather than waiting for the contractor to provide what he "thinks" the Army wants.

This whole approach offers challenges and opportunities to "rewrite the book" on aviation testing. We at ATTC are prepared to take on this endeavor and are confident that we will succeed.

★★

Mr. Block is the RAH-66 Comanche Test Coordinator, U.S. Army Aviation Technical Test Center, Ft. Rucker, AL.

DECONFLICTING THE HUMMA-HUMMA

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I've always sensed a certain wariness between civilians and the military. As the son of a Marine, I grew up thinking of civilians much as the nuns who schooled me regarded non-Catholics: there might be some good ones out there, but they'll never get into heaven.

Language — the greatest barrier between a mutual understanding between the military and civilians.

Having now spent my professional life as a civilian, I looked forward to my year at the U.S. Army War College as an opportunity to get to the root of this cultural barrier. After all, I have spent half my life in a military environment and half in the civilian netherworld. As a member of the civilian government bureaucracy, I have worked often with the military and continuously been impressed with both that organization's integrity and intellect. What, then, causes several of my civilian acquaintances to draw the verbal caricature of the "military mind" and many of my military friends to view civilians as a species just below jellyfish and slightly above the U.S. media?

I figured if I could do some original study on this issue, I would go far in accomplishing my mission of promoting peace, understanding, and mutual respect between our two cultures. I could also satisfy a writing requirement or two. I could assume the perspective of one of the International Fellows who attend the War College, watching, listening, and learning about what makes the military — in particular, the Army — unique.

My initial clue came when we all gathered in Carlisle Barracks' Bliss Hall auditorium that first steamy

August day of last year. At one point during that morning's welcoming remarks, the word "infantry" was mentioned in passing. As soon as this word issued forth, no fewer than 25 of my classmates bellowed OOO-AH! (I remember being somewhat disappointed that it was not in unison, but it was, after all, our first day). In addition to easing my concerns about my professional maturity in handling the rigors of the War College, this event caused me some angst over the meaning of "OOO-AH".

Having spent many an evening in base movie theaters in Panama and Okinawa, I'd always heard "OOO-AH" belched after the national anthem by young men in buzz cuts and muscle shirts, with eagle tatoos on their arms. Thus, I'd always thought "OOO-AH" meant "Let the movie begin." Now, it seemed to mean something else. And I couldn't find the word in any of the 500 JCS PUB DASHES we were given to read.

As we moved into seminar discussions and course readings, the root cause of the military/civilian disconnect became more apparent. I was fairly convinced of the problem when one of my reading assignments included the sentence: "In addition to AMC and TRADOC, other MACOM serve as MATDEV or CBTDEV for certain types of equipment." All doubt was removed, however, when one day in the coffee shop I overheard several LTC(P)s bemoaning the plight of the Serbs. Thinking I was entering a heavy discussion on the nationalities question in Yugoslavia, I offered as how I thought the Serbs were quite efficient. It wasn't until a week later that I found out I had broken in on a debate over Selective Early Retirement Boards. The barrier between military and civilians is not one of ethics, discipline, of patriotism — it's language.

This is more than just a question of acronymphomania, however. My research shows that militaryspeak goes back at least as far as Alexander's time. But even before Haig, there was one person whose influence on militaryspeak is felt to even this day, and he wasn't even an American.

Everybody at the War College has to read and pretend they understand Carl von Clausewitz. We are told Clausewitz is the master writer on war, although he based his writings primarily on Napoleon's romp through Europe and on armies that had to see each other to fight. Clausewitz, or his translator, wrote complexly about war's complexity. He uses words like "adjunct" a lot and refrains from punctuation to the greatest extent possible, presumably to avoid distracting the reader from

his insight. Being German, Clausewitz also had little use for a verb when three or four nouns would do.

Because every colonel wants to be a military genius, it is natural to begin the transformation by talking like one. The same principle went for football coaches during the Lombardi era. Thus, I venture that Clausewitz's real influence on the U.S. military lay primarily in his influence on its language.

So how can a civilian conquer this language barrier? There are no shortcuts to acronyms, unfortunately. The best thing one can do is to find a pronounceable acronym or two — TIPFIDDLE is my favorite — and throw them around during seminar sessions.

If one wants to know what acronyms actually mean, studying might be required. (But such considerations are beyond the scope of this article.) Aside from acronyms, however, there are a couple of words civilians should learn so they can hold their own — a sort of street militaryspeak.

In addition to the aforementioned "OOO-AH", "Humma-Humma" is quite useful. "Humma-Humma" is roughly translated as "et cetera", "B.S.", or "I forgot what I was going to say". This word comes in handy during speeches. I listened to one general use "Humma-Humma" so often in a lecture that I thought he was reciting a Buddhist mantra. For my own purposes, I've found "Humma-Humma" to be useful when giving oral reports to the seminar.

A second tip, especially helpful in writing, is to cluster three or more nouns together, e.g. military manpower procurement problem. I believe this practice descends directly from Clausewitz. At the War College, noun clusters not only help fulfill wordage requirements, but they sound military. I was able to hide my civilian identity for three weeks in one advanced course by keeping my noun-verb ration at four to one. I blew it when I said something nice about Jimmy Carter, the U.S. Congress, and the media all in one day.

As for verbs, civilians can get away with using English most of the time, but there are a couple of high-impact verbs to keep in mind. "Prioritize" is the word most military people claim they hate to use but use anyway. As best as I can trace it, "prioritize" was first used during Alexander Haig's tenure as Secretary of State. It is a word familiar to everyone in the U.S. government, so it shouldn't pose much of a problem to those with no previous training in militaryspeak. However, a much more powerful and versatile verb is "deconflict".

Given the chance, civilians will

choose wimpy words like "compromise", "mediate", or "negotiate". Military officers, on the other hand, can simply use "deconflict" to cover all such unpleasant situations. I've also come to use "deconflict" in place of "prioritize", because deconflicting connotes accomplishment whereas prioritizing sounds almost wishy-washy by comparison. On those days I don't actually get any work done, I can always claim I deconflicted my schedule; it at least sounds as if I spent time wrestling with a difficult problem. If I just say I prioritized my workload, however, I find it harder to cover up for procrastination.

". . . when I heard that Joe So-and-so made O-7, all I could think of was that it had something to do with Bingo."

Finally, academic life is only one facet of the Army War College. Socially, it is important for all students to know the meanings of "ring knockers", "cannon cockers", and, of course, all the O-words. I'd spent two weeks memorizing all the ranks in the four services and could even think of generals in terms of movies (a one-star, two-star, etc.), but when I heard that Joe So-and-so made O-7, all I could think of was that it had something to do with Bingo. The potential for such social gaffes are many. Finally, please realize that the blank designated as "DOR:_____" on the information sheet all incoming students receive is not asking if you are a member of the Daughters of Revolution. If you put in "no" like I did, it may cause administrative problems.

Overall, with a few well-chosen words, a repertoire of multisyllabic noun clusters, and a dozen or so acronyms thrown in for good measure, civilians should be able to overcome the military language barrier. Until civilian agencies are able to open up formal language training, I'm afraid this is the most that can be done.

The effort is worthwhile, however. As the military gets more and more into LIC, MIC, and HIC, we civilians are going to be called on more and more to work with our uniformed counterparts in deconflicting the world's humma-humma.

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3D MILITARY INTELLIGENCE BATTALION (AE) IN KOREA

The mission, environment, and importance of Aerial Exploitation in Korea.

The Third Military Intelligence Battalion, Aerial Exploitation (AE), in the Republic of Korea, stands as a unique sentinel in the military intelligence community. Although there are other intelligence units in Korea, the 3d MI Battalion covers more area in different disciplines than any other intelligence unit in collection against the North Korean threat.

3d MI Battalion is a 24 hour a day, 365 day a year participant in the Peacetime Aerial Reconnaissance Program (PARPRO) to ensure the security of the U.S. forces in Korea and the Korean peninsula. The 3d MI Bn has three companies whose differing missions combine to make it a unique intelligence asset.

The individuals who make up the 3d MI Bn have more than a passing interest in the success or failure of the Battalion. In the Special Electronic Mission Aircraft (SEMA) community there are only five Aerial Exploitation Battalions (AEBs). Therefore, there is a good chance they will be back to Camp Humphreys again in their career, sometimes three and four times. Those who make their bed in the 3d MI Bn make sure they keep it made right because they know they may end up in that same bed a few years down the road.

Headquarters and Service Company (HSC) is perhaps the most difficult of the three companies to command and control. HSC provides the Battalion with Administrative (Admin), Communications (Commo),

Dining Facility, Military Police (MP), Motor Pool, and Petroleum Oil and Lubricants (POL) support. Within each section in HSC are a myriad of military occupational specialties which provide the support to keep the Battalion operational.

One of the biggest challenges in HSC is to conduct required soldier training while still providing the support to the Battalion and its heavy mission load. A real world mission 24 hours a day, 365 days a year does not leave time for training holidays or many slack periods in which to fit training. With all of the challenges, the training and missions get accomplished due to the professionalism and can-do attitude of the Soldiers, NCOs, and Officers in the Battalion.

"A real world mission 24 hours a day, 365 days a year, does not leave time for training holidays or many slack periods in which to fit training."

The largest company of the Battalion is A Company. Flying the OV-1D Mohawk aircraft, A Co provides imagery intelligence through use of the APS-94 Side Looking Airborne Radar (SLAR) system and KA-60/KA-76 aerial photography systems. The RV-1D Mohawk aircraft provides electronic (non-communications) intelligence using the QUICKLOOK II system.

The OV/RV-1D Mohawk is a high performance, fully aerobatic aircraft which, although old, is perfectly suited to its mission. The aircraft is kept flying by Army crewchiefs who take a great deal of pride in keeping the Mohawk fleet mission capable. This is no small feat considering the aircraft is over 30 years old and parts are not readily available.

The APS-94 SLAR system on the OV-1D images moving targets. Its imagery is seen both in the aircraft by the enlisted crewmember or "T.O." and by the Ground Station Modules (GSM) located at various locations in the Republic of Korea. The APS-94 with a range of 100km can look into the North to track all possible avenues of approach.

Since most of the North Korean forces are forward deployed, the SLAR gives the intelligence consumers a good indication when and where there are heavy concentrations of North Korean activity.

The camera systems on the OV-1D provide an aerial photo-

graph capability for unit commanders on the Korean peninsula. With all of the personnel, equipment, and know how, 3d MI Bn can turn around a finished product in 2 hours. The capabilities of the OV-1D camera systems can provide forward panoramic, vertical panoramic and vertical frame or stereo photographs.

The RV-1D aircraft carries the QUICKLOOK II system to intercept Electronic Intelligence emitters such as enemy radars. The intelligence product produced by the QUICKLOOK II system helps with putting together the air threat briefings which pilots receive before missions. Also, the QUICKLOOK II product helps verify other intelligence platforms' products. The data received by the QUICKLOOK II system is stored onboard the aircraft and datalinked down to the ground to the QUICKLOOK II van. Once in the van, the information is processed and analyzed to produce an intelligence product.

With the Mohawk aircraft, soldiers, NCOs, and officers who support, fly, and fix them, A Company continues to provide a quality intelligence product to the Korean Theater. The mission of the Mohawk and how it ties into the intelligence network in Korea will be missed and not easily replaced when the fleet is retired. Army Aviation will also lose a unique and very professional part of its long history with its retirement.

B Company, 3d MI Bn has the communications intelligence (COMINT) mission of the Battalion. Flying the RC-12H aircraft with its Guardrail/Common Sensor (-) mission package, B Co can collect its intelligence product by listening to the North Koreans using Korean linguists located in the Integrated Processing Facility (IPF).

The RC-12H is maintained by Beech Aerospace Services Incorporated (BASI). The newer RC-12H poses less of a maintenance drain on the military side of the house; but is no less of a challenge for the civilians who keep the aircraft flying. With fewer aircraft, longer mission profiles, and a requirement for two aircraft per mission for total mission coverage, BASI personnel are kept busy keeping the RC-12H mission ready.

The second part to the Guardrail Team is located on the ground in the Integrated Processing Facility or IPF. This is where all of the "high tech" magic comes to the ears of the Korean linguists.

The mission of Signals Intelligence, both communications and non-communications, is a B Co mission. However, due to the nature of the RV-1D's maintenance requirements, A Co does the Electronic Intelligence mission. With

the age of the RV-1D and retirement of the Mohawk fleet, the Electronic Intelligence mission will return to B Co with the fielding of Guardrail/Common Sensor system. Common Sensor will add the required equipment to the Guardrail aircraft to allow it to do the non-communications and communications missions all in one airframe.

With the two different aircraft and their three distinct missions, the 3d MI Bn combines these assets to look deep into North Korea and provide a detailed picture of the threat from the North. Any of the three missions can cross-que the others within the Battalion or other intelligence platforms/systems.

Using the three different intelligence disciplines together provides a clear intelligence picture to intelligence consumers. Movement is detected (using SLAR); while the QUICKLOOK II system warns of radar or other non-communication emitters, Guardrail can tell who it is in the area and the type of activity being conducted.

These three disciplines are combined at the 3d MI Bn operations center to give the Battalion a clearer picture of what is happening across the DMZ. This Battalion analysis coupled with the more detailed analysis at higher levels, helps 3d MI Bn brief its aircrews on the threat which could possibly be encountered while on mission track. Also, other signs of electronic interference or unusual occurrences reported by the pilots of the aircraft help to piece together a complete picture of the North Korean threat.

Some exciting new developments will enhance the capabilities of the 3d MI Bn in the not too distant future. The fielding of the complete Guardrail Common Sensor System will allow, as mentioned before, the combining of the QUICKLOOK system with GUARDRAIL into a single airframe, giving twice the capability with half the aircraft.

With the retirement of the Mohawk fleet, there will no longer be any Army imagery capability to look deep across the DMZ to monitor the North. Currently there is no replacement platform for the Mohawk, but there are systems that could provide an imagery asset to fill the wide gap the Mohawk now fills.

Joint-Surveillance Target Attack Radar Systems (J-STARS), would be deployed to the Korean peninsula when needed. 3d MI Bn is a Theater asset. All other AEBs are Corps assets, and there are other assets in-theater that can look across to the North. The challenge lies in trying to pick the times the other assets will be utilized. As the Mohawk usually flies at night and is usually the only one up at night,

(AE — continued on page 64)

AEROMEDICAL RESEARCH

A review of the Aeromedical Research Laboratory's recent accomplishments and ongoing efforts.

The U.S. Army Aeromedical Research Laboratory (USAARL) continues its research supporting Army aviation. Our scientists and engineers focus on systems health hazards, hazards of mechanical forces, combat crew effectiveness, and soldier chemical warfare agent antidotes.

While we are concerned with the performance effects of nuclear, biological, and chemical weapons and protective ensembles, the effects of antidotes or treatments to these threats must also be understood. Atropine-related performance decrements were detected both in the simulator and aircraft. USAARL researchers are trying to improve aviator performance assessment techniques as an adjunct to chemical defense antidote and pretreatment study efforts.

USAARL scientists are also investigating the amount of central nervous system degradation attributable to sleep deprivation. More pilots are required to fly at night and sleep during the day. In order to provide effective countermeasures for those required to reverse their schedules, we have implemented various field and laboratory research projects. In addition, laboratory and field experiments were conducted on the psychological, physiological, and biochemical impact of Army systems.

Investigators have researched whether crew rest problems exist in the operational environment. A National Guard attack helicopter

battalion was studied during its annual training. The data revealed problems with highly variable sleep periods, fragmented sleep, and insufficient sleep periods. One possible solution is the administration of benzodiazepines to help pilots sleep during daytime when they must fly at night. We're now investigating the efficacy of this pharmacological intervention.

Increased thermal strain also produces physiological and performance decrements, particularly when soldiers wear chemical protective clothing. For aviators flying in closed cockpits, the problem becomes even more severe because ventilation is reduced to prevent NBC contamination.

"Aircrews wearing chemical protective clothing undergo thermal stress. . . survival times are definitely reduced when chemical protective clothing was worn."

Aircrews wearing chemical protective clothing undergo thermal stress. Investigators completed a UH-60 flight simulator study to assess its operational impact. Researchers learned survival times are definitely reduced when chemical protective clothing was worn. The study proved aviators must be provided with some countermeasure when wearing protective clothing in hot environments; a potential solution under investigation involves using microclimate cooling systems.

In the area of health hazard assessment, our engineers are developing techniques to record vibration signatures experienced by vehicle crewmembers in all Army air and ground vehicles. They are formulating a military vehicle vibration signatures library and developing an automated system to allow quick vibration signals analysis.

USAARL engineers also identify hazards associated with aviation life support equipment (ALSE) used in combat. They provide a technological and injury database from information collected for design recommendations and biomedical evaluation and concept development of ALSE. Analysis of ALSE by our researchers has provided significant assistance to investigations of Army, Navy, Coast Guard, and Department of Transportation aircraft accidents.

We're also studying U.S. Army helicopter accident investigation records. We've found injuries to pilots due to striking a structure

inside the cockpit outnumbered those due to excessive accelerations by five-to-one. We concluded an airbag system would prevent severe or fatal head and chest injuries.

USAARL supported the U.S. Army Safety Center by evaluating ALSE mishap. USAARL was tasked by the Surgeon General to help the Program Manager Light Helicopter by reviewing health hazards and helmet issues. A new design for helmet retention systems was developed by USAARL. This innovative design has been accepted by the Army, Navy, Coast Guard, and civil communities; it is scheduled for incorporation in all SPH-series helmets.

"We've found injuries to pilots due to striking a structure inside the aircraft cockpit outnumbered those due to excessive accelerations by five-to-one."

Researchers have also studied aircraft pilot and troop seats for total crew protection. We have conducted assessments on the seat performance through the ALSERP; the successes and failures of this program already are providing vital data for future design considerations.

Today's cockpits are cluttered with visual displays and sighting devices required for weapons delivery. This intrusion causes concern in the projected strike envelope for crash scenarios. USAARL engineers assessed pilot injury data relating to seat belt restraint performance and found the current system provided inconsistent protection.

Inertia reel operation and lock performance investigation confirmed the specification had no dynamic design or test criteria included, thereby allowing head impacts into surrounding structures in potentially survivable crashes. USAARL researchers are exploring new concepts to improve aircrew restraint under realistic crash conditions. A new government furnished equipment belt release buckle also was designed.

USAARL is also determining the reliability and suitability of selected medical devices that may be used on Army helicopters in medical evacuations. This work will ensure aircraft, equipment, flight crew, and patient safety. To date, 26 items have been flight tested. Responding to an emergency request involving DESERT SHIELD/STORM for a defibrillator assessment, USAARL finished its evaluation in less than two weeks, thereby ensuring delivery of these systems to our units in Southwest Asia.

Another test was requested by the U.S. Army Aviation Systems Command on the aircraft compatibility with a candidate filter motor/blower for use with the new M-43 nuclear, biological, and chemical aviation protective mask. USAARL completed this test in less than a week; the data provided expeditious acceptance and procurement of these units which then were used by DESERT STORM soldiers. In addition, USAARL investigators developed an AH-64 aviator contact lens wear database while using disposable extended contact lens to include the entire Army, even the troops in DESERT SHIELD/STORM.

"New exposure limits for towed artillery fired in the open were derived and approved."

Aircrews employ night vision devices to see the terrain outside the cockpit while flying at night; both compatible cockpit and auxiliary lighting within the aircraft must be available. USAARL researchers are testing various devices to determine their compatibility with avionics and auxiliary lighting.

USAARL researchers are developing a measurement methodology and establishing a database that embodies circumaural hearing protective devices. A published military standard has resulted. New exposure limits for towed artillery fired in the open were derived and approved.

Our investigators are also studying cholinesterase inhibition effect. Since chemical agents have varied toxic effects, USAARL scientists are attempting to supply information about the mechanism of action. The work will support Army efforts to develop and field protective compounds which will spare the soldier's visual performance on a chemical battlefield.

Carbamates are the pretreatment drugs for nerve agent exposure. Our researchers are trying to determine the relationship between blood cholinesterase activity, more reduction of the visual evoked response, and protection from nerve agent exposure. This will reveal the effect of pyridostigmine on the central processing of sensory information. Researchers are tackling the problem of predicting visual performance under operational-type conditions.

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COL Karney was the Commander, U.S. Army Aeromedical Research Laboratory (USAARL), Ft. Rucker, AL, when this article was written.

THE ARMY'S NON-RECOVERABLE STALL PROGRAM

An examination of the Non-Recoverable Stall Program and its applications toward the T-55 engine.

The Chinook helicopter's T55-L-712 turboshaft engines exhibit an intermittent "hung" start problem where the engine fails to start in the allotted time. The problem is more prevalent during "warm" restarts and is more likely to occur at higher elevations. While it's specific cause is unknown, it resides in the engine compressor and occurs when the compressor fails to provide adequate air to the combustor during start.

The Army's Vehicle Propulsion Directorate (VPD) at Cleveland, OH, while primarily chartered to do fundamental research, also supports the field by providing solutions to specific propulsion problems. Hence, ATCOM's Propulsion Technology Division (PTD) requested the VPD to investigate the T-55 starting sequence, determine the problem's cause, and recommend solutions.

The T-55 compressor consists of seven axial and one centrifugal "stage". Each stage consists of a set of rotating blades and a set of stationary blades. During normal engine operation, each stage's frontal area is matched to accept compressed air from the previous stage.

This results in mismatching of the stages during the start because the first stages of the compressor cannot compress the air adequately for succeeding stages.

In the T-55, a start bleed addresses this problem. A start bleed increases the airflow through the first stages of the compressor, thereby increasing their efficiency and the amount of air compression. During a "hung" start, the front stages fail to operate proper-

ly even with the bleed.

The VPD recognized that this problem provided a unique opportunity to study basic flow phenomena occurring in turboshaft compressors and, therefore, structured a four phase program to explore low speed and unsteady operation.

- *Phase 1.* Here the T-55 problem will be specifically addressed. Preliminary analysis using NASA and AEDC (Arnold Engineering Development Center) computer codes indicates a first or third stage problem. Experimental efforts will be focused on these stages. Textron/Lycoming was contracted to obtain and provide the VPD detailed low speed compressor performance information by the fall of 1992.

This information will aid in isolating the problem location. It will also provide inputs to a dynamic engine model being developed by AEDC as part of a cooperative effort with the VPD and NASA. In the spring of 1993, the VPD will conduct a full engine test inhouse at the Engine Component Research Laboratory (ECRL) test stand. The test engine, provided by the PTD, is highly instrumented with over 140 sensors measuring pressures, temperatures, tip clearances, fuel and air flow rates.

Engine starting operation will be mapped from ground level to 4500 meters for various starting conditions. Should the engine not hang "naturally" during start, modified fuel schedules will induce the problem. Recommendations for problem solution will be made.

- *Phase 2.* During phase two, rotating stall phenomena will be studied. This unsteady phenomena severely degrades engine performance. Recent research indicates that it may be possible to delay rotating stall's onset with some form of active control. This would allow transient operation beyond the normal operating envelope.

Testing, in the summer of 1993, will induce rotating stall during normal operation. Results will show if an active stall control is practical in a typical jet engine. Data obtained in this phase will be used to design an active control system and will indicate the optimum form of stall control system.

- *Phases 3 and 4.* These phases are dependent upon phases one and two results. The third phase will demonstrate the soundness of the recommendations to solve the T-55 start problem. The last phase will test a system for actively controlling the onset of rotating stall.

This program will help solve a chronic field problem, provide basic knowledge useful for advanced engine modeling, and explore new concepts that may provide future aircraft with improved operational capabilities.

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Dr. A. Karl Owen is a Research Engineer and Principle Investigator on the Non-Recoverable Stall Program.

■ FEATURE

BY LTC DENNIS L. CRIPPS
and CPT THOMAS M. McCANN

COMING OF AGE: THE 10TH AVIATION BRIGADE

The story of the activation of the 10th Mountain Division's Aviation Brigade.

It began, humbly enough, in a borrowed building at a nearby Air Force base. It now occupies the most modern post in the U.S. Army. The 10th Aviation Brigade has finally come of age, its birth and growth a long and eventful process but with first-class results.

On May 29, 1992, a bright North Country day, COL Michael D. Dallas, its current Commander, stood proudly with the Brigade colors alongside other units of the 10th Mountain Division (LI) on the flight line at Ft. Drum's Wheeler-Sack Army Airfield, while dignitaries dedicated its new facilities and praised those who had made them possible.

The warm sun and clear skies contrasted starkly to the cold and wind at the Brigade's activation on July 1, 1988. On that day more than four years ago, soldiers of HHC, 10th Aviation Brigade; 3rd Squadron, 17th Cavalry: 2nd Battalion (Attack), 25th Aviation; and the 61st and 121st Combat Aviation Companies unfurled their colors on the flight line at Griffiss Air Force Base, 80 miles from the rest of the Division at Fort Drum, where the airfield had one drafty wooden hangar and a World War II-era cement strip.

Today, $59.1 million later, it is an ultramodern facility, with a 5,000-foot runway and four large hangars housing the latest technology. A new control tower crowns the operations building and fire station. It is the highlight of Ft.

Drum's $1.3 billion expanion, the Army's largest construction project since World War II.

When the 10th Mountain Division reactivated in late 1984, it faced an important logistical challenge: the need for aviation support. It had to initially house three units in Wheeler-Sack's only hangar: an Aviation Intermediate Maintenance (AVIM) company, an aeromedical evacuation detachment and its first direct support aviation element, the 121st Combat Aviation Company.

To accommodate the rest of the Aviation Brigade — its headquarters, a light cavalry squadron, an attack helicopter battalion and a second combat aviation company — it needed what amounted to a whole other airfield, and found it at Griffiss Air Force Base, 80 miles south in Rome, N.Y.

Base officials agreed to turn over a row of alert hangars from a recently-deactivated fighter squadron and also offered part of a large transient aircraft hangar, as well as headquarters space, maintenance bays and barracks. Brigade units would operate here for the next four years.

Brigade planners faced another challenge besides housing aircraft — they also had to house several hundred single soldiers, and the barracks available at the base could only hold a portion of these. COL Alfred G. Snelgrove, the first commander, found a solution in an old Christian retreat center in the town of Marcy, 12 miles from the base.

The site, christened "Alpine Barracks", resembled a small college campus with a gymnasium, dormitories, a cafeteria and a chapel. For two years single soldiers of the Brigade HHC and 2-25 ATKHB lived there, while those of 3-17 CAV and 61st CAC occupied two barracks at the base.

"The Brigade took off at full speed even before official activation. It began the process of Total Package Fielding, bringing in soldiers, helicopters, combat and support vehicles. . ."

Some Brigade units did not settle at Griffiss. Elements of 3-17 CAV — its ground cavalry unit (Troop A) and part of its HHT and the Brigade's Class III/V support platoon moved into World War II-era buildings at Ft. Drum alongside the 121st CAC. A control cell at Fort Drum — ABLE, the Aviation Brigade Liaison Element — would provide a vital link between the two posts.

At Griffiss, the Brigade's single officers and most of its married soldiers lived on the local economy.

Some families had military family quarters at old Hancock Field in Syracuse, about 50 miles away; others had government-contracted "domestic lease" apartments. At Ft. Drum, many of the families lived in new Section 801 housing areas, privately-built and Army-operated, some of them as far as 30 miles away.

The Brigade took off at full speed even before official activation. It began the process of Total Package Fielding, bringing in soldiers, helicopters, combat and support vehicles, and required equipment from tiny repair parts to huge generators and maintenance platforms. Items both new and old appeared—one day on the flight line a warrant officer found an AH-1S Cobra that he had flown in Vietnam.

Late in 1988, the Brigade activated the 3rd Battalion (Assault), 25th Aviation, with headquarters at Ft. Drum. It combined the 61st and 121st CACs into a single organization for improved support to the Division. Its Company B activated at Griffiss from elements of 61st CAC.

Early on, the Brigade formed an aviation task force to deploy to the intense training environment of the Joint Readiness Training Center (JRTC), Fort Chaffee, AK. Rising to this challenge, the 2-25 ATKHB commander, LTC Terry Gannon, prepared his not yet fully-fielded unit and, despite equipment shortages and limited preparation opportunities, succeeded in this first major operation.

In July 1989, LTC William A. Belich took 3-17 CAV on its first big deployment, to the National Training Center (NTC), Ft. Irwin, CA. Here, despite their own equipment and training shortfalls, the Squadron's troopers and attached elements earned a proud reputation as tank killers, scouts and supporters.

Back home, the Brigade headquarters met and overcame its own training challenge, the Battle Command Training Program (BCTP), an intense computer-supported command post training system designed to prepare staffs at brigade level and higher, just as the Combat Training Centers tested the tactical expertise of battalions and companies.

In October 1989, COL Warren C. Edwards succeeded COL Snelgrove and carried on the job of developing the Brigade. Fortunately he had LTC Bruce Grable, its first Executive Officer, to provide continuity while it continued to surge forward. Grable was the key person who assembled all the details to bring the Brigade on line. Meanwhile, the first battalion commanders—LTC Belich of 3-17 CAV, LTC Gannon of 2-25 ATKHB, and LTC

Stephen K. Cook of 3-25 AHB — continued to build their units as they received equipment and personnel.

3-25 AHB overcame several difficult challenges as it developed. Not only did it create an entire battalion of five companies from the assets of the two CACs, it also moved its Company B from Griffiss to Fort Drum and converted it from UH-1H Hueys to UH-60L Black Hawks in the spring of 1990. Even as it implemented these organizational changes, it also conducted its first deployment, to JRTC in February 1990.

Also in 1990, 3-17 CAV and 2-25 ATKHB began converting from the AH-1S to the AH-1F model Cobra attack helicopter. This continued despite diversion of AH-1Fs to units deploying on Operation DESERT SHIELD, and ended on March 6, 1992, when 3-17 CAV turned in its — and the Brigade's — last AH-1S.

CW3 William F. Keith, probably the Brigade's quietest hero, made a major contribution to its overall readiness when, as the Division Logistics Readiness Officer, he travelled to Europe with an Aviation Systems Command (AVSCOM) team to coordinate shipment of aviation-related items made available by Army force reductions there. This impressive windfall of equipment, transferred to CONUS and reissued to the Brigade, ranged from helicopters to special tools.

In the summer of 1990, Brigade elements at Ft. Drum became the first units to occupy its new cantonment area. As part of this move, the motor pool also became "Warrior Helipad", housing the 3-25 AHB UH-1s and OH-58s, while its UH-60s and EH-60s moved onto the flight line at Wheeler-Sack.

"In the summer of 1990, Brigade elements at Ft. Drum became the first units to occupy its new cantonment area."

The Brigade's greatest trial to date began on January 10, 1991 when COL Edwards informed his battalion commanders that they would deploy helicopter crews and other support personnel to Saudi Arabia to augment American forces deployed on Operation DESERT SHIELD in response to Iraq's invasion of Kuwait in August 1990.

The units initially selected only Readiness Level (RL) 1 pilots, and anticipated sending more crews later in the event of a long ground war. The selected soldiers completed their training and deployed from Griffiss Air Force Base. They

all returned safely after serving with units such as 2nd Armored Cavalry Regiment and 101st Airborne Division. Several 2-25 ATKHB crews, flying AH-1Fs, earned battle honors; one crew claimed nearly 25 kills of Iraqi tanks and other combat vehicles.

In July 1991, 3-17 CAV and the Brigade headquarters made the trek north from Griffiss to Fort Drum. AH-1s joined OH-58s and UH-1s on the "flight line" at Warrior Helipad, adding to the tempo of the Brigade's rapidly-expanding presence.

These relocations and the Gulf crisis failed to stop the Brigade's commitment to training and readiness. In April 1991, 3-17 CAV made its first JRTC deployment as an aviation task force; it had sent individual Troops previously as part of other task forces. In December 1991 3-25 AHB returned to JRTC for the second time in two years, further strengthening the Division's operational readiness.

The Brigade demonstrated its maturity in April 1992 under COL Dallas, who succeeded COL Edwards in October 1991, with extraordinary efforts in the "graduate level" work environment of BCTP. COL Dallas developed a series of briefings and exercises that caused his staff and commanders to act on their experience and assess what they had yet to learn in order to fight and win against the skillful Ft. Leavenworth OPFOR.

The Division increased its tempo of preparation by simultaneously planning and rehearsing with its higher headquarters, XVIII Airborne Corps. All the hard work paid off as the Division's aviation and artillery elements defeated the OPFOR second echelon in the Warfighter Exercise "final exam".

LTC David M. Cowan's 3-17 CAV ably carried out its role as the 'eyes and ears" of the Division, while 2-25 ATKHB deployed alongside long-range artillery, Army attack helicopters, and Air Force combat aircraft in devastating concentrations. LTC Roger L. Duckworth's 3-25 AHB proved its versatility by moving infantry, equipment and supplies deep behind enemy lines. The 10th Aviation Brigade had truly come of age.

The Brigade completed another chapter on July 16, 1992, when 2-25 ATKHB completed its relocation from Griffiss, uniting the entire Brigade at Fort Drum for the first time since activation. With its feet now firmly planted in the North Country, the 10th Aviation Brigade continues to move full speed ahead as it adds new milestones and successes.

[Editor's Note: Since this article was written, elements of the Brigade have deployed in support of Joint Task Force Andrew and Operation RESTORE HOPE.]

★★

LTC Cripps served as the Commander, 2nd Battalion (Attack), 25th Aviation, 10th Avn Bde. He is currently attending the Army War College at Carlisle Barracks, PA. CPT McCann is the Public Affairs Officer, 10th Mountain, Ft. Drum, NY.

BY CPT DAVID A. PASS

THE AVIATION MIST CONCEPT

The background of 10th Mountain Division's Aviation Military Intelligence Support Team.

The 10th Aviation Brigade, 10th Mountain Division (Light Infantry), Fort Drum, N.Y. is taking a fresh look at intelligence and the added potential that results when the Military Intelligence Support Team (MIST) is paired with Aviation's flexible mobility.

Already hampered by MTOEs that deny S-2s to its Attack Helicopter and Assault Helicopter battalions, the Brigade looks to the MIST as a means to disperse the weight of the Division Collection Plan.

The Aviation Brigade has a genuine MIST requirement because its Area of Operations (AO) and its Area of Interest (AI) parallel those of the Division. Intelligence Preparation of the Battlefield (IPB) and subsequent mission planning are derived from, and based on, the Division AI, in which the Brigade provides the most viable and effective extension of combat power to the Division Commander to affect enemy courses of action.

This is why the Brigade requires a MIST element in an habitual "slice" role to better fulfill its mission as the Division's single most effective maneuver force killer.

The MIST is a task organization formed from the assets of three companies of the 110th Military Intelligence (MI) Battalion. Its typical organization consists of a team headquarters, a Low-Level Voice Intercept (LLVI) platoon, a Ground Surveillance Radar (GSR) squad, a

Remote Battlefield Sensor System (REMBASS) team, a Counterintelligence (CI) team, a liaison team and a maintenance contact team.

The MIST headquarters and liaison elements are the only assets with habitual relationships: Company A supports 2nd Brigade and Company B supports 1st Brigade. Currently, the Division does not have sufficient assets to field a third full MIST.

The MI assets that normally support the Division's roundout infantry brigade are, theoretically, available for allocation during training or for contingency missions/operations where the roundout unit does not deploy.

However, critical personnel shortages in MI specialties, primarily SIGINT, impose real constraints on manning and maintaining a full complement of MISTs.

A MIST's GSR and REMBASS teams would greatly enhance operations in the Cavalry Squadron or in Brigade and Battalion assembly areas. LLVI teams would work effectively if employed in conjunction with Cavalry screen missions.

The Aviation Brigade has the liability of a large logistics "tail" that requires precious aviation assets for security during extended and deep offensive combat operations. A doctrinal rear area threat could potentially become a "most dangerous" enemy course of action, which would change tactical mission priorities.

MIST elements with the Brigade, complete with a relative command and control structure, ensure a continuity of collection effort throughout the Division AI. The only way to effectively train with these additional collection assets is to develop an habitual relationship now, through exercise, and develop a reprioritized distribution of Division collection assets. This should emphasize extension and base itself on the Brigade's capabilities.

"Changing Army scenarios would place the Division in areas of much larger responsibility than those considered normal in the past."

Changing Army scenarios would place the Division in areas of much larger responsibility than those considered normal in the past. The Aviation Brigade would remain the Division Commander's primary maneuver force, but with added missions along the lines of

the Armored Cavalry Regiment, including the normal combat multipliers inherent to this mission (artillery, etc.).

Maneuver space would multiply, economy of force would become the norm, and reaction time would become even more critical if the Division were to mass combat power over great distances with little notice. Reconnaissance, surveillance, security and economy of force would occur simultaneously over a wide area.

Providing Intelligence assets to the Aviation Brigade on an habitual training and exercise basis is crucial. The MIST, when related to the Brigade, enables the Division Commander to avoid fragmenting the combat power of his primary maneuver force. Aided now by an integrated surveillance package, the Brigade becomes the most potent weapon with which to enter and interrupt the enemy decision cycle.

As light division requirements and responsibilities change, flexibility remains a constant and even more important concept. The MIST/Aviation Brigade relationship will enhance the maximum amount of deep strike ability and collection flexibility.

★★

CPT Pass is currently serving as the Intelligence Officer (S-2) of the 10th Aviation Brigade, 10th Mountain Division (Light), Ft. Drum, NY.

AE

(CONTINUED FROM PAGE 50)

other platforms and systems will now have to fill that gap.

The Unmanned Aerial Vehicle (UAV) is another asset which will eventually be a part of 3d MI Bn but it does not provide the SLAR's capability of looking across the DMZ. The Airborne Reconnaissance Low (ARL) is a multisensor platform which could fill the gap that the Mohawk leaves.

3d MI Bn is but one part of the intelligence team in the ROK. Combined with Air Force, Navy, Marine Corps assets, the many listening posts and the Field Stations, 3d MI Bn contributes significantly to the intelligence picture of North Korea. At night, when almost everyone else is comfortable in their quarters, 3d MI Bn is in the air standing as a sentinel against the possible threat from the North.

Those who have never stood at the military demarkation line at Pan mun Jom don't and can't know of the tension that still pervades this beautiful peninsula.

As long as there is a threat from the North, 3d MI Bn will be there to stand as a partner with the Republic of Korea in protecting its people.

★★

CPT Robinson served as the Battalion Operations Center OIC for the 3d Military Intelligence Battalion (Aerial Exploitation), Camp Humphreys, Korea. He is currently stationed in Ft. Lewis, WA.

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SUPPORT DATA
(CONTINUED FROM PAGE 27)

unscheduled maintenance events for their assigned aircraft. As budget allows, the sample of each aircraft series is geographically diverse enough to provide valid inferences for the fleet in general. However, enough information is gathered to isolate environmentally induced variances.

SDC often provides objective evidence of the influences of maintenance concepts and operational factors on unit readiness. SDC has many uses that vary from forming the basis for contract specification compliance to the formulation of requirements for next generation aircraft systems.

The formation of valid support data for decision making is indeed a cooperative effort between the Field User and ATCOM. Only through your continued support will we succeed.

For inquiries on submitted EIRs/QDRs or component data reconstruction contact:

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The branch chief is Mr. Teddie Stokes.

★★

Mr. McDonald the Chief of Field Data Division, Directorate for Maintenance, ATCOM, St. Louis, MO.

FIX FORWARD
(CONTINUED FROM PAGE 29)

automatic data acquisition systems identical to that which will be in the FEDS and added capability to test the T700 engine family and the T703-AD-700 engines.

A program is also ongoing within the Weapon System Management Center to procure an additional fifteen FEDS to meet the long term requirement. In the interim, funding is being sought for several other initiatives which would, if approved, procure an existing engine test system, upgrade the capability of the test stand at the Connecticut AVCRAD, and establish capability to test Army engines at a civilian facility in South Carolina. The facility is located within reachable distance of Ft. Bragg, NC and Hunter Army Airfield, Savannah, GA, and could test the T703-AD-700 engine on all six METS.

The establishment of EERAs in concert with an off-wing test capability are proven money savers that focuses on fixing forward to the maximum extent possible, our largest cost driver — engines.

★★

Mr. Neale and Ms. Kelly are Equipment Specialists, Aircraft in the Engine Support Section, Maintenance Engineering Division of the Directorate of Maintenance, ATCOM.

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Mr. Keith M. Larson
Ms. Pam Lowry
Mr. Michael A. Wetzel
Mr. Andy White

OLD TUCSON CHAPTER MARANA, AZ

SSG Calvin L. Guyer

PHANTOM CORPS CHAPTER FORT HOOD, TX

2LT Marcus A. Daughtry
SPC Joseph L. Depenhart
CW4 Jeffrey A. Harford
SGT David McCullum
CPT Daniel A. Wilson

PIKES PEAK CHAPTER FORT CARSON, CO

CPT Steven A. King

RHINE VALLEY CHAPTER MANNHEIM, GERMANY

MAJ Frank L. Franklin

TALON CHAPTER ILLESHEIM, GERMANY

CW4 Richard I. Brooks, III
SPC Brian Davis
Mr. Joseph D. Means
CW2 Kevin M. Purtee
SSG Robert R. Shick

THUNDERHORSE CHAPTER FULDA, GERMANY

SPC Kevin Cavanaugh
CW3 Shapour Moinian
CW2 Christian J. O'Neil
SPC Robert F. Stafford

WASHINGTON DC CHAPTER WASHINGTON, DC

Mr. Richard A. Albinger
MAJ Philip J. Dermer
2LT Michael N. MacDonald
MAJ Kim D. Mansfield
COL David L. McGinnis
CW4 Delors Ross

WINGS OF THE MARNE CHAP. ANSBACH, GERMANY

WO1 Thomas R. Armbruster, Sr.
CW3 James L. Barrow
WO1 Michael D. Burke
MAJ Edward C. Farnham
LTC David M. Flood
CPT Robert F. Gale
MAJ Keith M. Handy
CPT Marsen W. Kyriss
MAJ Pat M. McMurry
CW2 Daniel J. Mordarski
CPT(P) William J. Petree
CPT James S. Rice

CW2 James D. Schocke
CW2 Duane D. Stanislaw
CW2 Clarence L. Wilson III

WINGS OF THE WARRIORS CAMP STANLEY, KOREA

CPT James T. Anibal
SPC Damian M. Armesto
SFC Allan W. Seymour

MEMBERS WITHOUT CHAPTER AFFILIATION

SPC John D. Barrett
Ms. Karen L. Bass
Mr. Walter G. Boyer
Mr. W. G. Clegg
Mr. Donald B. Fairbrother
CW4 Gary W. Hall
SPC Janet M. Ibarra
COL Gary C. Jones
Mr. Oleg G. Marinich
Mr. Robert J. Rechter
PFC Kevin G. Roberts

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Acosta, Edmund D., Mr.
Adams, James R. Jr., MAJ
Adams, Kirk D., WOC
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Adams, Richard M., COL
Adamson, Pam, Ms.
Adcock, John S., WOC
Ainsworth, Richard, Mr.
Albee, Mark N., 2LT
Alexander, Steven S., WOC
Algood, Eric J., 2LT
Allen, Eddie E., SFC
Allen, Gary L., SGT
Ally, Bernard, CPT
Alumbaugh, Carey M., 2LT
Alvarez, Eduardo G., WOC
Ambrose, David K., CW4
Ambrosio, Mark A., SPC
Amegin, Daniel G., WOC
Amos, Steven W., SPC
An, Chong Song, Mr.
Anastasio, Shawn C., SPC
Anderson, Carlos E., SSG
Anderson, David P., WO1
Andrew, Raymond A., Mr.
Archetti, Ralph D., CPT
Arnberg, Andrew B., CPT
Asher, David S., LTC
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Bailey, Lowell R., SGT
Baird, Jerry L., 2LT
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Baker, Wesley B., WOC
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Ballard, John M., PFC
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Barnett, James E., 2LT
Barnwell, Patrick H., 1LT
Baron, David S., SPC
Barrett, James R., WOC
Barrows, Jeffrey A., SPC
Bass, Brennon, CPT
Basso, Timothy, WO1
Beach, Tab A., WOC
Beahon, James L., LTC, Ret.
Beam, Rob A., PV2
Becker, John D., 2LT
Beerman, David A., Mr.
Beheler, Thomas C., CW2
Bell, Charles S., 2LT
Bell, Dewayne, SGT
Bennett, Domingo A., SGT
Bennett, George, SPC
Bess, Michael J., WOC
Bezore, Jeffrey, SFC
Biere, Edward M., CPL
Billioque, Jean, Mr.
Blackmon, Jimmy F., 2LT
Blanchette, Robert D., 1LT
Blankenbiller, Richard M., WOC
Blankenship, Tina L., PFC
Boatman, Brian V., 2LT
Boehm, Scott A., CPT
Boggs, Larry D., CPT
Bolish, Robert J., CW2
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Bouchard, Charles, LTC
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Bowman, James, SGT
Bowns, Nicolas D., LTC
Boyer, Patrick M., 2LT
Bradley, Charles D., 1LT
Brady, Bernard T., SFC
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Brown, Kerry M., LTC
Brown, Matthew D., 1LT
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Brown, Robert W., WOC
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Buchanan, Misacle K., PV2
Buchholz, Peter A., SPC
Buino, Michael F., PV2
Burke, James L., COL, Ret.
Burns, Michael F., 2LT
Burns, Ronald A., 2LT
Burrell, Thomas A., PFC
Bursik, William S., SGT
Busse, Morgan C., WO1
Butler, John C., WOC
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Christopher, Gregory C., 2LT
Chronis, Chris W., 2LT
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Lanphar, Frederick J, 2LT
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Larrabee, Richard D., CW2
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Leach, Jeffery S., WOC
Leon, Edward L., WOC
Leonard, Kelly T., 2LT
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Levi, Matthew d., SPC
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Lulkart, Jeffrey S., WOC
Lupus, Mark W., SSG
Lutz, David L., WOC
Lynch, Kathleen L., WOC
Lynd, Allyn D., 2LT
Lyons, Jimmy, SSG
Mabe, Kurtis T., SFC
Mack, Frederick C., CW2
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Mallett, Jeffrey, SPC
Mahannah, Jesse L., SPC
Maldonado, Stephen L., WOC
Maloney, Jeremiah P., CW3
Mangeot, Paul T., WOC
Mann, Mitchell C., CW2
Mann, Robert E., 2LT
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Marcinowski, Michael, PFC
Marcovsky, David, CPT
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Matthews, Robert L., SPC
Maltner, Matthew E., 1LT
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McGavock, James S., SPC
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McGinnis, Jean M., CPT
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McGuinn, Michael E., MAJ
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McMillan, Donald JJr, MAJ, Ret.
McMullen, Brian K., 2LT
McNamara, Craig A., CPL
McNamara, Michael E., WOC
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Minichiello, Angela L., 1LT
Mitchell, Darren S., 2LT
Mixon, Gary, SGT
Mohler, Ronard S., PV1
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Moore, Glenn A., SPC
Moore, Walton A., 2LT
Moore, William P., CPT
Morehead, Edwin C., MAJ
Morgan, William, SSG
Morse, George L. Jr., SPC
Moseley, Michael S., COL
Moss, April J., 1LT
Mowchan, John, SPC
Moya, Glenn A., WOC
Mullins, Larry J., MSG
Munger, Ronald R., SPC
Murmann, Klaus E., Mr.
Murphy, Michael P., 2LT
Murray, Brian R., SPC
Murray, Randy, 2LT
Muszynski, Robert W., WOC
Nagel, Darin, SPC
Nance, J. Louis, Mr.
Nance, Scott W., WO1
Nash, James P., WOC
Naylor, Sean P., Mr.
Nee, Richard M., WOC
Nelson, Jerred L., WO1
Nieman, Lori A., SFC
Noisette, Garick, SPC
Noser, Russie L., PFC
Noyola, Orlando, Mr.
O'Brien, Stephen B., Dr.
O'Bryan, Richard S., WOC
O'Connell, Brian A., WOC
Odom, Michael S., 2LT
Ohlson, Thomas W., WOC
Oliver, Terence B., MAJ
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Orebeau, Robert N., CPL
Orland, Aaron S., SGT
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Palyo, Eugene P., SPC
Pankey, Kenneth D., LTC
Papp, Gary L., SPC
Paquette, Roger K., LTC
Park, Hong Soo, COL
Patton, Kenneth E., WOC
Patton, Mark E., WOC
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Paul, Franklin Jr, CW2
Paul, Timothy D., SFC
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Payton, Robert, SGT
Penrod, Rory B., WOC
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Perry, James S., 2LT
Pervez, Sergio, PFC
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Porter, Timothy C., CPL
Powell, Georgia A., SPC
Powell, Scott D., CPT
Presnell, Larry D., MSG
Price, Gary G., CW2
Priester, Perry E., WOC
Prince, Joel L., SFC
Proesch, Joby A., WOC
Protacio, Jeffrey J., CPT
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Purcell, Richard D., TSGT
Purdy, Tracy M., PFC
Quigley, Leonard P., SPC
Rafinski, Scott A., WOC
Ramsey, Willie, SSG
Randle, Lawrence L., CPT
Randle, Robert B.II, LTC
Rasch, Michael J., WOC
Rasnake, Jeff, WO1
Rastella, Mary A., SPC
Rawls, John M., WOC
Raymond, Leif, SGT
Reckemmer, Shawn, SPC
Reese, Raymond, SPC
Reiley, Vincent L., WO1
Reisert, Robert S., WOC
Respass, Robert M., CPT
Rexing, Henry A., WO1
Reyes, Luis A., SPC
Reynolds, Ronald, SFC
Richards, Darrell E., WOC
Richardson, Reed A., WOC
Riedel, Jeffrey A., 2LT
Ringer, Philip W., SPC
Rivera, Jose D., MAJ
Roach, Erik R., WOC
Roach, Michael W., WOC
Robertson, Jonathan D., PV2
Robin, Chad A., SPC
Robinson, James M., 2LT
Rodriguez, Milton O., 1LT
Rogers, Daniel H., SPC
Rogers, Dennis P., WOC
Rojas, John T., WO1
Rollins, Gene D., COL
Roman, Luis A., PV2
Rombough, Robert R., 1LT
Rooker, James R., WOC
Rosa, Darryl A., CPL
Ross, Pete A., 2LT
Rue, Donald B., MSG
Russell, Darlene A., 2LT
Russell, Dennis M., 2LT
Russo, Paul C., WOC
Ryan, Daniel J., WOC
Sadowski, Joseph L., CW2
Salvatore, Peter C., WOC
Salvatore, Robert M., 2LT
Sampsell, Norman E., 1SG, Ret.
Sasser, William E., 2LT
Savidge, Maria Elena, 2LT
Schneider, Christopher, PFC
Schoenholer, Bruce E., WOC
Schonhorst, John B., 2LT

Schrepfer, Adam B., WOC
Schroeder, Patrick D., WOC
Scott, Gerald, SFC
Scott, Robert A., CW4
Seamster, Thomas L., PFC
Sebia, James A., WOC
Selph, Daniel C., CPT
Session, Darrel, SPC
Sewall, Robert D., CPT
Seymour, Robert A., 2LT
Shaffer, Emmett C., CPT
Shealy, Bradley C., 2LT
Shelstad, Keith J., WOC
Sheppard, Andre B., SGT
Sherman, Stephen E., CW2
Shivers, Terry, Mr.
Shober, Robert A., WOC
Shreve, Richard S., CW2
Shy, Clyde W., Mr.
Siegmund, James E., SPC
Skripka, Fred, Mr.
Slusser, Keith E., CDT
Smith, Christopher, WOC
Smith, Cory R., 1LT
Smith, Donald K., SGT
Smith, Gregory H., PFC
Smith, Howard, PVT
Smith, Nuntawood, SPC
Snethen, Mark V., CW2
Snyder, Warren, 2LT
Sofie, Timothy A., 2LT
Soliz, Frank, Mr., Ret.
Sonsik, Robert W., MAJ
Sorensen, Kelly R., SPC
Sorvagg, Jeffery, SGT
Spence, Wayne, WO1
Stachura, James P., WOC
Stallings, Chris, CDT
Stanoch, Guy K., MAJ
Stefanski, Martin E., SSG
Steinbauer, Norman E., WOC
Stenseth, Michael T., WOC
Stephens, Harold B., Mr.
Stewart, Travis R., PFC
Stockhausen, Richard C., CPT
Story, Kurt S., MAJ
Strait, James R., SPC
Strecker, Eric J., WOC
Streeper, Deborah A., Ms.
Streips, Eugene A., Mr.
Strickland, Christopher, 2LT
Stuverude, Howard N., Mr.
Sullivan, Timothy S., CPT
Summers, Lawrence C., CW3
Sutter, Robert F., WOC
Sutton, Timothy F., WO1
Svihla, Bryan P., 2LT
Swain, George D Jr, WOC
Sweeney, Erin M., 1LT
Sweet, Curtis F., WOC
Sweet, Matthew L., WOC
Tack, Lowell W., PFC
Tae, Kim Sung, MAJ
Tannich, Richard L., MAJ
Taylor, Allyn C. IV, WOC
Taylor, Richard P., MAJ
Teelon, Michael A., WOC
Tevis, Troy N., 2LT
Thompson, Patrick M., WOC
Thompson, Scott A., WOC
Thorne, James E., WO1
Thorpe, Aaron P., SFC
Thorpe, William M., SPC
Titanski, Michael C., WOC
Todman, Darryl, SFC
Tomlisson, Lance, PFC
Tommy, Hamilton D., PFC
Toohey, Stephen G., 2LT
Tope, Jeffrey H., CW2
Torrey, Samuel D., CPT
Towner, John F., CW4
Tuten, Michael C., CW2
Tuttle, Mechelle M., 2LT
Tyrrell, Harriett G., WOC
Valdez, Mario, SPC
Vanguilder, David D., PVT
Van Pelt, Albert E., COL
Van Vleck, Robert A., SSG
Vanvleet, Walter A., SPC
Vaughn, Russ, Mr.
Vazquez, Alfredo, PFC
Vickery, Donald B., Mr.
Viets, Thomas J., WOC
Vigil, Aaron, PFC
Villarreal, Manuel, Mr.
Voelke, Walter E., SSG
Wallraven, Kenneth E., CPT
Walthouse, Robert J., CDT
Ward, Derwin E., WOC
Ward, John M., LTC
Ware, Robert P., LTC
Warren, Donald E., Mr.
Wasdyke, James, SFC, Ret.
Washington, Patricia E., SGT
Waters, Daryll K., WOC
Watson, Charles P., WOC
Webb, Terry L., CW3
Weber, Christopher, 2LT
Weber, William J., CW3
Weberg, Michael L., SPC
Weidinger, Kendal K., CPT
Wells, Alvin R., CPT
Welsh, Thomas, CW3
Wendt, Maurice E., WOC
Wenthold, Richard W., CW2
Wertz, Michael E., 2LT
Wesemann, Greg P., SPC
Westerfield, Jeffrey A., WOC
Westerbeck, John A., CW2
Whitaker, Mark, CW2
Whitcomb, Glenn K., SGT
White, Jimmie, SGT
White, Russell S., WOC
White, Scott A., SPC
Whitehurst, Leon c., CW4
Whitehill, William H., CW4
Wicke, David, SPC
Wilcox, John D., SSG
Wilcox, Ward W., PFC
Wiley, William K., WOC
Wilkins, Brian H., WOC
Wilkinson, Byron M., MW4
Williams, David W., CPT
Williams, Gary D., WOC
Williams, Herman, 2LT
Williams, James A., SGT
Williams, Reginald G., 2LT
Willis, Kevin D., 1LT
Wills, Harley L., Mr.
Wilson, John S., LTC
Wilson, Marilee D., MAJ
Wirt, Kevin S., SPC
Wolfe, Douglas M., SPC
Woods, Kenneth P., MAJ, Ret.
Woodson, Todd L., 2LT
Wright, Charles W., WOC
Wright, Gary L., CSM
Wright, Robert T., WOC
Wuthrich, Shelby D., WOC
Wyman, Samuel D., Mr.
Yearly, Ronald, SPC
Yerdon, Craig D., WOC
Yost, Steven E., 2LT
Young, Clarence K., PFC
Young, Francis X., CW2
Young, Rodney, PFC
Young, William D., 2LT
Zabrowski, Zina G., Ms.
Zenker, John A., 1LT

AAAA NEWS

New AAAA Chapter Officers

Checkpoint Charlie:
CW4 Paul J. Shega (Treas)

USAREUR Region:
LTC Victor S. Conner, Ret., (VP Industrial Affairs); COL Thomas M. Hayes (VP Membership); MAJ Mark E. Valentine (VP Awards)

New AAAA Sustaining Members

The Enterprise Ledger
Enterprise, AL

SSI Services, Inc.
Newport News, VA

New AAAA Industry Members

North Texas Circuit Board
Grand Prairie, TX

AAAA Aviation Soldiers of the Month

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

SPC Damian M. Armesto
Wings of the Warriors

SSG Calvin L. Guyer
Old Tucson Chapter

AAAA Aviation NCO of the Quarter

SPC Akemi L. Randle
Aviation Center Chapter

SGT Bradley L. Wilson
Aviation Center Chapter

Above: The AAAA Air/Sea Rescue Award is presented to the 377th Medical Company (AA)'s DUSTOFF 18 during the Morning Calm Chapter Christmas Formal held on 11 December 1992 at the Hotel Inter Continental, Seoul, Korea. Left to right: WO1 John T. Rojas, MG Charles F. Drenz, AAAA President, SGT Dwane Means, SGT Anthony R. Robinson. Not pictured: WO1 Christopher F. Latin.

Below: MREs were passed out in the commander's tent as plans for AAAA's Wings of the Warriors Chapter were discussed. Left to right: MAJ Richard K. Eissler, Secretary, Terrence M. Coakley, Executive Director, AAAA, MG Charles F. Drenz, Ret., President, AAAA, COL John K. Schmitt, President, Morning Calm Chapter, CSM Raywood P. Dartez, VP Enlisted Affairs and LTC Paul F. Garrett, VP Programs.

Above: Patrick A. McCullach (left) is celebrated as the first aviation warrant officer to be promoted to Chief Warrant Officer Five (CW5). Colonel Dennis Healy, Director of Training and Doctrine, U.S. Army Aviation Logistics School, Ft. Eustis, VA joins Mrs. Catherine McCullagh in presenting CW5 McCullach his promotion at Fort Eustis, VA on 1 October 1992.

Below: Miss Erin E. Hewitt (center) of Watertown, NY, receives a certificate of achievement from COL Michael D. Dallas, Commander, 10th Aviation Brigade, Ft. Drum, NY, representing the AAAA's North Country Chapter. Miss Hewitt, sister to CW2 James C. Hewitt, received a $4,000 interest-free loan through the AAAA Scholarship Foundation. Looking on is Miss Hewitt's family.

Aces

The following members have been declared Aces in recognition of their signing up five new members each.

CW3 Bud W. Wheeler, Jr.
SFC Willie C. Lucas
Mr. Thomas Diaz-Deleon, Jr.
COL Thomas E. Johnson
Ms. Gemma Schwind
Mr. Frederick B. Deitz
Ms. Catherine C. Roache

Honorary Members

The following persons have been selected by their Chapters as Honorary Members. Each will receive a complimentary one year membership, citation in these pages, and a "Certificate of Honorary Membership."

COL Thomas F. Cox
Minuteman Chapter

Dynamic Programs Planned for Fort Worth AAAA Convention

Two additional forums will be conducted at the AAAA Annual Convention, to be held at the Tarrant County Convention Center, Ft. Worth, TX, 31 March-4 April 1993. The sessions will run concurrently on Saturday morning, 3 April.

MG John D. Robinson will chair the Operations and Training Forum.

MG Donald R. Williamson, CG, USAATCOM, and MG Dewitt T. Irby, Jr., Program Executive Officer, Aviation, will co-chair the Acquisition and Maintenance Forum.

Come prepared to have your questions answered!

AAAA NEWS

OBITUARIES

BG Hallett Daniel Edson, Ret.

BG Hallet D. Edson, Ret., died on 4 September 1992 at the Arleigh Burke Pavilion of Vinson Hall in McLean, VA. He was 82 years old.

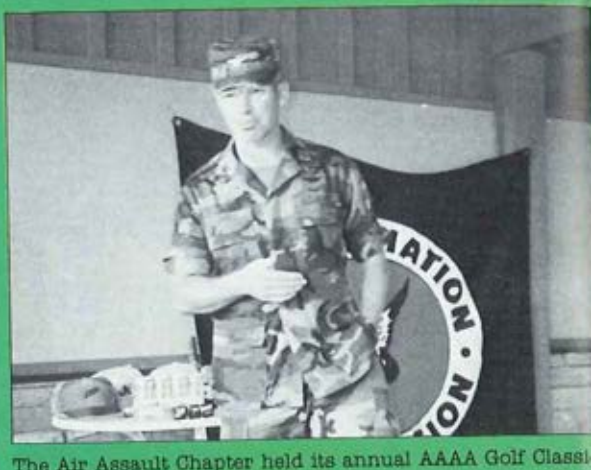
Edson, who lived at Vinson Hall, was born in Providence, RI. He graduated from the U.S. Military Academy at West Point. During World War II, he commanded an infantry regiment in Europe. He also participated in combat operations during the Korean War.

He was Director of Army Aviation from February-July 1969 for the Department of the Army. He also had been a senior military adviser in Korea and assistant commander of the 101st Airborne Division at Fort Campbell, KY. His last post held before retiring in 1964 was that of Deputy Commander, Army Mobility Command, in Warren, MI.

His military decorations included three Silver Stars, two awards of the Legion of Merit and a Bronze Star.

In 1968, he helped organize the National Association for the Uniformed Services, and he served as executive vice president of that organization until retiring there in 1975.

Survivors include his wife of 56 years, Faith Varney Edson of Vinson Hall; three children, Scott Edson of Rowayton, CT, Daniel Varney Edson of Newburyport, MA, and Sue Edson Griffith of Naperville, IL; and four grandchildren.



The Air Assault Chapter held its annual AAAA Golf Classi on 18 September, which proved to be a tremendous success The 4-man scrambles were played at the Ft. Campbell, KY Cole Park Golf Course. Featured teams came from the entir Aviation Brigade, as well as corporate members of th surrounding community. The tournament was organized b the "Expect No Mercy" Battalion, 1-101 Aviation. Presidin over the activities was COL Charles "Sam" Hurt, Brigad Commander and Chapter President (above).

Below: The "Bearcat Bastards" were officially recognized a the "worst" at the event. Pictured below (left to right) ar WO1 Todd Hensley, CW2 Mike Barrios, CPT D. Moore (Even Director), CW2 Rich Simpson, and CW2 Dave Hilemon.

Above: LTG Wayne A. Downing, Commanding General of U.S. Army Special Operations Command, Ft. Bragg, NC, was the guest of the Connecticut Chapter's November meeting. LTG Downing provided a spectacular presentation covering Army Special Operations Aviation, featuring the 160th Special Operations Aviation Regiment (Airborne).

Below: COL Samuel L. Kindred (left) receives The Bronze Order of St. Michael Award at the NEB Luncheon on October 12 at the Sheraton Washington Hotel, Washington, DC. MG Charles F. Drenz, Ret., AAAA President, is pictured at right.

Warren T. Rockwell

Warren T. Rockwell, 77, retired vice president for Washington operations for Bell Helicopter Co., died of congestive heart failure 17 September at his home in Washington.

Mr. Rockwell was born in Annapolis and reared in Washington. He graduated from Western High School, attended Stanford University and graduated from Georgetown University.

He worked for Bell Helicopter from 1967 until retiring in 1982. For 16 years before joining Bell, Mr. Rockwell had been in charge of Washington operations for Hiller Aircraft, which later became Fairchild Hiller. Earlier, he had been vice president in Washington for Aircraft Supply Corp.

Mr. Rockwell had been vice president of the American Helicopter Society and served on the national board of the Army Aviation Association. He was a founding member of the City Tavern Club and a member of the Metropolitan, Chevy Chase and Gibson Island clubs.

Survivors include his wife, Nell Alexander Rockwell of Washington; and two sisters, Betty Lowe of Sea Island, GA, and Kappy Anderson of Newport Beach, CA.

LTC Willard D. Conklin, Ret.

Services were held at Moore Funeral Home for LTC Willard D. Conklin, Ret., who died on August 1, 1992 at his residence in Hattiesburg, MS.

MSG Bae Does It Yet Again!

MG Benjamin L. Harrison, Ret., AAAA Senior Vice President and Vice President Membership, announced that MSG John H. Bae, Ret. Vice President Membership, Morning Calm Chapter, Seoul, Korea, has won the Calendar Year 1992 "Top Gun" award. This award is given annually to the member who sponsors the greatest number of new members during the contest year ending 31 December.

MSG Bae, who placed first last year with 502 members, continues his trend with a staggering 827 members in 1992.

MSG Bae wins an expense-paid trip to the AAAA Annual Convention in Fort Worth, TX, including airfare, hotel accomodations, registration, tickets to all social functions, and a $300 cash award. He will receive a plaque at the AAAA Membership Luncheon, 1 April 1993.

Mr. Fernando P. Gomez (Corpus Christi) placed second with a 75 member effort; CW3 Roger K. Garner (Army Aviation Center) produced 36; Ms. Catherine C. Roache (Monmouth) had 33; Mr. Joseph A. Caines (Corpus Christi) came through with 29; and SFC Willie C. Lucas (Colonial Virginia) and LT Kurt G. Moses (Army Aviation Center), both produced 24.

AAAA offers $114,000 in 1993

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

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

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

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

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

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

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

AAAA Annual Essay Contest

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

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

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

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

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

CALENDAR

January, 1993

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

February, 1993

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

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

Feb. 13-21. Chesapeake Bay Chapter Ski in '93, Whistler Village Resort and Blackcomb Mountain, Vancouver, Canada.

March, 1993

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

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

April, 1993

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

1992 Chapter Membership Contest

At the close of the Calendar Year 1992, the following AAAA Chapters had achieved the following standings in the "Chapter Membership Enrollment Program";

"AAAA Chapter" category (25-89): The Minuteman Chapter, Westover Air Force Base, MA, won with a net gain of 97 members. Wings of the Marne Chapter, Ansbach, Germany, came in second with a gain of 53, placing the Old Bill Chapter, Ft. Bliss, TX, in third position with 27.

"Senior Chapter" category (90-159): America's First Coast Chapter led the way with a net gain of 31 members. In second place was the Aloha Chapter, Honolulu, HI, with 29 members. Third place saw the Talon Chapter, Illesheim, Germany, with 25.

"Master Chapter" category (160 or more): The Morning Calm Chapter, Seoul, Korea, took first place with a net gain of 243 members. The Corpus Christi Chapter, Corpus Christi, TX, claimed second place with a net gain of 220 members. Coming in at third place was the Iron Mike Chapter, Ft. Bragg, NC, with 156 new members.

The presidents of the three winning chapters will receive plaques at the 1 April 1993 Membership Luncheon at the Annual Convention, Ft. Worth, TX.

AN/ARC-217

HIGH HF STANDARDS FOR DEEP-STRIKE MISSIONS.

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

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

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

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

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

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

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

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

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