Simulation and Training

SIMULATION AND TRAINING

ARMY AVIATION

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Briefings

The Secretary of Defense **William S. Cohen** announced 19 June 1997 that the President has nominated 45 active duty colonels for promotion to the grade of brigadier general. Two aviators are among them. They are: **COL(P) Craig D. Hackett**, Senior Army Fellow on the Council on Foreign Relations, New York, NY, and **COL(P) Gene M. LaCoste**, Chief of Staff, 3rd Infantry Division, Fort Stewart, GA.

Sanders, A Lockheed Martin Company, has received a contract from the U.S. Army Communications and Electronics Command to perform integration tasks associated with the installation of the Sanders-built **AN/ALQ-212 Advanced Threat Infrared Countermeasures (ATIRCM)**, which includes the AN/AAR-57 Common Missile Warning System (CMWS) on the AH-64D Longbow Apache Helicopter. Under an 18-month, $982,000 U.S. Army contract awarded June 6, Sanders will determine the optimum configuration and interface requirements of ATIRCM/CMWS for Apache Longbow.

Northrop Grumman has awarded **Cubic Defense Systems, Inc.** $10.5 million to build Air Data Terminals (ADTS) and associated spares for the Joint Surveillance Target Attack Radar System (Joint STARS). Since the initial Joint STARS contract was awarded in 1993, Cubic has received contracts totaling $128 million for its Joint STARS work.

March 26, 1997 - **Systems Research Laboratories** was awarded a contract from the Title III Program Office at Wright Patterson to develop next generation Flat Panel Night Vision Heads-Up Display (FP NV/HUD). This program consists of integrating HUD symbology into a 25mm Integrated Eyepiece for the ITT F4949 NVG using a miniature AMEL display from Planar Systems, Inc.

June 2, 1997 - **McDonnell Douglas** dedicated a new hangar that will become the training center for the U.S. Army pilots and maintenance teams that will support the AH-64D Apache Longbow multi-mission combat helicopter. Operations in the 38,000 square foot hangar, located at Falcon Field, just southwest of the main McDonnell Douglas Helicopter Systems facility in Mesa, AZ, are scheduled to begin this month.

Army Otter - Caribou Association, 12th Annual Reunion, Aug. 20-24, 1997, Albuquerque Hilton Hotel, Albuquerque, NM. POC: Bruce Silvey, Executive VP, Army Otter - Caribou Assoc., P.O. Box 20471, St. Petersburg, FL 33742 (800) 626-8194

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GUEST EDITORIAL BY GEN GEORGE H. HARMEYER

AIR/GROUND INTEGRATION

Many would expect an article by the Chief of Armor to be about tanks and other armored systems. However, this is not about Armor and Cavalry specifically. This article addresses the combined arms team in which we all participate. In my role as the integrator of the mounted force for TRADOC, I understand we must not just talk combined arms. We must live it – in garrison, in training and certainly in combat.

"Key to the integration of aviation and ground operations is the control of air space."

We have proven through the years that the integration of all combat forces on the battlefield: infantry; tanks, aviation, and artillery, is a must for success in battle. Yet integrating the air-ground team remains a challenge, requiring experience, and extensive training.

The Apache Longbow, the M1A2 SEP, and the M2A3 emerge as the key combat platforms of the new digital force. These vehicles will ultimately ensure success on the battlefield. They must deliver the combat infantryman to the fight and protect him so that he can finish the job. All else centers around this combined arms team completing the battle. These vehicles are the primary investment that make them the backbone of the future digital force. The M1A2 SEP and the M2A3 will be fielded in 1999, with the Apache Longbow coming on line right now.

Key to the integration of aviation and ground operations is the control of air space. Air space command and control requires hard training, much experience, and leaders who are well-grounded in the employment of combined arms. As we enter into the 21st century, we must retain the clear vision of the three dimensional battlefield. Digitization gives us a means to produce synergy to mass effects of the combined arms team. We have advanced weapons systems such as the Paladin advanced artillery system, which can shoot from any place on the battlefield; we also have Unmanned Aerial Vehicles (UAVs) flying in that same battle space, so it is crucial that we continually improve air space command and control. The introduction of the Paladin, UAV and other future improvements are the enablers to improve

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the commanders ability to command and control on the three dimensional battlefield.

During the month of March, I was fortunate to spend some two and a half weeks at Fort Irwin, CA, during the AWE. I spent a lot of the time discussing both current and future combined arms operations with my colleague MG Carl Earnst, the Chief of Infantry. We both agreed that the Apache Longbow, M1A2 SEP, and the M2A3 are the keys to digitization. The AWE proved that situational awareness of both friend and foe, is possible, allowing us to act faster in the future. The M1A2 SEP Tank and the M2A3 Bradley will have built-in computing capacity. When the first of these vehicles are fielded in 1999, the initial digital division will possess immense capability. For example, the M1A2 tank is some 40% more combat capable than the M1A1. Because of the 2nd generation Forward Looking Infrared (FLIR), these vehicles enjoy greatly extended target identification and engagement ranges. Through the use of the Commander's Indepen-dent Thermal Viewer (CITV), the M1A2 can acquire two or more targets simultaneously killing them within seconds.

Also noteworthy are the successes of other systems during this AWE. The 2 x 9 + 5, is an infantry squad with an additional machine gun squad. With much talk about a smaller Army, we still require combat infantrymen to finish the job. We proved in the AWE that this enhanced infantry squad configuration adds tremendous capability to the force. In addition, the Own The Night equipment is absolutely essential for today's infantryman. The Infantry School is continuing to develop these essential systems. The Long Range Advanced Scout Surveillance System (LRAS) and Hunter Sensor Suite (HS3) are two experimental, prototype systems; fielded to the reconnaissance troops during the AWE. They were able to pick up and identify forces at 15-18 kilometers. They could then identify enemy vehicles at 10-11 kilometers, allowing long-range kills with indirect fire and aviation.

The Land Warrior, or the digitized infantryman, is also progressing very well. The system employed during AWE was a surrogate for this system, but Land Warrior, connecting the man on the ground with the digitized force, is absolutely essential. Its development will continue.

". . . we still require combat infantrymen to finish the job."

Also during the AWE, the Palletized Load System (PLS), for the Combat Service Support (CSS) proved to be extremely effective. Commanders can now know their logistics status, all the way down to what individual trucks are carrying. A computer chip on each truck contains the inventory, so that when supplies roll in, the commander knows what's available to him. Now the logistician can launch his combat service support forward. He can control it, know its location, and get it to the right place at the right time. The Enhanced Position Location Reporting System (EPLRS) and a robust data radio are two of the essentials for this kind of situational awareness, allowing the use of Tactical Internet and passing of

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digital traffic in high volumes. The digitized equipment produced a dramatic increase in the effectiveness of each unit adding to its combat capability.

The AWE demonstrated a need for improvements in survivability and air/ground fusion. We found that in the close fight, immediate, responsive, suppressive fires and smoke are needed to enhance the survivability of the force. This led to the conclusion that the 120mm mortar with the Mortar Fire Control System is essential in all heavy task forces. The Future Scout and Cavalry System (FSCS) will probably be the first in the future generation of ground systems to incorporate leading-edge technology, such as 3rd generation FLIR and Stealth on the ground. We feel the fielding of the 120mm mortar and FSCS will give us this survivability and air/ground fusion.

The AWE showed us three things. First, modification of the equipment, the man/ machine interface, requires better systems integration. With the current digital ap-pliqué, you cannot fight the tanks or Bradleys. It represents an experiment with "off the shelf" equipment plugged into the tanks and Bradleys, meant to prove that situational awareness does enhance warfighting capability. We must move beyond the experiment towards integrated systems capable of delivering the full potential of digitization.

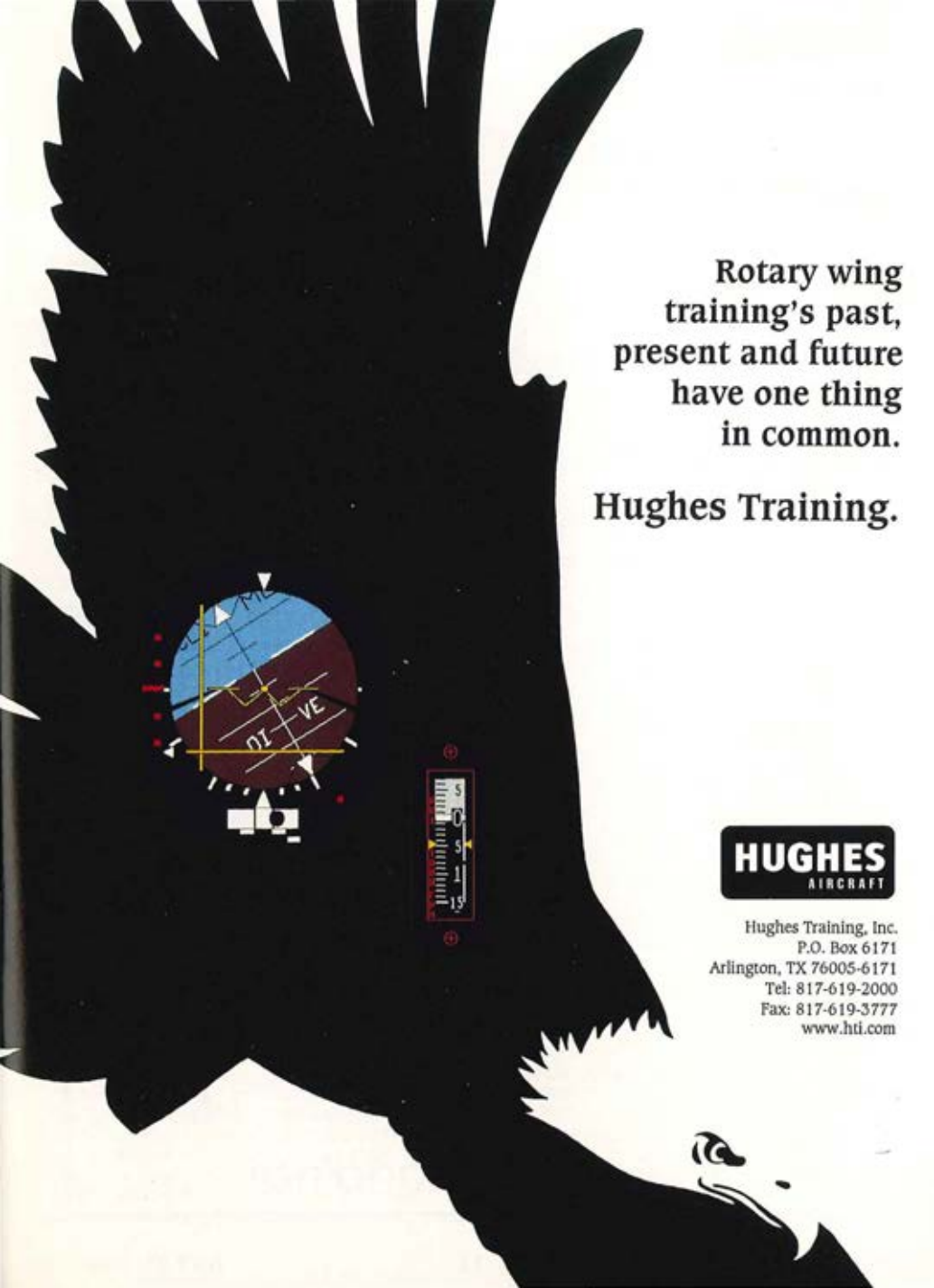
Second, we found the operational requirements document must be modified and cross walked with the Force XXI Battle Com-mand, Brigade, and Below (FBCB2) software and hardware. This software change is key to our future air/ground operations.

Finally, training support packages are very effective for training all types of units. A training support package is assembled for a commander to preclude him from having to go through weeks of planning for a training exercise. As we observed the 4th Infantry Division during AWE, we kept refining our training support packages, trying to determine the best mix of constructive simulations, virtual simulations and live simulations. Those training support packages are continually being developed. I think this approach improves the effectiveness of training in the future.

"The NTC will be the means by which we continue to build air/ground operations."

Linked to my observations during AWE is we've made a tremendous investment in the National Training Center. The NTC will be the means by which we continue to build air/ground operations. I am a zealous advocate for the Combat Training Center (CTC) program. It's my considered opinion that we must maximize their use. The levels of proficiency we can attain at the CTC's is just unimaginable. For this reason I feel we need to continue to work heavy and light forces alongside aviation at our Combat Training Center's.

The vision of the future is everybody talks to everybody else. The scout and the combat infantryman on a patrol in front of a heavy force must be able to receive digital communications concerning the enemy disposition. And vise-versa, when he sees something, he must have digital links to the



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tank force, to the Apache, and to the command post. This is going to require an industry which works together on a common operating system, enabling all of these assets to talk horizontally to one another. It all has to work on a common operation base.

What is the path to the future? The Mounted Battle Lab at Fort Knox and the Air Maneuver Battle Lab at Fort Rucker are clearly linked on all these issues. The next step is the Division AWE with a Battle Command Training Program (BCTP) Exercise this Fall.

All of this adds up to be a training challenge. We must gain experience with new equipment, new methods, as well as new tactics, techniques and procedures. I have said it several times. " You can't fight faster until you know how to fight." Training and fundamentals are essential, and digitization can help us do it faster, and more effectively. This all assumes units are functionally sound and reliable.

The combined arms team is not primarily an investment in technology. We have the technology. We have the greatest equipment in the world. Neither of these are worth much without quality people. We must maintain the quality people we have in the Army; soldiers, NCOs, and officers. We must provide them with the means they need to hone their skills and maximize the integrated air/ground team.

* *

GEN Harmeyer is the Chief of Armor, U.S. Army Armor Center & School, Ft. Knox, KY.

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THE VALUE OF THE NATIONAL TRAINING CENTER TO ARMY AVIATION

Training to achieve decisive victory when the nation calls

America's Army today is a highly trained and professional force serving the nation in a challenging time at home and abroad. Although smaller than at any time since World War II, our Army is conducting an ever increasing number of operations throughout the world. Today's operational pace is unprecedented, resulting in longer and more frequent deployments for soldiers, and a greater need to maintain trained and ready forces capable of quick, decisive victory when our nation calls. Only by remaining well trained can we expect to do this.

The three dirt combat training centers provide the most focused, realistic, and intense collective training opportunity available for our tactical units. The CTCs address a known and recurring training deficiency that can only be resolved in this environment: collective training and execution at the company, battalion, and brigade levels. During these periods of dwindling fiscal resources and ever increasing demands on available CTC rotations, it is imperative that Army Aviation battalions and brigades participate as full players—in the box, with complete staffs and supporting attachments—in what is clearly the premier combined arms training experience, outside of actual combat. It is a world class education process to train our future battalion and brigade commanders. It is our vision that every battalion and brigade commander assigned to an MTOE unit should experience a rotation to NTC, CMTC, or JRTC during a normal 2-year command tour. Given the unique challenges and demands of our mission—spanning every battlefield function and reaching across the operational spectrum—our commanders and staffs must be the ultimate combined arms planners, integrators, and synchronizers on the battlefield. Nothing short of war can hone those acquired skills like a CTC rotation.

A CTC rotation is not the end state, war is the end state. But, the preparation for it—the "road to war"—provides an immeasurable value added. It is the development and execution of long range training plans, the "crawl, walk, run," of individual and small unit training, building over time to a peak of precision in collective execution. It is the melding of a commander and his battle staff—learning the art of military decision

making and adapting the process to the personal style of the commander—as plans and orders are developed and refined. It is the TEWTs, MAPEXs, FTXs, and gunnery training. It is hands-on, battle-focused training. It is leader development, from the young PIC in the cockpit, to the platoon sergeant and platoon leader, all the way through the chain of command. Still another collateral benefit is the high state of sustained combat readiness that is a natural derivative of preparing for a CTC rotation. There is no better event on which a commander can focus his home station training program and even perhaps, his vision for his command.

In this edition I will only concentrate on one of our three great training centers, the National Training Center (NTC). The NTC is clearly optimized for its role as a heavy force training facility. With over 1000 square miles of dedicated training area, it provides a focused, realistic, and intense collective training opportunity for our aviation units that cannot be duplicated anywhere. The NTC experience begins with the reception, staging and onward movement and progress through all phases of combat operations. The unrestricted live fire area provides commanders with their first and only opportunity to fire and maneuver their attack assets independently and most importantly as a part of the entire combined arms team. The force on force fight, utilizing MILES AGES II, against the world class OPFOR provides the perfect environment for team building and leader development. However, perhaps the most important benefit of training at the NTC is derived from the superb observer controller (OC) team. Though the After Action Review (AAR) process can be painful at times, the OCs capture the critical details of the planning, preparation and execution phases of each operation and provide feedback to the unit to help them improve.

During the recent Task Force XXI Advanced Warfighting Experiment (TF XXI AWE) conducted at the NTC, I had the opportunity to observe the latest advances in aviation technology. Aviation initiatives in TF XXI AWE exhibited tremendous potential. The AH-64D Longbow Apache, A2C2S Black Hawk, and the Aviation Tactical Operations Center (AVTOC), were just a few of the initiatives tested in the harsh desert of Southern California. Although final analysis as to the effectiveness of these new systems is still to be concluded, one conclusion is certain: Army Aviation is key and continues to be an integral part of the combined arms team. This will prove to be even more prevalent as future initiatives are fielded. As equal partners in the combined arms team, we must strive to meet the ever increasing demands placed on our battalion and brigade commanders and their battlestaffs. Our commanders and staffs must seize on every NTC rotation to practice the planning and execution of combat, combat support, and combat service support missions.

Forging the Warrior Spirit!
Train the Force!
Train to Win!

* *

MG Petrosky is Aviation Branch Chief and CG, U.S. Army Aviation Center (USAAVNC) and Ft. Rucker, AL, and Commandant, U.S. Army Aviation Logistics School (USAALS), Ft. Eustis, VA.

BY BG JOHN P. GEIS

A STEP BEYOND

Bringing the Aviation piece into Combined Arms Training

For over twenty years STRICOM's Project Manager for Training Devices has supported the Aviation community by developing and supporting fielded Training Aids, Devices, Simulators and Simulations (TADSS). I am committed to continuing the support that PM TRADE began so many years ago—and taking a step beyond.

I believe the Aviation community clearly recognizes the benefits of simulation for engineering development, training, testing, and mission rehearsal. We now need to expand our horizons and explore more opportunities for increasing the value of training simulation for not only Aviation but the entire Combined Arms Team. By connecting simulations and simulators, we have been able to take advantage of networked training and enhance those benefits. Our next big step is to bring the Aviation piece into Combined Arms Training. This will be one of STRICOM's biggest challenges in the next few years.

The future Aviation collective training needs will be met with state-of-the-art aviation simulators operating in a synthetic environment. The environment will provide both the simulated physical environment and the combined arms environment that allows the participants to train with their counterparts in the Armor, Aviation, Infantry, Combat Support, and Combat Service Support.

Simulation technology has advanced to a point where it is possible to divide the development task between the simulator development and the supporting environment. STRICOM is coordinating with TRADOC and PEO Aviation to explore concepts that would have System Program Managers, such as Comanche and Apache, build hardware simulators while STRICOM complements these efforts by expanding and enhancing the existing synthetic environments. This allows the System Project Managers to look at multi-use simulators, and STRICOM to build on a tested and proven environment.

This strategy will be an extension of the one STRICOM has been planning for several years for the various systems under the Combined Arms Tactical Trainer (CATT) environment. We envision one of the key benefits of the CATT program, besides providing the most advanced virtual collective training system for the combined arms team, is to maximize reuse of Army-developed products. The first of these simulator programs is the Close Combat Tactical Trainer (CCTT). This program developed armor and infantry manned modules and the combined arms synthetic environment for these. The synthetic environment includes terrain, Semi-Automated Forces (SAF), After Ac-

tion Review (AAR), higher headquarters and support workstations (TACP, TOC, FIST, Log), models, algorithms, and exercise tools. Follow-on CATT systems, such as the Aviation CATT, will use this technology base and expand upon it as necessary. Our approach will allow weapon system Project Managers to develop multi-use simulator hardware that can perform system training tasks - as well as collective tasks - in the combined arms environment.

There are two active program efforts in STRICOM that support Aviation collective training. The first of these is the Aviation Reconfigurable Manned Simulator (ARMS). This is a procurement effort for the Army National Guard. The program is intended to provide approximately 36 simulators that can be reconfigured. The second program, the Aviation Combined Arms Tactical Trainer, is projected later, based on available funding. This program will provide simulators and the synthetic environment to meet active Army aviation collective training requirements. Because of the timing of this program, STRICOM is currently working with the System Project Managers to plan this program under the simulator/synthetic environment discussed above.

STRICOM has supported the Army Aviation community with high quality simulators for many years. As technology now supports integration of these simulators into a total simulated combined arms environment, STRICOM will work hard to take advantage of simulation products and new strategies that allow the Army to get the most for its limited training dollars.

* *

BG Geis is the Commanding General, Simulation, Training and Instrumentation Command (STRICOM), Orlando, FL

BY CPT STEVE YOST

SIMULATING AND MODELING EFFORTS

How USAAVNC Supports Simulation in Three Domains

The United States Army Aviation Center (USAAVNC) simulation strategy addresses simulation use within three domains: Research Development & Acquisition (RDA), Advanced Concepts & Requirements (ACR), and Training Exercises & Military Operations (TEMO).

Simulation use within the RDA domain is focused on highly detailed analysis of proposed systems physics-based characteristics and analysis of how to apply emerging technologies. The ACR domain focuses upon several issues from the analysis of decisions on war fighting capabilities and outcomes, to force and organizational design analysis, to Operational Requirements Document (ORD) supporting analysis and Cost and Opera-tional Effectiveness Analysis (COEA). The TEMO domain encompasses individual and collective training, Command Post Exercises (CPX) and Field Training Exercises (FTX), and analysis of operational plans and orders.

Within each of these domains, simu-lation users here at USAAVNC and throughout the Army employ one or more of the following three categories of simulation, termed synthetic environments:

- Live Simulations are operations with real equipment in the field. Examples include exercises conducted at the National Training Center and the Joint Readiness Training Center.
- Virtual Simulations: consists of systems and troops in simulators fighting on synthetic battlefields. Battle Force Tactical Training (BFTT), aircraft simulators, and the Combined Arms Tactical Trainer (CATT) are a few examples of virtual simulation.
- Constructive Simulation: consists of war games, models and analytical tools. The Army uses the Corps Battle Simulation (CBS), Brigade Battle Simulation (BBS), Vector-in-Command (VIC), Eagle, Aviation Tactical Command (ATCOM), Modular Semi-automated Forces (ModSAF), and Janus among others.

There are several agencies at Ft. Rucker that are directly involved with one or more of the above categories of simulation, either for analysis or training. These agencies are the Air Maneuver Battle Lab (AMBL), the Directorate of Training Doctrine and Simulations (DOTDS), the Aviation Test Bed (AVTB), and the Army Research Institute (ARI). Figure 1 displays the relationship,

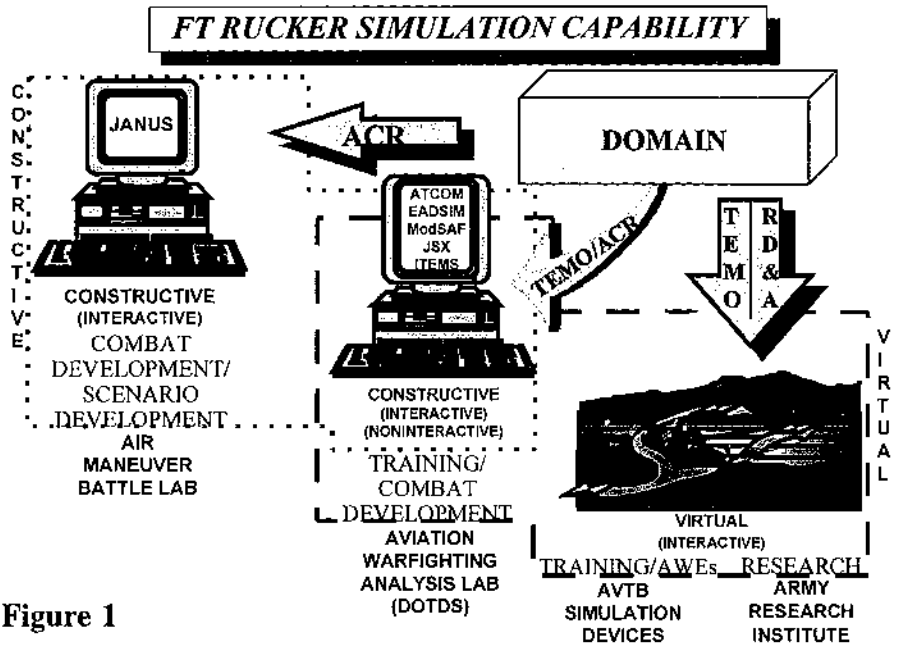

Figure 1

relative to domain, of each of these agencies and their corresponding use of simulations.

The AMBL's role in simulation falls squarely within the ACR and TEMO domain. The AMBL plans and conducts analytical constructive simulations to support material and doctrinal decision makers and requirements from the Directorate of Combat Developments (DCD) and DOTDS. This includes ORD and COEA supporting analysis, and force and organizational design study support. The AMBL also supports TRADOC standard scenario development by providing aviation subject matter expertise, aviation modeling support, and remote gaming capability, see figure 2.

The Janus constructive simulation is the main tool used by the Wargaming Branch to accomplish these tasks, although several other constructive simulations are available with the assistance of DOTDS. A few of the constructive models used regularly at USAAVNC include:

•*Advanced Tactical Combat Model (ATCOM)* is a powerful analytical tool developed by Boeing Defense and Space Group for the analysis of helicopters in combat. ATCOM has been applied to numerous high resolution experiments by both Boeing and the U.S. Army and is inter-operable with EADSIM, ModSAF, ITEST, and JSX.

•*Extended air defense simulation (EADSIM)* is a powerful analytical tool for evaluating the effectiveness of various C3I, Theater Missile Defense (TMD), and air defense architectures, as well as weapons systems in the full context of an environment of sensors, C2 centers, communication

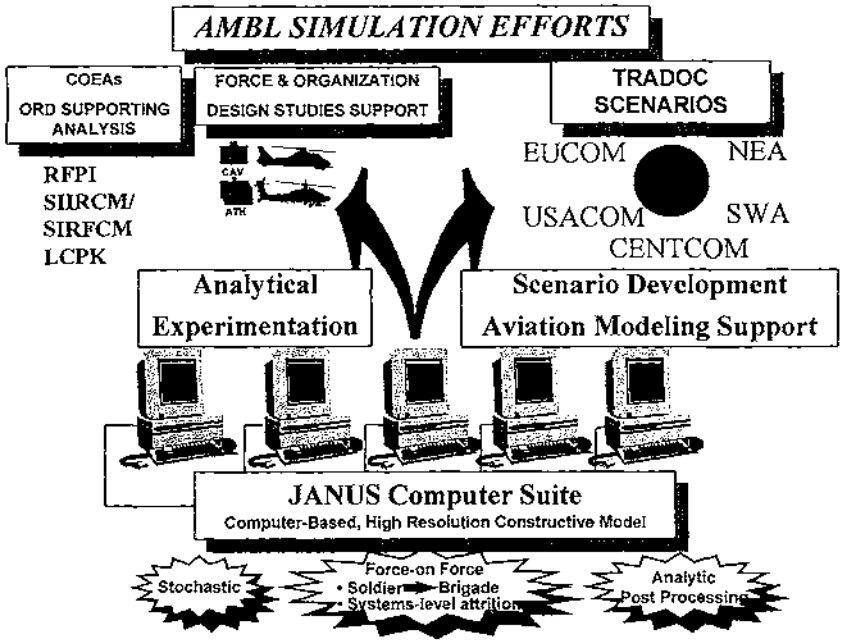

Figure 2

systems, platform dynamics, and weapons performance. EADSIM can be used in wargaming, battle management training, C3I planning, and systems effectiveness. EADSIM is being enhanced to include rotary wing aircraft.

•*Janus* models company and platoon activities all the way to BDE activities to plan and execute joint and combined arms operations. The AMBL operates and maintains the Janus force-on-force combat model to support studies of future materiel and organizational developments. Janus is used in every COEA; for doctrine development, such as the ARI; for R&D; and for staff training. Janus also is used for movement and for the relationship of line-of-sight for calculations of kills and survivability.

* *

CPT Yost is the Project Officer in the Wargaming Branch of the Air Maneuver Battle Lab, Ft. Rucker, AL

HOW UNITS WIN AT THE NTC

Highlights from Rotations 96-07 and 96-04

Before the battle even starts, the OPFOR already has the "home team" advantage (knowledge of terrain, knowledge of ROE, NTC experience). In order to overcome this, BLUEFOR units must know the basics and they know them cold. They must fight on their own terms and demonstrate proficiency in a few critical areas:

Discipline; Will to fight and win; Operational Planning Endurance; Use of terrain; Reconnaissance; Controlling the tempo; MILES.

DISCIPLINE. OPFOR and BLUEFOR both conduct disciplined operations yet OPFOR units demonstrate a greater attention to detail. Pre Combat Inspections (PCIs) are a good indicator of this. Force-on-force battles move so rapidly (once they begin) that there is no time for last minute adjustments: basic loads, fueling, arming, and lining up must be conducted early and checked in detail. OPFOR soldiers maintain detailed checklists to conduct PCI and use them extensively. PCI is emphasized from the highest levels in the chain of command down to the individual soldiers. A great sense of pride is instilled in OPFOR soldiers because they are much more "ready" for each fight than the BLUEFOR.

WILL TO FIGHT AND WIN. The OPFOR are certain that they can win all battles without question. Arrogance in this area runs rampant throughout their forces. The attitude stems from officers and NCOs who force this mentality down to their soldiers and reinforce it every time they win. The BLUEFOR has the disadvantage in this area - it is hard to instill a winning attitude when you are new to the environment and constantly being defeated.

You can overcome this by executing successful field training exercises prior to NTC rotation. Build a high level of confidence in your equipment and your individual capabilities prior to arrival to Ft. Irwin. Brag about your capabilities. Build a positive attitude early so that your unit will dominate the rotation and rewrite the record books.

An example of success in this area is 1st Battalion, 227th Aviation (AH64) from the 1st Cavalry Division. 1-227 deployed to the field training areas on Fort Hood reservation two months prior to deployment. From there they underwent a CAT-B recertification

program and also completed a JANUS computer exercise in conjunction with the Aviation Brigade and one ground brigade. The unit improved many weak areas and sustained excellence in several others. The end result was that the unit leadership could focus on their talents and build confidence in their troops. 1-227 arrived at NTC with fire in their eyes and destroyed more enemy forces than any other unit in the history of NTC. Their unstoppable will to fight provided them with a distinct advantage as reflected by the OPFOR BDA.

OPERATIONAL PLANNING ENDURANCE. An essential element to BLUEFOR success is an adequate sleep cycle for operational planners. OPFOR units utilize warplans that are written 2-5 months prior to the rotation even occurring. These same exact plans are rehearsed during successive rotations. All an MRB commander needs is current graphics and he already knows the plan.

BLUEFOR units are not so fortunate. Chemical attacks, air attacks, probes, media events and raids are all events that interrupt their planning process yet do not even occur on the OPFOR side. As a result, operational planners attempt to work longer hours to write better warplans. By the end of the first week most BLUEFOR units cannot stay awake long enough to put adequate plans together and then the frustration sets in.

Units that develop an adequate sleep cycle from day one in the box will reap greater combat power throughout the force-on-force cycle.

The 1-227 TOC during rotation 96-04 utilized four S-3 operational planners working six hour shifts. This allowed the unit to maintain at least two battle captains (one future ops, one current ops) working 24 hours a day. The six hour shifts allowed each planner to get at least one opportunity to sleep per day (if not two), even if probes, chemical attacks, or assembly area movements occurred during one of the planned sleep periods. Utilizing planners in a 12-on / 12-off cycle is not as effective because of the inevitability of attacks and/or interruptions during the single sleep cycle.

USE OF TERRAIN. The terrain at Fort Irwin is "proven" terrain. It can be called proven terrain because so many battles have been fought on it for so long. All the key terrain, dead space, LP/Ops, slow-go terrain, and kill zones have been clearly identified and given specific names.

On the battlefield the OPFOR knows the terrain like no other U.S. Army unit because they train on it everyday and focus on it in rehearsals. In talking to individual OPFOR soldiers, I found that they know how to use the key terrain better than most BLUEFOR commanders do.

History repeats itself at NTC; BLUEFOR commanders need to study the past battles and learn from the misfortune or victories of previous units. LTP is an outstanding opportunity for BLUEFOR units to start their knowledge of terrain; it should be attended by as many key leaders as possible.

RECONNAISSANCE. Recon forward is essential to defeat the OPFOR. OPFOR commander's hate it when UH-60 Black Hawks at night fly deep to insert COLTs and DIRT teams. In fact, they expend an unusually large amount of time and resources trying to find and destroy all recon teams inserted deep into their areas.

EXAMPLE #1: When 4-227 inserted DIRT teams in the vicinity of Artillery Piece during rotation 96-07, approximately fourteen OPFOR infantry soldiers were dispatched to find them. OPFOR radio traffic increased dramatically during this

time and it was obvious that they were extremely agitated. Normal operations ceased and all units shifted efforts towards the invaders until they were found and destroyed.

EXAMPLE #2: Day mission between 1-7 CAV and an MRB: Two OPFOR soldiers were located on the side of Brigade Hill overlooking the OPFOR defensive positions. An OPFOR spotter on the ground could see the two soldiers but could not confirm their status as either OPFOR or BLUEFOR. A net call went out to all scouts to report their positions and get accountability. After all scouts called in, the OPFOR leadership misinterpreted the position reports and thought that the two soldiers on the hill were a BLUEFOR DIRT team overwatching.

The possibility that a BLUEFOR DIRT team had "eyes on" caused the entire OPFOR leadership to mobilize. Immediately they launched two OPFOR UH-1s to attempt to destroy the DIRT team. They circled Brigade Hill for over ten minutes looking for BLUEFOR and reported seeing none.

After continued net calls the OPFOR commander called off the search and determined that he was looking at his own men on the side of the hill. After the battle, during the AAR, the MRB commander was nearly fired for his lack of control and accountability of his recon teams. The individuals at fault (Two NCOs and a lieutenant) were severely reprimanded and came very close to losing their jobs.

The OPFOR reaction to all BLUEFOR probes demonstrates the major worry that infiltration is for all OPFOR commanders. It clearly demonstrates that if the BLUEFOR force wins the reconnaissance and surveillance battle, that they will shake the OPFOR from their comfort zone - a great opportunity for the BLUEFOR to control the tempo of the battlefield and set the conditions for success.

CONTROLLING THE TEMPO. While on the offense, BLUEFOR units must maintain momentum throughout the battle. Prematurely stopping movement while on the offense is devastating. During a day fight between 2BCT and an MRB, the advancing BLUEFOR tanks and Bradleys were often harassed by light infantry "strong points" set up on key terrain. With simple M-60s, Dragons, and other light weapons, these OPFOR infantry forces were able to deny terrain from the entire BLUEFOR. The only reason for this was that 2BCT commanders were unwilling to bypass or utilize their own inherent shock effect to rapidly push through the harassment in search of their objectives. They treated each initial encounter with OPFOR as if it were the main body, and this greatly slowed their pace in the battle.

An administrative fact about NTC which should be noted is that during each rotation there is often several National Guard and Reserve units assigned to the OPFOR to conduct their own annual training. These are often the light infantry units. The OPFOR will position them forward in each sector on highground, and require them to defend these infantry strong points to the death. They are generally not given follow on missions, and have no evacuation, resupply, or support facilities provided. It is often these units that are primarily responsible for early warning to the OPFOR, and for completely disrupting the tempo of the BLUEFOR fight.

MILES. MILES is the only joint battle that both the BLUEFOR and OPFOR have to fight together. OPFOR units do of course have much more experience with MILES due to the nature of their work. In several

(How Units Win - cont'd on pg. 26)

ATS: A BLUEPRINT FOR THE FUTURE

Historically Army Air Traffic Control Units have focused their efforts on services to Divisions, Corps and "Echelons above Reality". In the past an ATC unit's capability was measured in terms of how many fully instrumented Airfields it could place in key rear areas. The whole concept of tactical ATC employment was based on the full-scale conventional commitment of entire Theaters. The emphasis during our brief periods of relative calm was on installation support, in other words, running Army Airfields.

A fundamental shift in thinking must occur across the community

However, as we all know, the world has changed and this is no longer how the army fights. Today the Army is into things like Joint Contingency Operations, Non-combatant Evacuation Operations (NEO), Show of Force, Peace-Keeping, and Peace-Making just to name a few. The Army has adopted its new role in fine style, making adjustments as required in order to meet the needs of supported CINC's. However, somewhere along the line the Air Traffic Services community was left behind. *ATS never made the transition from the Cold War to Today's Wars.* In fact we are still using tactical equipment designed in the 1940's and fielded in the 1950's!

In order for the Air Traffic Services Community to make this transition and remain relevant, a fundamental shift in thinking must occur across the community. The current focus on installation activities and support to full scale theater deployments must be dropped in favor of a Tactical Focus at the user level. In simple terms this means that instead of support to division and corps ATS must focus it's efforts on support of the rank and file of Army aviation, in the field, at the brigade and battalion task force level. The old paradigms about how ATC is employed and whom they will support have to be relooked.

This implies much more than may be evident at first glance. ATC battalions are currently organized with battalions assigned to theaters and companies habitually associated with divisions and corps. The concept for deployment of these companies is based on commitment of entire companies with various items of airfield support equipment and NAVAIDS to support employment. What is implied is that in order to support "lesser contingencies" ATS must both shift its level of focus and the manner in which it is organized. Further, we have to consider current

trends and future direction with regard to the airspace environment and the systems that our aviators will utilize to negotiate the battle area. How will our aviators transition through the airspace in the future? What capabilities will our aircraft have to operate under IFR and VFR conditions? What will be the impact of full integration of Global positioning navigation systems into the airspace that we fly in? Will GPS relegate ATS to a secondary role with regard to instrument navigation?

The answer to all of these questions is simple. There is a clear role for ATS in the future and new technology will never replace the need for "eyes on the target". In this context this means that although GPS systems or other technology may replace others for the purpose of navigation and instrument flying, there will continue to be a need for landing zones to be monitored and controlled. No matter how sophisticated the navigation system, there will always be a need for someone to walk the ground, survey the field, and build the approach. Someone will have to tell the aviator that the field is clear of obstacles and he is "clear for the approach".

"Habitual association is an outmoded concept"

So how do we in the ATS community ensure that we are in the position to provide this service? What is proposed is a complete reorganization of ATS Battalions with an eye towards future trends and capabilities. ATS must be capable of moving on short notice, be light, and provide the full range of services to our aviators in the field. Our focus must be on providing unique services that an aviation unit cannot duplicate itself, and the equipment that goes with the package must be state-of-the-art and complimentary to onboard aircraft systems. Packages tailored for specific missions will be the norm.

Habitual association is an outmoded concept. In actual practice this is no longer the way business is done in the field. The services that ATS provide are generic and standard enough in nature that the presence of one company vs. another should be transparent to the supported unit. Therefore, what is envisioned is a battalion headquarters in general support to the theater CINC, organized with companies made up of rapidly deployable, modular packages tailored to meet specific mission requirements. The intent then is to employ these packages as forward as necessary to meet the needs of aviation commanders.

In some scenarios ATS can even be employed cross - FLOT for deep operations. The smallest of these teams would provide VFR manpacked support for forward landing zones and FARPS. Given the complexity of today's aviation operations, the discipline provided by the presence of ATS, even in the VFR only mode, provides value added to the operation. The largest of these packages would provide the full range of services to the Aviation Brigade Task Force commander and would include an instrument launch and recovery capability at battalion and brigade field sites.

In order for Army Air Traffic Services to remain relevant in the future, we must shift our focus from large scale fixed installation mission that ATS is currently saddled with

should be considered nothing more than a training vehicle for tactical operations. ATS must become a force multiplier **on the battlefield**, supporting the bulk of our aviators who are deployed in the forward areas rather than the handful of support and VIP aircraft which operate in the rear. The presence of the right mix of Tactical ATS well forward on the battlefield;

- Raises the probability of success as a result of a disciplined flight environment
- Increases aviator confidence through knowledge that instrument recovery is available at selected launch points
- It buys down the overall risk of our more complex operations.

Army Air Traffic Controllers are some of the best and brightest soldiers in the army today. They will continue to be hand picked in the future. The technical skills required to perform their vital mission demands this. The army trains these soldiers well and at great expense. Let's get them forward with the right equipment to fully exploit their vast potential.

* *

LTC Irish is the Commander, 3-58 AV(ATS)s, APO AE.

(How Units Win at NTC
cont'd. from pg. 23)

operational spot checks made by observer controllers during Rotation 96-07, all the OPFOR MILES systems were working. Rumors of MILES tampering by the OPFOR are unfounded as they are under the same scrutiny as the BLUEFOR soldiers.

Fighting and winning the MILES battle requires increased expertise by BLUEFOR units. Units need to understand the limitations and capabilities of MILES, as it is the only direct fire weapon that we have at NTC. Practicing with it at home station will greatly prepare units prior to arrival.

SUMMARY. BLUEFOR units can win at NTC if they level the playing field with the OPFOR. Through FOCUS, PREPARATION, and REHEARSAL, the BLUEFOR can overcome the challenges of the NTC battlefield before they even get there.

* *

CPT Eno is the commander of Alpha Company, 1-227th Aviation Regiment, 1st Cavalry Division, Fort Hood, TX.

TACTICAL REFUELING & REARMING CHALLENGES

The Airborne Tactical Aviation Support Platoon and Cross Training Are Key

The aviation community has recognized that tactical refuel and rearm are the most dangerous of all aviation operations. The May 96 edition of Flightfax offered thoughtful insight concerning the potential hazards which exist in aviation refueling. However, the scope of this article was limited because it was from the front seat of an aircraft.

While I agree with the author's contentions regarding inadequate mission planning, lack of fighter management, and leadership failures in the fundamentals of aircraft refueling, I would stipulate that the scope of the problem is much broader and much more serious. I would like to offer the aviation community a different view of FARP difficulties by sharing my experiences as a 3/5 platoon leader. From this view, I hope you can appreciate the hazards which inevitably beset any tactical refuel or rearm mission, and I hope to share some ideas which may mitigate these intangibles.

I served as the 3/5 Platoon Leader assigned to 82d Aviation Brigade from April, 1996, through February, 1997. Under the ARI MTOE, I am authorized 44 aircraft fuel handlers (77F) and 14 ammunition specialists (55B). These personnel are expected to support an air cavalry squadron, an attack battalion, and an assault battalion.

In only ten months, I supported two JRTC rotations, two JTF-06 missions, three major battalion field exercises, three Emergency Readiness Deployment Exercises, over a half dozen aerial gunneries, a countless number of battalion and brigade sized assaults, and the largest airborne operation since World War II. It was not uncommon to have better than two-thirds of the platoon deployed at any one time.

Such a demanding mission scope is not without its price. Soldiers went from one mission immediately into another without personal compensation time. The serviceability of the equipment degraded to a critical level as unserviceable equipment began to accumulate in garages and storage sheds. With almost 40 fuel tankers, cargo vehicles, troop vehicles, and forklifts assigned to the platoon, there were not even enough soldiers in the unit to operate all the equipment! Motor stables became a two or three day operation, and the standard of doing what was required to roll the vehicle from the motor pool replaced -10 and -20 technical manual standards. Fatigue, both mental and physical, haunted every operation.

There simply was not enough personnel to accomplish all missions in a safe manner. Furthermore, those personnel working in the FARP had little or no experience in aviation operations.

The notion that 77F are experts in aviation fueling operations is false. I spoke with personnel at Fort Lee, VA, concerning the training that soldiers receive on aviation fueling operations. Of the 53 days of training at BNCOC, only two class days (approximately 12 hours) are dedicated to aviation fueling operations. Through AIT and BNCOC, the soldiers receive no experience in operating around an aircraft with a turning rotor blade. In fact, Fort Lee has only recently begun instruction on hot refuel operations.

The persons I spoke with at Fort Lee stated that the scope of the MOS is so broad, that the importance of aviation fueling is lost in the number of critical tasks that the soldiers must accomplish. My 3/5 platoon had 153 years of total 77F NCO experience. Of that, only 52% of the experience involved aviation operations. I had two senior staff sergeants in the unit whose rank and time in service dictated that they be placed in a section leader position; however, for both of these soldiers, this was their first aviation assignment. This problem is compounded because the fuel handlers are not the only soldiers working in the FARP.

Because FARPs must be task organized to support all the fuel and ammunition needs of the task force, there could be up to three different MOS's from three different units working in the FARP at one time. In our brigade, aviation operations which require refuel and rearm would employ 77F (fuel handlers), 55B (ammunition specialists), and 68J (armament specialists) for combat support operations. Oftentimes, the first exposure that 68J will have to the FARP will be on a live fire gunnery, and many times their procedures differ from those of the refuelers even though they are supporting the same mission. Naturally, this scenario in an unfamiliar environment, under adverse weather conditions, and at night would significantly increase the risk in the operation and decrease the speed and effectiveness of the refuel and rearm support.

The greatest challenge with the 3/5 platoon is understanding the extent of the problem. Once done, the leaders of the unit have an obligation to address the problems in a brutally honest manner. It is far too easy to accept the problem as one of doctrine, force structure, or simply something out of our control. Furthermore, if the leaders accept these deficiencies as "leadership challenges" without aggressively solving the problems, then they are subconsciously accepting the ultimate price of losing an aircraft or a soldier's life through a hot refueling mishap.

These problems led to the birth of what is now called the Airborne Tactical Aviation Support (ATAS) Platoon. Also, it spawned the Aviation Combat Support Operations Course and the most thorough training program for Class III/V support operations in the United States Army today.

The ATAS Platoon combines the soldiers who would normally conduct FARP operations into one, cohesive team. The 3/5 platoon, which belongs to H.C. Brigade, is attached to the brigade's organic AVIM unit, D Company (AMC). A portion of both the AVUM and AVIM armament specialists, 68J, are reassigned to the ATAS Platoon. The platoon is restructured from a Class III and Class V section into three teams possessing the same number of 77F, 55B, and 68J's in each team. Each team is aligned with one of the battalions in the brigade and is led by a lieutenant. The entire platoon is commanded by a captain.

The restructuring of personnel from H.C., AVUM and the AVIM units increases the number of enlisted soldiers in the platoon from 58 to 88, helping to alleviate the extensive manpower requirement. Also, the platoon can take advantage of the more experienced and better structured supply and maintenance programs which are present in an AVIM unit. As for vehicle maintenance, the AVIM unit provides a motor officer and more mechanics to combat the difficult task of fuel tanker maintenance.

Resourcing the platoon with a captain and three lieutenants provides the necessary leadership and supervision required of the platoon. The captain provides experience and guidance to the unit. He is able to manage training and maintenance while the lieutenants are supervising the FARP missions. The lieutenants (or team leaders) act as the platoon leaders liaison with the three battalions. Because each lieutenant can focus solely on their supported unit, each battalion will inevitably receive better support.

The ATAS Platoon and team concept offer the leadership, maintenance support, and cohesion needed to reduce the risk of FARP operations. The training program utilized by the platoon provides the safety and standardization which is absent from current 3/5 operations. From the cockpit perspective, pilots can anticipate the same refuel and rearm procedures regardless of either the task force headquarters or the team supporting the FARP.

The training program combines refueler tasks, armament tasks, and ammunition qualification for each soldier in the platoon. The purpose of this training program is to provide the focus of an aviation training program on the 3/5 support operations. The program is modeled after the Aircrew Training Program for rated and non-rated crewmembers. As such, the program includes a Commander's Task List, training objectives, grade slips, and training files for each soldier in the platoon. The standardization and training program basically combines those applicable tasks from the 77F AIT manual (STP 10-77F15-SM-TG) with the armament tasks as outlined in TM 9- 1090-214-23&P. Because there is no precedent for maneuvers such as emergency procedures or Robertson Pump operations, we provided our own conditions and standards for these tasks. The program provides the thorough training, documentation, and command emphasis to increase the flexibility, efficiency, and overall safety of the FARP.

All ATAS soldiers are trained in the Aviation Combat Support Operations Course. This course provides hands-on training which limits the scope of the various MOS's to aviation specific tasks. The course provides what the soldiers lack: emergency procedure training, hands-on equipment training, and experience in conducting hot refuel and rearm operations under the supervision of an instructor. Furthermore, each soldier, regardless of MOS, is trained to perform all tasks in FARP operations. Soldiers reporting to the unit are required to attend this course, a procedure which is similar to RL progression training for rated and non-rated crewmembers. The extent of the cross training is limited for simplicity, but the ATAS platoon has 88 personnel who can perform refueling and rearming to a great or lesser extent. If you remember, the 3/5 platoon under the ARI MTOE has only 44 refuelers and 14 ammunition specialists.

From the commander's perspective, the ATAS Platoon greatly increases the flexibility of Class III/V support operations. Fewer soldiers are required to accomplish a FARP mission and can perform both the refuel and rearm

(Tactical Refueling cont'd. on page 54)

MOVING THE MOUNTAIN

Achieving Successful Hellfire Engagement in the Rugged Terrain of Korea

Stand-off distance, clearly one of the most advantageous characteristics of the Hellfire missile and Apache helicopter, is severely reduced in regions of the world where mountainous terrain and low lying enemy avenues of approach dominate the landscape. Since the initial deployment of two Apache Battalions to the Republic of Korea (5-501 and 4-501), this terrain issue has forced planners to rethink the manner in which they fight the AH-64. What appears to work on a map or sand table often times does not translate in the aircraft.

This article will cover an overview of the terrain in Korea, some of the pitfalls encountered when planning attack helicopter missions, modern tools available to planners, and a method of fire delivery which supports the Hellfire's capabilities in Korea and maximizes its effectiveness.

The Terrain. On your first flight in Korea, you will immediately know why a long range Hellfire shot can be a problem. The Korean people appear to have been punished by mountains, valleys, ridges, cliffs, and highlands which are all detrimental to any form of organized infrastructure growth. As a result, road networks are scattered randomly amongst the low lands, tunneled through impassable highgrounds, and cut right into the side of steep mountains for miles. Like a snake moving through high grass, Korean roads bend and twist around obstacles without any sort of pattern or order, constantly seeking any flat, low lying stretches that can support fluid movement.

In addition to these abundant highlands, the low lying areas also promote their own formidable problems. Centuries of agricultural expansion have captured nearly all of the exposed, flat, (useful) land for farming. The large Korean population maintains thousands of individual rice fields, fully irrigated and saturated with extremely thick, wet, and sticky mud. Peppers and other vegetables are also grown across the countryside, but rice is by far the most common crop and dominates the landscape.

Other factors influencing the terrain are the large population and congested urban areas. Except for the small, scattered, farm communities, the majority of the Korean population lives in extremely concentrated urban areas. Large buildings tower over downtown streets; streets that are sometimes too narrow to support a HMMWV. Day long traffic jams are normal occurrences throughout the cities-and no road is too short to put

yet another traffic light on it. Urban infrastructure is very cramped, overpopulated, haphazard, and more disorganized than the roads and trails formed throughout the mountains and farmlands.

As a result of these terrain characteristics, vehicle movement throughout Korea is extremely difficult and limited. Vehicles attempting to advance rapidly cross-country must completely avoid urban areas and are forced to utilize the limited road networks. Farm trails (in between rice paddies) are sometimes usable, but crossing directly through an irrigated rice paddy in the summer is impossible. Column formations on roads are the only choice for armored forces.

Planning Considerations. The foremost problem that operational planners face is proper selection of the "Attack By Fire" positions (ABF). These "ABFs" (formally known as "battle positions" or "BPs") are defined by the upcoming FM 1-112 as a position where "fires [are] employed to destroy the enemy from a distance, normally used when the mission does not dictate or support occupation of the objective." A suitable ABF for an Apache supports ample line of sight to the target, adequate lateral tracking distance, cover and concealment, and as much stand off range as possible.

In the rough Korean terrain, Apaches are forced to attack the enemy while he moves along narrow, winding roads surrounded by extremely steep highground. Locating an ABF that allows the pilots to see the enemy, engage him from a distance, and still conceal their aircraft is extremely difficult.

In an effort to support successful target acquisition and tracking (to guarantee that the aircraft will see the targets) the operational planner will sometimes decide on an ABF position that locates the AH-64 high on a ridgeline. Engaging downward towards a low lying road may allow him to see the target, but this also produces a dangerous and tactically unsound silhouette. This type of Hellfire employment would be too costly given the ample North Korean air defense capabilities.

In an effort to avoid this problem, the planner may attempt to position the aircraft lower in the mountains, possibly in a draw or saddle large enough for an aircraft. While the pilot may have substantial terrain coverage and concealment on either side, and an extensive backdrop to mask his position, locating and tracking targets will be extremely difficult. Too often the CPG (copilot-gunner) will not be able to even find the narrow roadway that the enemy is supposed to be moving on. Even the slightest rises in the terrain will completely mask targets and roads. If he does locate the enemy, tracking will be somewhat inhibited by his reduced field of view to the left and right.

A final significant pitfall that planners face is the extreme urban and natural congestion surrounding most all Korean roadways. The small hills that the roads were built around and the buildings that stand along the road sides make target tracking very difficult. CPGs face losing several missiles while lasing due to obstructions encountered in the crucial final seconds.

Planning Tools. Probably the most useful and accurate planning tool for selection of suitable ABF positions is Terra Base. This CD-ROM based program is available from the Defense Mapping Agency and covers the entire Korean peninsula. In general, Terra Base is a three dimensional map of the entire peninsula depicted solely by contour lines. Though the screen is merely black and white (and only contour lines are drawn), the planner gets a very vivid picture of the terrain that he is dealing with.

By inputting the eight digit grid representing the expected enemy position, and also the potential friendly ABF positions, the planner can navigate his way around the location on the computer and see the actual terrain relief. Terra Base will let you look between the two inputted grids and see the visual perspective from either the enemy side or friendly side. The level of magnification is fully adjustable, and with a few manipulations of grid selection and zoom level, the planner can determine whether or not his selected ABF will mask his aircraft and still allow intervisibility with the targets.

After aircraft positions are verified with the computer, the program will print out the visual picture on a wide-carriage dot matrix printer which is useful to bring the visual picture from the S-3 shop directly to the pilots letting them see their ABF before they even get there.

Successful Hellfire Employment. By emphasizing the use of remote hellfire engagements in the Korean terrain, commanders can still maintain surprise, retain standoff distance, and protect the force by utilizing fewer helicopters forward in the face of the enemy.

The Cobra served as the primary attack helicopter over Korea for several years before the Apaches moved into the theater. With a maximum TOW range of 3750 meters, Cobra pilots were forced to fight close to the engagement area. This constraint allowed them to avoid some of the planning pitfalls mentioned earlier in this article, because invoking long range fires (past four kilometers) simply did not exist with the Cobra.

Putting Apaches within four kilometers of the engagement area (like a Cobra) is hard to justify. By doing so, a commander would give up the increased survivability and surprise that the Hellfire provides from as far out as six kilometers at night. Aircraft would at times be within the main gun range of Soviet tanks (the leading kill factor at the National Training Center), and as the attack progressed, aircraft positions would be easy to locate due to the bright flash created by the missiles when fired.

The remote Hellfire engagement avoids most of these problems. This is accomplished by placing two (or possibly more) aircraft forward with eyes on the enemy. The rest of the company positions their aircraft orientated on the enemy location, but completely masked behind terrain, perhaps in a valley one or two terrain features back. The aircraft up front (the "lasers") each has designated "shooter" aircraft who will provide remote fired missiles for them on call.

As the engagement begins, the enemy does not have any idea that he is being watched. Two Apaches search out the enemy and divide him up into sectors of fire. After a short call for fire to the shooters, the first missile launches. When it arrives, the AH-64 commander has total surprise. The missile destroys the lead tank and the enemy has no idea what hit him, where it came from, or where he should run to. The hits continue to rain in on the enemy column in rapid succession. During this entire time not a single missile flash can be seen as the shooters are positioned down low behind a ridge, shooting missiles up and over the terrain. In about eight to ten minutes, the column is stopped completely and rendered combat ineffective.

In using the Apache in this fashion, the commander protects his force by positioning only the lasing aircraft forward. Since the shots cannot be seen until impact, the position of the lasing aircraft will not be immediately revealed. Lasing aircraft therefore have increased flexi-

(Moving the Mountain cont'd. on page 37)

6TH CAVALRY IN KOREA

Lessons learned from the change of location and mission

Mid November 1995, 6th Cavalry Brigade Commander, COL Randal L. Ticszen, returned to Fort Hood from a decision brief with the Chief of Staff of the Army. The Brigade was to forward deploy to the Republic of Korea (ROK) with an effective date of 15 July 1996.

The restructuring of aviation, both in CONUS and ROK, precipitated the following major changes in the organization of 6th Cavalry Brigade. Sequentially, 1st Squadron, 6th Cavalry cased their colors for shipping to Korea, Headquarters and Headquarters Troop, 6th Cavalry, and 3rd Squadron 6th Cavalry deployed to the ROK.

B Company, 1st Battalion, 158th Aviation remained at Fort Hood to provide general support for III Corps.

2d Battalion, 158th Aviation (CH- 47) inactivated. 5th Battalion, 501st Aviation reflagged in ROK as 1st Squadron, 6th Cavalry.

Assigned to 17th Aviation Brigade, MAJ Brian Perris and CPT Lonnie Hibbard moved to 6th Cavalry to serve as the advance party. They wore out telephone lines and earned their drivers badges coordinating the actions required preparing for the arrival of the brigade in Korea. You can imagine the personnel and equipment issues that arose from this major reorganization and deployment. Our Brigade S-1, CPT Mark Evans and S-4, Major Frank Glang set records in establishing admin/log channels and working the tough challenging issues involved in a move of this magnitude.

Having undergone these tremendous changes in unit personnel and designations, the brigade became operational in the ROK on 15 July 1996. On 22 July 1996, COL James E. Simmons took command of the Blackhorse Brigade.

Along with the change in geography, came the 6th Cavalry change in mission. In fact, although significantly different in makeup, our active component's mission actually expanded in scope. It did not take long to see what our new mission entailed.

Within 45 days of our arrival, 6th Cavalry participated in Ulchi Focus Lens (UFL) '96. This primarily Computer Based Simulation (CBS) exercise gave us the opportunity to demonstrate our existing capability to perform the theater deep attack mission. During the first phase of UFL we located our Brigade Plans and Intel Cell in Command Center (CC) Seoul. Here we planned and executed missions in support of the CINC and Ground Component Commander's defense of the peninsula.

During this first phase, 8th Army stood up an ad hoc Deep Operations Coordination Cell (DOCC) working from within CC

Seoul. Equipping and staffing the DOCC proved an interesting event given little available time and resources.

Not having our Brigade TOC performing command and control of our forces led to some tense moments as we performed those functions from within the 8th Army DOCC. We learned the hard way the importance of utilizing our entire TOC for effective command and control. During a one day break midway in the exercise, the brigade battle staff boarded an airplane and headed for Part B of UFL with III Corps at Fort Hood. Within four hours of arrival we were once again demonstrating our capabilities performing deep operations in conjunction with III Corps Artillery and the Air Component Command.

Our primary mission had been working with the III Corps DOCC for deep operations. It became obvious this concept would change given our new location and contingency plans. Part A of UFL '96 reinforced our pre-conceived notion that deep operations changed from our primary focus to just one of many 6th Cavalry missions. Having two Apache squadrons immediately available to 8th Army at the start of any potential hostilities, as opposed to arriving weeks or months later, would require re-looking and re-working the 8th Army capabilities, Oplans and Conplans.

During our first 90 days in Korea, we had the opportunity to re-look those plans and start developing new ones. Our S3, MAJ Robin Cofer, sent his assistant, CPT Tim Solms, out about the countryside forming relationships with Naval Component Command (NCC), Air Component Command (ACC), and ROK Army elements. Additionally we performed other routine tasks such as turning over 100% of the Brigade's Commissioned Officer Staff and conducting the first live Hellfire missile shoot in Korea.

While the brigade battle staff was busy conducting UFL, CPT Russell Fisher and our newly arrived Standardization Pilot (SP), CW4 Claudio Facundo were busy planning and coordinating for a brigade gunnery. Shortly after returning from UFL the brigade deployed the re-configured TOC to the multi-purpose range complex (MPRC) to execute the Brigade gunnery. This provided the opportunity to shake out new procedures learned from initial tactical operations in theater.

In late October the weather started turning bad. Every Cav soldier, past and present, knows what that means. Pack up the field gear, we're heading out for some fun. Foal Eagle 96 arrived along with the weather and gave us the opportunity to further develop and test our new capabilities and Conplans in addition to performing our traditional deep attacks. Although the Brigade has participated in countless CBS exercises at all levels of command, Foal Eagle was the first opportunity to exercise the entire brigade in a field environment.

We kicked off with a deployment of our 1st Squadron and Brigade TAC to Pohang on the southeast coast to conduct Coastal defense, Special Operations Missions and Counter SOF infiltration missions with the NCC and 7th Fleet. 1st Squadron immediately began refresher training and initial deck landing qualifications on the *USS Dubuque* and *USS Germantown* while the brigade TAC was flown to the aircraft carrier *USS Independence*, CV-62, with Destroyer Squadron 15, to set up operations in the Naval Combat Direction Center. Satellite communications were established with the Brigade Main located in the field near Camp Humphreys and 1st Squadron TOC located at Pohang.

Due to cross service communications incompatibility, our brigade commo section was deployed with the TAC and arranged for various methods to communicate. Our Brigade Signal Officer, CPT Bill Miller, utilized TACSAT, HF, UHF, Marine Satellite, STU III, Email, SIPRNET, and POTS (plain

old telephones). The redundant communications worked. The combat flow was SH-60 LAMPS aircraft launched from the *USS Curts* daily to provide early warning radar identification. Previously, AH-1W Cobra helicopters performed the target identification friend-or-foe mission, but due to station time incompatibility with SH-60s and limited optical sights, were marginally effective. AH-64's proved ideally suited however.

With a single AUX tank we had equivalent station time with the SH-60s, and the Apaches TADS/PNVS provided positive IFF at ranges exceeding 15 kilometers in daylight and 9 kilometers at night, a capability previously nonexistent. This was unprecedented, and at ship speeds, added valuable time to the NCCs ability to effectively track and engage targets. Typically, after LAMPS would identify radar targets, talking directly with overmatching AH-64's, the Apaches would proceed to the target for positive visual identification.

This information was passed back to the LAMPS who relayed to the *USS Curts* via UHF/HF radio. This information was passed to Combat Direction Center on the *Independence* via HF who had weapons release authority. If targets were friendly vessels, the LAMPS tracking radar could tag and monitor. If non-friendly, they could be tracked and or engaged by the Apaches.

Operations were also conducted with the F/A-18 Hornets. When targets were identified foe, LAMPS helos would vector the F/A-18s in a high orbit to an IP. AH-64's would establish compatible laser parameters and codes with the Maverick missiles on the F/A-18's. LAMPS helos coordinated the battle hand over of fighters to the AH-64s for final coordination and laser designation of the targets.

Operations were conducted from 25 -100 kilometers off shore but could be performed at any range. Our TAC was able to pass information and conduct coordination with 1st Squadron on shore and the Brigade Main via SATCOM. The missions were so successful, an unscheduled event was added testing our ability to conduct security missions for Navy SEALS by assisting in a military interdiction operation (MIO). The Navy boarded the non-friendly vessels using AH-64s as security for the operation. This too proved highly successful.

Third Squadron was not at rest during this time. They conducted Deep Attacks in coordination with the 8th Army DOCC against elements of 3rd Bde, 2ID (US) moving from the port of Pusan to forward staging areas in preparation for force on force exercises. This portion of Foal Eagle allowed for further exercise of the DOCC concept and tested the ability of the intelligence community to track rail and vehicle movements over long distances, and pass the real time information to the user (sensor to shooter link).

Visibility on these deep operations was quite high as several new digital battlefield surveillance systems at the Theater and National levels were being tested, including installing Grenadier Brat devices on several of our AH-64's allowing them to be tracked via satellite. The Brigade conducted mission execution from the Brigade Main TOC and further C2 from UH-60 Black Hawks within LOS radio range with the attacking Apaches and maintaining communications with the Brigade TOC via SATCOM and HF. The deep operations provided valuable information on the capabilities and limitations of our intelligence collection assets, and reiterated our requirement to be able to command and control several concurrent events.

The Brigade planned a deep mission in support of 5th Special Forces airfield attack and emergency exfiltration operations. This mission required intensive coordination and critical timing events with U.S. and ROK aviation assets and the ground SOF soldiers. The Brigade participated in the Second ROK Army's primary mission of rear area threat defense by conducting counter SOF penetra-

tions at Kunson AB. The Apaches were utilized to identify and destroy battalion sized SOF attempting to penetrate the perimeter of Kunson AB. Night vision systems allowed the Apaches to perform reconnaissance and surveillance of the perimeter, and pass enemy activities to the ground security forces. This added capability alone provided immeasurable security enhancements to our airbases on the peninsula. Being able to call on an Apache helicopter team to provide the equivalent of close air support against battalion and larger size SOF attacks against our airbases day and night is a force protection package highly effective, and highly sought after.

As 3rd Squadron was defending airbases, 1st Squadron was redeploying from Pohang and setting up field operations along with 3rd Squadron and preparing for force on force operations for part II of FE. During this portion, the Brigade conducted traditional security missions and attack missions with 2ID (US). The brigade worked as an additional maneuver brigade for the division commander dividing up the battlefield with 2ID's Aviation Brigade. Positive and procedural control measures were utilized to deconflict and keep the over 128 aircraft in the 70k X 120K maneuver box separated both day and night. During part B of the force on force, 6th Cav was OPCON to 26th ID (ROK). CPT Terry Yuri was dispatched as an LNO, performing invaluable service as an expert on AH-64 capabilities and employment tactics and translator. This was the first time a US aviation brigade has ever been OPCON to a ROK Division. The Brigade again performed security and attack missions for the Division. The Brigades optempo for this portion of Foal Eagle was extremely demanding. 3d Squadron flew 147 AH-64 hours on the first day of the seven day force on force event.

Command and control for all these events became a critical element. We relied heavily on satellite communications and UH-60 aircraft. The 2-51st Avn Bn, 17th Avn Bde provided a Black Hawk company (-) which deployed with us during the exercise to augment our dwindling fleet of UH-60s due to ARI. At various times during the three weeks, besides our Main TOC, we deployed a forward CP and TAC, both air and ground, and 3 LNO teams to command and control our squadrons, and effect coordination with supported divisions.

Although the Brigade has participated in many CBS exercises at all levels, Foal Eagle provided the first opportunity to exercise the entire Brigade in the field in recent years. This exercise highlighted the challenge of commanding and controlling multiple units over great distances while performing a variety of demanding missions simultaneously. Our LNOs were continually coordinating missions in the joint and combined arena. The communications requirements stretched our commo sections to the limit. Plans and Intel personnel passed each other coming and going keeping up with a dynamic battlefield.

This training exercise provided valuable insights into our strengths and weaknesses. We demonstrated our capabilities in working closely and effectively with Naval Component Command, providing pinpoint accurate firepower in defending our Air Component Command bases. We reconfirmed our deep operations capabilities and were reminded of the A2C2 challenges. We received much needed support from the 164th ATS Group. Automation initiatives also provided much needed help in this arena. Recent fielding of an upgraded Automated Deep Operations Coordination Systems (ADOCS) and integration with the Battlefield Control Element(BCE) located at Osan Airbase Hardened Tactical facility (HTAC) have proved invaluable. The ADOCS has grown from a field artillery tool, to a true coordination tool for all airspace users. As more of these systems are integrated with not only artillery FSE, but air defense , Army A2C2, intelli-

gence, SOF, and all other users of airspace we will be able to integrate and operate more efficiently. These systems however, are expensive and require well trained operators to be used effectively. Experience has shown that without properly trained operators, these systems are not utilized to their fullest potential becoming just another briefing slide computer.

Past reliance on a Corps DOCC to provide mission guidance and facilitate mission execution has shifted to the Brigade Main TOC. Our pipes to intelligence and battle space control elements are growing daily. We are able to internally plan and execute all assigned missions, which have grown dramatically since arriving in Korea. As the CINC'S theater reserve during the initial phase of hostilities, we continue to prove our flexibility and lethality.

The 6th Cavalry will continue to train hard and update TTP as we mature in this theater. One thing you can be sure of, the computers in Combined Forces Command Plans sections are humming away rewriting the plans for this Theater.

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CW5 Oliver was the 6th Cavalry Brigade Tactical Operations Officer, at the time this article was written.

(Moving the Mountain cont'd. from pg. 32)

bility to move around in their firing positions. They can ensure that they have good intervisibility with the target area and adequate cover and concealment.

Since they will not be firing their own missiles initially, the lasing aircraft have more flexibility in choosing the positions from which they lase. They can lase up a valley, rather than strictly viewing it from the side. In the narrow valleys of Korea, this method can be highly effective.

Use of the remote engagement does have its disadvantages as well. The possibility of losing a missile is increased by the longer time of flight of the missile and the necessary verbal communication between lasing and shooting aircraft. A missile fired from six kilometers out requires approximately twenty-three seconds to fly its full trajectory, and again we run into the problem of a target moving behind clutter in the EA and another missile lost. There are also several safety factors involved in utilizing a remote shot that must be considered. The twenty-degree safety fan for positioning the shooting aircraft is an example.

In Conclusion. There is nothing that a commander can do to change the terrain over which he fights. He cannot move the mountains that block his missiles and protect the enemy from attack. He can, however, try to change his planning and employment techniques to work with that terrain. The Korean landscape is by far the most rugged that Apaches have ever flown in. Many AH-64 pilots call it "The last great Apache adventure." Battles will be won there by the commanders who are willing to break from convention, try new ideas, and utilize the latest technology to their best advantage.

* *

CPT Eno is Company Commander of A Co. 1-227 Aviation Regiment, Fort Hood, TX. He was a Platoon Leader in 5-501 Aviation when he wrote this article.

THE MATERIEL SOLUTION FOR A2C2

Who is identifying, coordinating, regulating, integrating, synchronizing and deconflicting users of the total battle space? What system has the capability of bringing together all of the bits and pieces of users' capabilities for synchronization and deconfliction of the total battle space? What system exists to automate Army Aviation Command and Control (A2C2) for effective management of the battle space and provides a three-dimensional picture for the commander to make informed and timely war-fighting decisions? The answer is the future Tactical Airspace Integration System (TAIS).

"The battlespace is congested, war fighters are at risk"

Currently, there is no independent, overarching system fielded in the Army that integrates these critical requirements.

Personnel from all services (joint and combined) must be free from the threat of fratricide due to the lack of timely information and be able to use the three dimensions of battlespace while conducting assigned missions. Commanders need maximum flexibility to use organic and supporting assets within the airspace under any limitation that the joint forces commander may impose. There must be a responsive A2C2 process and system to execute a close, continuous, and timely coordination among all airspace users.

The current A2C2 process and system is fragmented; there is a sharing of capabilities and requirements among many users to meet joint airspace control procedures (fire support, air defense, battlefield geometry, and intelligence) to support the commanders in their decision process. The Air Tasking Order and Airspace Control Order are not electronically provided down to the corp after being parsed at the battlefield coordination detachment. With rare exception, airspace control measures are still a grease pencil and acetate process within the Army. But, we can all take heart that a 21st century system is at hand, thanks to the diligent work of many to provide a solution for this vital need.

The A2C2 Action plan, September 1993, required a new system for airspace management. Through a memorandum of agreement, the TRADOC school commandants from the Aviation Center, Armor Center, Field Artillery Center, Air Defense Center, and the Infantry Center agreed to support the materiel solution to the Army's A2C2 man-

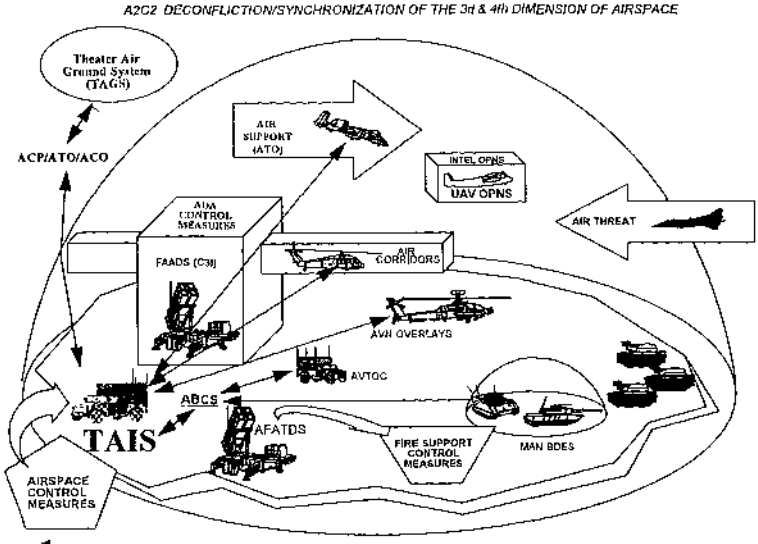

Figure 1

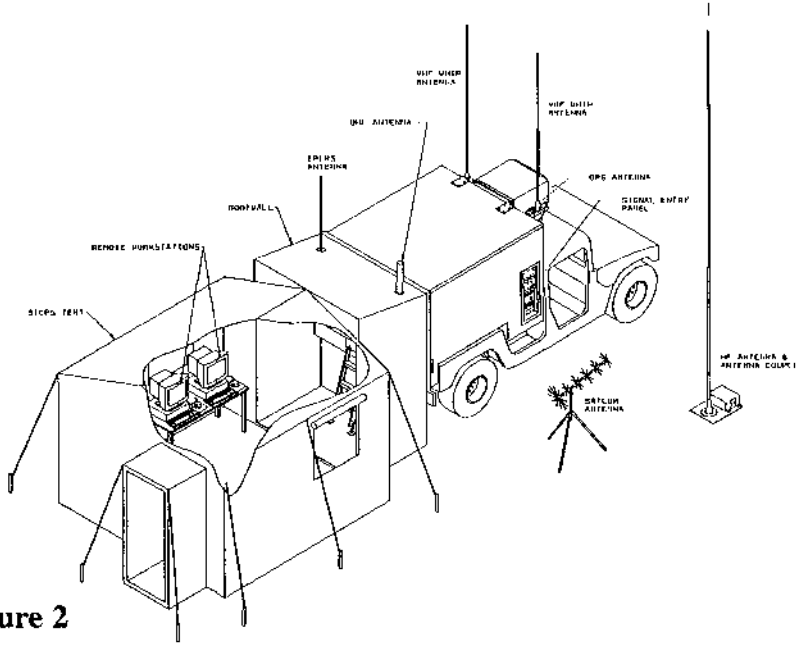

Figure 2

TAIS PROTOTYPE INTERFACES

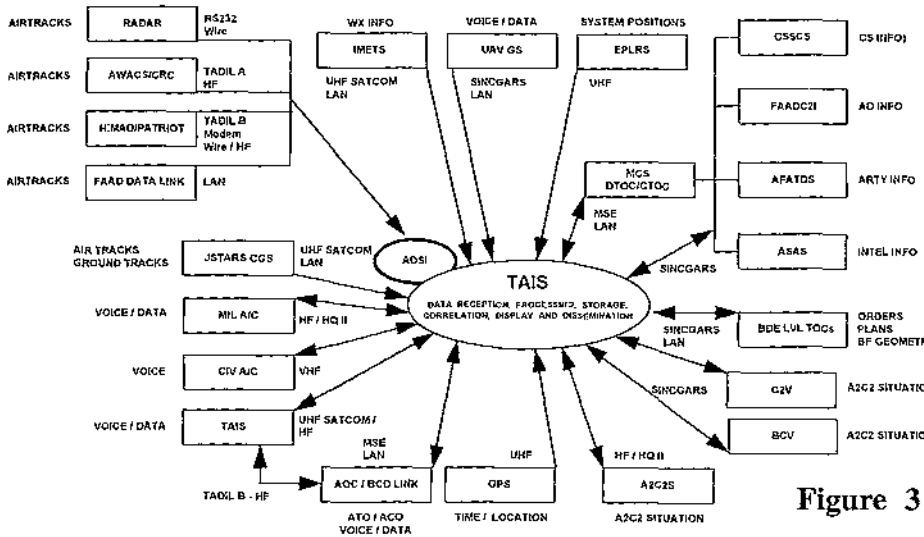

Figure 3

agement deficiencies with the TAIS, 10 August 1995.

A mobile communication and digitized battlefield automated system, TAIS is planned for employment in any theater of operation to include military operations other than war and will be the Army's system to meet the A2C2 and air traffic services' (ATS) mission requirements for the foreseeable future.

Co-located with the A2C2 element at the corps and division tactical operation center, TAIS will directly respond to the current operations G-3, usually the G-3 Air. The Force XXI battlefield commander will be provided with timely battlespace information, synchronization in the third and fourth (time) dimension, and automated A2C2 planning and execution.

A direct link is provided to the theater air-ground system through interface with the joint force air component commander's automated airspace planning and communication systems for processing and displaying air information. The primary interface will be with systems at echelons above corps, corps, and division.

The TAIS will interface with the Army tactical command and control system (ATCCS), specifically the maneuver control system (MCS). The TAIS will have the capability to link directly to other Army ATCCS nodes (advanced field artillery tactical data system, forward air defense (FAAD), all source analysis systems, and combat service support control system) if, for any reason, there is a problem obtaining information from MCS. The system will also link to other organizations: allied, multinational command and control, service in DOD, civil and interagency, and information system for

(A2C2 Solution - cont'd. on pg. 44)

FEATURE

BY GALE RAHMOELLER
and JIM ROBERTS

CORROSION – THE SILENT ENEMY

What is corrosion, and why should you have a Corrosion Prevention and Control Program (CPC)?

Corrosion is simply the electrochemical deterioration of a metal due to the chemical reaction with its surrounding environment. This reaction occurs because of the tendency of metals to return to their naturally occurring physical states, usually oxides or sulfide ores.

"... lack of an aggressive CPC program can have a major adverse impact on field units."

For example, iron in the presence of moisture and air will return to its natural state, iron oxide or rust. Aluminum and magnesium form corrosion products that are white oxides or hydroxides. When a water solution containing soluble salts is present, corrosion of many alloys can occur easily at ambient temperatures. Corrosion can also occur in the absence of water but usually at high temperatures such as those found in gas turbine engines. All corrosive attacks begin on the surface of metals. If allowed to progress, corrosion can penetrate into the metal. Corrosion is truly the "Silent Enemy" of all Army aircraft. Silent, because there are no visual or audible queues to alert aircrews or maintenance personnel to its presence or stage of growth. An enemy, because it consumes increasingly scarce resources and threatens aircraft and aircrew safety.

If undetected and/or allowed to progress without requisite corrective action, corrosion and its precipitated effects can render the most complex weapon system not mission capable. Corrosion can be viewed as "Aviation Termites." Parallels between termites and corrosion are:

- Without special vigilance, an occurrence can begin and spread with minimal outward signs.
- Without active defensive measures, a single occurrence can eventually inflict substantial damage on valuable assets (aircraft and equipment).
- The geographic location of your asset and environment in which it is utilized has direct impact on the magnitude of damage resulting from an occurrence.

The most significant impacts of corrosion are: decreased operational readiness rates; significantly increased Operational Support costs and threatened ability to complete all assigned missions.

Army aviation units must contend with numerous diversified missions and tasks which compete for precious time, personnel, and resources. All too often this situation

precipitates crisis management, or management by exception, in order to complete missions and tasks. Therefore, the question arises, "why should an aggressive CPC program requiring additional maintenance man-hours and resources be pursued by aviation units?"

The answer is that cost of corrosion prevention and control, both in dollars and readiness/aircraft availability, is significantly less expensive than the cost of major airframe repair, component repair or replacement.

An aggressive CPC program can lead to lower life cycle costs for fielded aircraft and support equipment. Importantly, under Defense Business Operating Fund (DBOF) and Stock-Funded Depot-Level Reparable (SFDLR), lack of an aggressive CPC program can have a major adverse impact on field units. A successful program requires a dedicated effort by all operational and maintenance personnel to prevent corrosion before it starts. Aggressive corrosion prevention efforts will culminate in improvements to the operational ready rates of equipment and minimize costly repairs.

Corrosion can be encountered in any environmental situation. Don't think that corrosion occurs only aboard naval vessels or near salt water. Although you may not believe so, a desert environment with high temperature and low humidity facilitates corrosive activity. However, there are specific corrosion preventive compounds and procedures that can assist your unit in deterring corrosion and its effects in diversified environmental conditions.

The Somalia Aircraft Refurbishment Program (SARP) is a good example of why an aggressive CPC program should be pursued. Selected Ft. Drum aircraft underwent extensive CPC pre-treatment prior to deployment to Somalia. Non-treated aircraft of similar age, deployment history, and airframe operational hours were also deployed to Somalia. Post-deployment refurbishment results reflected a significant difference in treated aircraft vs. non-treated aircraft. CPC-pretreated UH-60 aircraft vs. untreated UH-60 aircraft resulted in savings of $152K per aircraft for refurbishment of CPC-pretreated airframes. Also, the AH-1 aircraft refurbishments revealed savings of $192K per aircraft that were CPC-pretreated.

CPC-pretreated UH-60 aircraft vs. untreated UH-60 aircraft resulted in savings of $152K per aircraft.

The 1996 Department of Defense, Office of the Inspector General, Audit Report, 97-015, "U.S. Marine Corps Aircraft Corrosion Prevention and Control Program", revealed that Marine Corps aircraft depot repair costs related to corrosion damage will increase $49.4 million projected over the next six years. This report attributed this situation to lack of viable corrosion prevention program at the organizational/unit level. Figures obtained from Corpus Christi Army Depot (where UH-1N Marine Corps Standard Depot Level Maintenance is performed) indicated that nearly $120K of repairs per aircraft were attributable to corrosion damage. The depot estimated that 60 percent of the $120K is directly related to corrosion structural damage that is preventable at the organizational/unit level.

Another good example, and basis for supporting an aggressive CPC program, is Task Force 118 (Operation Prime Chance). Initial

deployment of the OH-58D aircraft onboard Navy vessels in the Persian Gulf, with Navy CPC training and procedures provided to unit personnel, resulted in minimal aircraft and equipment corrosion deficiencies. Following rotation of initial cadre and support personnel, with no CPC training for incoming personnel, institutional knowledge and continuity for CPC procedures perished. The consequences of this situation were extensive aircraft and equipment corrosion deficiencies, which created a substantial negative impact on aircraft readiness.

In these days of diminishing resources and defense budget constraints existing aircraft will remain in the Army's inventory for a longer period than was originally anticipated. Extending the service life of these airframes will become a reality; therefore, aging aircraft will become an increased maintenance burden to owning units. Corrosion in aging aircraft, if undetected and untreated, eventually degrades aircraft structural integrity. Some examples of this situation have already occurred:

Aloha Airlines suffered an in-flight incident of loss of fuselage section attributed to corrosion effects.

The U.S. Air Force suffered a HC-130 accident involving in-flight loss of wings due to stress fatigue compounded by corrosion.

CPC is a preventive maintenance program. If aggressively pursued, it is greatly beneficial to aviation organizations at all levels. If your unit does not aggressively pursue CPC as a preventive maintenance program, you could be facing major repairs caused by corrosion. In the past many of the resources for repairs were borne by DA; however, with DBOF and SFDLR units must now bear these cost burdens for repairs. This situation makes a solid case for implementing a more aggressive CPC program to increase unit level readiness and reduce expenditure of maintenance man-hours and precious repair parts resources.

The forthcoming revision to TM 1-1500-328-23, Aeronautical Equipment Maintenance Management Policies and Procedures, is due out to the field in mid-year 97. Section VIII, Aviation Corrosion Prevention and Control Policy, has been significantly changed to provide a more robust approach to CPC than in previous years. Responsibilities for Commanders and Maintenance Officers are more clearly defined and delineated.

Additionally, new procedures for aircraft washing and corrosion inspections are included in the revision. However, there is no "magical solvent" or "magical spray-on liquid" that will replace man-hours and tenacity in combating corrosion and its effects. Corrosion prevention, in reality, is maintaining equipment to as clean as possible state - through washing, inspection, detection, and repair. Success means preventing corrosion - and this mission belongs to all personnel personnel assigned to Army Aviation.

If you desire more information pertaining to Corrosion Prevention and Control training or program applications contact the ATCOM Corrosion Prevention and Control Projects Office. The Project Engineer for CPC at ATCOM is Ms. Gale Rahmoeller, AMSAT-I-MEP, DSN 693-5422 or commercial (314) 263-5422.

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Ms. Rahmoeller is an Aerospace Engineer currently assigned to the Maintenance Engineering Directorate at ATCOM. She is the Project Engineer for Corrosion Prevention and Control. [] Mr. Roberts is currently an ARINC employee supporting ATCOM Maintenance Engineering under the Programmatic and Technology Support (PATS) III contract. He is a retired Army Aviation Maintenance Officer and Master Aviator.

(A2C2 Solution from page 40)

the collection processing and dissemination of planning and near real-time information.

The TAIS will also have a near real-time interface capability provided by radar systems, airborne warning and control system and control reporting center; high-to-medium altitude air defense and phased array tracking intercept of the target, FAAD; and Air Force Air Operations Center through the air defense system integrator to the TAIS providing a near real-time, three- dimensional visualization of the battlespace.

Developed to operate around the clock in all weather condition, TAIS will provide secure jam- resistant radio communications in the VHF-AM, VHF-FM (single channel ground and airborne radio sets), UHF-AM (HAVEQUICK II), and HF-SSB frequency bands. The TAIS will be operated by 93C air traffic controller and Air Ground Operations School graduates to fill operator positions within the Humvee. The system will have off-road capability, and roll-on and roll-off movement onto a C-130 or larger U.S. military cargo aircraft requiring no more than one sortie for deployment. Each major component of the system will be externally transportable by UH-60 or larger helicopter.

The system has met a milestone II program acquisition requirement and is currently in prototype development. The TAIS has proven itself while operating in the deep operations cell in Advanced War fighting Experiment (AWE), Prairie Warrior (PW) 1996. It will be given the opportunity to demonstrate its crucial and valuable capability again in AWE PW 1997, and DIV XXI 1997.

The TAIS will provide the Force XXI battlefield commanders with improved theater, intracorp, intercorp and division automation, communications, and digitized A2C2. Tactical airspace integration system will support ATS in battle and force projection operations while minimizing fratricide through a more exacting battlespace synchronization. The TAIS is expected to be fielded in the year 2000.

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TROPIC LIGHTING AND AIR VOLCANO

Airborne Scatterable Mine System as a Combat Multiplier

The Light Fighter's Toughest Scenario. The scene was familiar to many 25th ID (L) "Tropic Lightning" soldiers from the 3rd "Bronco" Brigade Combat Team (BCT) as they prepared to defend the friendly Cortinian Republic from the onslaught of a determined invasion from the Marxist Atlantican Army.

This scenario is played out monthly at the Joint Readiness Training Center (JRTC) located at Fort Polk, LA, with light infantry forces pitted against a combined arms mechanized assault. This time, however, the light fighters from the Hawaiian Islands, known for their real volcanoes, had a surprise eruption for the enemy with the first "Tropic Lightning" deployment of the Air Volcano scatterable mine system.

The 3rd BCT was organized with three light infantry battalions (one CPX and two Live), a light 105 mm howitzer battalion, and a robust Aviation Task Force with attack, assault and medium helicopters with a tank and light infantry team attached. The BCT also enjoyed the support of an ADA Battery (Avenger), a light engineer company and a reinforced Forward Support Battalion (FSB). A quick analysis of the combat systems employed reveals the relative low firepower and mobility associated with light forces. While excellent in forested and built up terrain, light units need the effects of the combined arms team to gain the edge on the faster moving armored forces. The 3rd Brigade Commander tapped his aviation task force for mobile firepower from the venerable Cobra attack helicopter and the new mine laying capable Volcano equipped Black Hawk assault helicopter.

The Plan. The 3rd BCT was deployed in an area defense with three infantry battalions on line and the Aviation Task Force screening forward in the security zone. The concept was to identify the enemy's main attack and concentrate artillery, close air support and attack helicopters to defeat it. The OPFOR of course, are well aware of their strengths and weaknesses and fully realize that speed is their essential ingredient as they strive to cross 3rd BCT's no penetration line and wreck havoc in the division's rear area. Slowing or delaying the advance of armor is what Air Volcano is all about. The U.S. Army has had scatterable mines in its inventory for over twenty years. Prior to Volcano, these mines were normally hand in placed or

delivered by 155 mm artillery shells. Each method is fairly time consuming, it may take an artillery battery 15 or more minutes of continuous firing to deliver a single 400 meter square minefield. Artillery survivability is also reduced due to detection by enemy counter-battery radar. Besides the time problem, light force 105 mm artillery is not capable of delivering mines and the light engineers do not normally have large numbers of trucks and personnel necessary to hand in place large minefields.

The brigade commander counted on the speed, flexibility and responsiveness of the Division's newly acquired Volcano mine system to be the decisive factor in delaying the enemy armored attack and facilitating its destruction from artillery, close air support and attack helicopters. The plan was to equip a UH-60 Black Hawk helicopter with Air Volcano scatterable mines, set for four hour duration. Several pre- surveyed mine insertion sites were reconnoitered along expected avenues of approach. The aircraft was displaced to a remote area and remained on a short alert notice via the secure SINCARS radio. Once committed the Volcano Black Hawk would fly at Nap of the Earth (NOE) altitudes and quickly seed its long 1100 meter double band minefield in seconds. The intended effects would be to turn or delay the enemy armored commander and ultimately disrupt his attack as he suddenly faces an unexpected minefield where his earlier reconnaissance elements told him it was clear!

The Battle. The night prior to the attack enemy regimental reconnaissance elements infiltrated the 3rd BCT sector. They drove in light armored cars and dismounted numerous recon teams. Their goal was to identify the 3rd BCT's defenses and begin to dismantle mine fields and obstacles to clear a path for the armored columns. Despite the best security efforts, it was apparent as dawn approached that the enemy reconnaissance had been successful in infiltrating our defenses. As dawn approached the first signs of the enemy armored thrust were detected and by first light enemy tanks were observed racing at maximum speed towards the 3rd BCT's no penetration line. The Volcano equipped UH-60 crew was alerted and committed to one of the predetermined sites. A few minutes later and the enemy commander faced a significant obstacle which caused him to shift his drive towards a decisive battle with the center entrenched infantry battalion and not split the gap between them as he had intended.

The Air Volcano System. Air Volcano consists of an aircraft kit that fits only on a UH-60 Black Hawk helicopter and 160 mine dispenser canisters each with six anti-personnel and anti-tank mines. The M-87 dispenser is identical to the ones used on the truck mounted Ground Volcano system. An Air Volcano equipped Black Hawk can insert an 1100 meter long minefield made up of two bands 35 meters wide. A total of 960 mines make this medium density minefield a challenge for any armored force. The aircraft kit requires a crew of eight to mount the side panels and associated control boxes. We experienced about a six hour mounting and dismounting time, however, with practice this may come closer to the book value of four hours. Once mounted with the side panels the aircraft essentially becomes committed to flying the Volcano system. This is due to the side panels blocking access to the side cargo doors. In emergencies the aircraft could haul personnel through the restricted access of the small crew chief window.

The Volcano system with mines mounted, weighs 6400 lb., which is approximately the

maximum practical payload for a UH-60A model helicopter. The Lima model Black Hawk would be slightly higher. Unfortunately the aircraft loses about 25% of its range due to the increase in drag caused by the externally mounted canisters. Since the external wings must be removed and there is no excess payload available for internal fuel tanks, the Volcano equipped Black Hawk has a combat radius of about 150 kilometers. However, this greatly exceeds the range associated with artillery or missile delivered mines.

Employment Consideration. On the surface, the employment of Air Volcano seems straight forward, however, in reality the 3rd BCT experienced a tough challenge in synchronizing this new combat multiplier. The system pairs two members of the combat arms together that historically have worked little with each other, the combat engineers and army aviation. Aviation is the delivery method in the case of Air Volcano just like artillery is for FASCAM (Family of Scatterable Mines). The engineers remain the key player in determining the location and design of the minefield that supports the commander's intent. In addition, the engineers work with the aircrews to mount the ordnance on the aircraft much the same they do to assist the mounting of the Ground Volcano system on five ton trucks.

The method we adopted was to form an Air Volcano team and assign the assault helicopter company commander, the team leader charged with executing the pre-planned Air Volcano sites. The 3rd BCT engineer, designed the fields to support the commander's intent of delaying the enemy advance and canalizing them towards the more open areas. We discovered that a 24 hour time line worked best in planning the execution of Air Volcano. While the actual insertion of the minefield only takes minutes, there are numerous time consuming actions that must be accomplished prior to execution.

The Aviation Task Force commander designates the Air Volcano Team (AVT) which will normally center around the assault helicopter company. Specific aircraft and crews are identified, trained and then removed from the mission flow of aerial resupply and air assaults to ensure their availability. An engineer element works with the team to assist in the loading of the ordnance and the planning of the minefields themselves. This coordination is necessary to preclude a minefield that may look desirable on the ground but due to trees, power lines and enemy ADA threat may not be practical for Air Volcano execution. Multiple crews may be designated to achieve 24 hour capability. The Aviation Task Force Staff plans the AVT staging location and works with the brigade staff to refine Air Volcano decision points of the decision support template (DST). The goal is to implace the minefield where it will influence the enemy avenues of approach and timed so that its not too early so as to be detected by enemy reconnaissance.

Air Volcano Checklist. *The Brigade's Aviation Liaison Officer (AVLNO)*: Sends planning information to the Aviation Task Force outlining the Brigade Commander's intended use of Air Volcano. Provides an initial planning time line and as a member of the A2C2 (Army Airspace Command and Control) cell, assists in the deconfliction of airspace during execution with artillery and air defense assets.

Aviation Task Force Staff: Issues a warning order that activates the Air Volcano Team (AVT), designates the staging area, synchronizes the engineer and assault aircraft link up, develops COAs for delivery,

(Tropic Lighting - cont'd on pg. 49)

LOYALTY TO YOURSELF SHOULD COME FIRST

One of the most sensitive subjects I cover in my lectures as a TOPS counselor is loyalty. Service-members are taught from the first day they put on a uniform to be loyal to the chain of command as it descends from the president, through the respective services, to immediate commanders, and down the line to subordinates.

Loyalty lies at the foundation of our military institution and is rooted in traditions of honesty, integrity, and morality. However, "blind loyalty" is another matter. Loyalty taken too far frequently prevents officers from adequately preparing themselves for, and successfully transitioning to, the civilian work force. As your transition approaches, you will need to rearrange your priorities and take the time necessary to prepare for a second career.

All servicemembers have experienced working 18 hours a day, seven days a week "accomplishing the mission", rarely thinking about anything but the task to be accomplished. The here and how can be very demanding; it's perhaps not surprising that the first time many servicemembers begin to think about the future is the day they receive an achievement medal for many years of dedicated service and hear a few kind words at the retirement ceremony. That is about a year too late to take some action toward this most important "mission", retirement.

The truth is, there is not one officer in any service, of any grade, at any level of assignment whose departure would stop the wheels of his or her respective service from continuing to roll along. No single officer is so important as to be irreplaceable. I loved the Army. I spent 29 years in it and still miss it sometimes. But the Army is getting along without me. And since my retirement, not one of my superior officers has ever called me to ask, "How's it going, Jerry? Got a job? Need any help finding work? What can the Army do for you?" I'm not angry about this. The point is, life goes on after you leave the military.

The military's work ethic is of concern because every day I counsel officers who are bright, energetic, disciplined, and loyal who do not have jobs or, in many cases, do not have any idea what they want to do for their second career. They have not put the same effort into finding their next career as they have devoted to their current one.

My advice; Pretend that your service chief has just asked you for a detailed desk-side briefing next week on the requirements for him to successfully transition into the civilian job community when he retires from the service. Guess what? You would work 18 hours a day for the next seven days preparing this brief. You would read, do research, interview people in the business community, seek advice from friends, go into panic mode, and leave no stone unturned gathering information for this brief; you would be ready. When this brief was finished, you would get a big "atta boy" and get on with your next assignment.

You must put the same time and effort into your own transition program that you would put into preparing that transition briefing for "the Chief". Somewhere in the transition process,

begin to gradually shift loyalty from your service to yourself and your family. Remember to take full advantage of the many available transition programs, job fairs, research facilities, and civilian employment services to better prepare yourself for your next career. Don't forget, you have 20 days permissive temporary duty to do transition business and 10 days to clear your last duty station, plus a maximum of 60 days accrued leave. Use this leave wisely to prepare for your transition.

Prepare a detailed plan, known in the military as an operations order, and approach your immediate boss and test his or her loyalty to you. A supportive boss should find a way to redistribute the workload within the office or command to allow you some time to prepare for retirement. You will be more successful if you have prepared an operations order that clearly lays out the tasks you need to accomplish to be ready for your transition and the time you will need to accomplish them.

A boss will not be supportive if you are "winging it" and ask for time off "as needed" to do some things only vaguely defined, in hopes of finding a job. Be organized, pay attention to detail, and know what you want to do before you ask for time off. Be specific about the time you need, and try to balance your time with the boss's requirements.

No one reading this column should feel guilty about taking a few days off in preparation for retirement. Remember, your next assignment is your responsibility, and after your free transition services and a few kind words at your retirement, you are on your own.

**

COL Crews is Deputy Director for TROA's Officer Placement Service (TOPS), Alexandria, VA. He is currently presenting a lecture entitled "Marketing Yourself for a Second Career" in the greater Washington D.C. area. This article is reprinted with permission of TROA and first appeared in the May 1997 issue of The Retired Officer Magazine.

(Tropic Lighting - cont'd. from pg. 47)

establishes a time line and coordinates for the airspace use (A2C2) with supporting fires, electronic warfare and SEAD (Suppression of Enemy Air Defense) for ingress and egress routes. Coordinates with the brigade staff for decision points embedded within the brigade's Decision Support Template (DST) that result in timely execution of the minefields.

Assault Company Commander: Designates aircraft for Volcano mounting, designates aircrews and coordinates external support to assist in mounting the Volcano kits.

Brigade Engineer Officer: Nominates Air Volcano areas and conducts detailed sight surveys that supports the commander's obstacle plan. Provides detailed dimensions of the Air Volcano targets with start and release points for the minefields. Coordinates with the assault helicopter commander to provide expertise and assistance in mounting the ordnance.

Aircrews: Perform pre-combat checks, pre-flight inspections and detailed air mission planning that analyzes the effects that temperature, winds, visibility and pressure altitude will have on the mission.

Conclusion. The Air Volcano truly gives the light fighter a responsive and long ranging combat multiplier against enemy armored forces. Air Volcano now adds another role to the UH-60s missions of air assault, C3I, medevac, and electronic warfare. Finally, to the soldiers of the "Tropic Lightning" Division, Air Volcano gives a real world firepower dimension to the Myth of the Island's Volcano goddess Pele'.

**

MAJ Jarnot, 1st Battalion, 25th Aviation Reg. (Attack), Wheeler Army Airfield, HI.

Army Aviation

U.S. Army Aircraft Since 1947

Since 1947 - An Illustrated Reference

Stephen Harding

U.S. Army Aircraft Since 1947 is the only comprehensive, up-to-date guide to the 124 types of helicopters, fixed-wing aircraft and experimental flying machines used by the U.S. Army since 1947. After a concise yet thorough introductory history of U.S. Army Aviation, the author discusses each aircraft type used by the Army's air arm, which is the largest, most technologically advanced and most combat experienced force of its kind in the world today. Within each chapter the author includes information on aircraft serials, markings, weapon systems, operational history and other technical data. Illustrated with more than 220 color and black and white photographs, *U.S. Army Aircraft Since 1947* is the definitive reference source on its subject and a must-have volume for all military aviation historians and enthusiasts. [Schiffer Publishing Ltd. Size: 8 1/2" x11", 264 pages, hard cover; ISBN: 9-7643-0190-X]

Year of the Horse: Vietnam

1st Cavalry in the Highlands 1965-1967

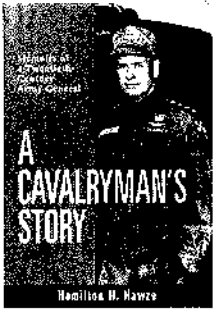
COL Kenneth D. Mertel (USA, Ret.)

Year of the Horse: Vietnam is the day-to-day story of the Jumping Mustangs - 1st Battalion, Airborne, 8th Cavalry, of the 1st Air Cavalry Division. After describing the activation of this then revolutionary airmobile division at Fort Benning, GA on 1 July 1965, COL Mertel gives a vivid picture of the building of his own Jumping Mustang Battalion, the rigorous training of officers and men, and, finally, the long voyage across the Pacific to Vietnam. Now the test. The answer came quickly and dramatically in a rapid succession of search and destroy operations. COL Mertel pays tribute to the many acts of heroism of his men, who lived, worked and fought together in some of the world's most inhospitable conditions. He also writes movingly of those who never came back. [Schiffer Publishing Ltd. Size: 6"x9", 384 pages, hard cover; 59 color photographs, 9 maps; ISBN: 0-7643-0190-X]

A Cavalryman's Story

Memoirs of a Twentieth Century Army General

Hamilton H. Howze



A Cavalryman's Story is the memoir of a professional soldier, born into the lineage of West Point and recognized today as the father of U.S. Army Airmobile tactics and doctrine. With understated charm and humor, GEN Howze writes of his polo-playing years in a 1930s Army that still relied on horses, and then of the sudden, almost remarkable transition to armored divisions, when the U.S. entered WWII. It was in the mid-1950s that GEN Howze emerged as one of a handful of perceptive Army officers who recognized the potential of a sky cavalry. As the first director of Army Aviation GEN Howze promoted the concept to industry, the government, and the public. His vision came to fruition in the 1960s when he presided over the U.S. Army Tactical Mobility Requirements Board, known as the Howze Board, which proved the viability of sky cavalry in combat. *A Cavalryman's Story* provides an authoritative look at the forging of the modern Army and a wry perspective on the perennial absurdities of military life, whether in peace or war. [Smithsonian Institution Press. Size: 6"x9", 316 pages, hard cover; ISBN: 1-56098-664-6].

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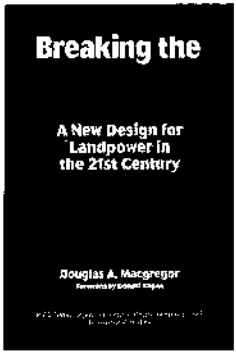

BREAKING THE PHALANX
Douglas A. Macgregor

This work proposes the reorganization of America's ground forces on the strategic, operational and tactical levels. Central to the proposal is the simple thesis that the U.S. Army must take control of its future by exploiting the emerging revolution in military affairs. The analysis argues that a new Army warfighting organization will not only be more deployable and effective in Joint operations; reorganized information age ground forces will be significantly less expensive to operate, maintain, and modernize than the Army's current Cold War division-based organizations. And while ground forces must be equipped with the newest Institute weapons, new technology will not fulfill its promise of shaping the battlefield to American advantage if new devices are merely grafted on to old organizations that are not specifically designed to exploit them. [Praeger Publishers. Size: 6"x9 1/8", paperback, 283 pages, ISBN: 0-275-957942]

WE WERE SOLDIERS ONCE... AND YOUNG
Harold G. Moore and Joseph L. Galloway

We Were Soldiers Once ... And Young brings the war back home with unforgettable stories of those who lost family members to combat. This devastating account rises above the specific ordeal it chronicles to present a picture of men facing the ultimate challenge, dealing with it in ways they would have found unimaginable only a few hours earlier. It reveals to us, as rarely before, man's most heroic and horrendous endeavor. [Harper Collins Publishers, Size 5 1/2"x8", 483 pages, paperback. ISBN: 0-06-097576-8

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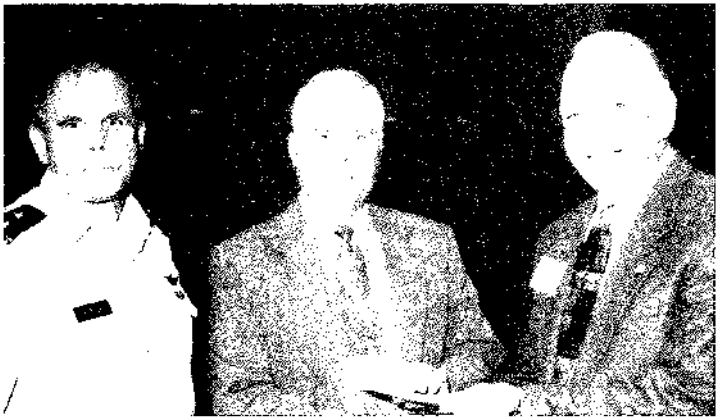
ARMY AVIATION MUSEUM

The 1997 AAAA Annual Convention in Louisville, KY, was the occasion for a number of very generous donations to the Army Aviation Museum Foundation from industry. Mr. Chuck Vehlow, VP Apache Programs, McDonnell Douglas Helicopter Systems, donated $3,000.00 from the company. He is pictured above between MG Daniel J. Petrosky, Aviation Branch Chief (left), and GEN Benjamin Harrison, Ret.(right).

Pictured above are (left to right) Mr. Charles Quinn, COL John J. Stanko, Jr., Ret., MG Daniel J. Petrosky, Mr. Barry Jenkinson, and MG Harrison, Ret. with a donation of $1,000.00 from UNC Aviation Services.

FOUNDATION DONATIONS



Mr. Pete Ryan, Manager for Quality Assurance, donated $1,000.00 from FlightSafety International. He is pictured with MG Petrosky (left) and MG Harrison, Ret. (right).

MG Dave Robinson, Ret., AAAA President and VP Operations, Raytheon Aircraft Co., donated $500.00. He is above with MG Petrosky and MG Harrison, Ret. Other donations were made by Bell Helicopter Textron, $2000; Sikorsky Aircraft, $2000; Lockheed Martin Electronics and Missiles, $1500; CAE Electronics, Inc., $1000; and U.S. Helicopter Co., $500.

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(Refueling cont'd. from pg. 29)

missions because all soldiers conducting the mission can perform both refuel and rearm duties. The commander can utilize the remaining soldiers for contingency FARP missions, or they can implement a more conservative fighter management plan. Regardless of the intent, the ATAS concept affords the commander a level of flexibility far beyond that offered by a 3/5 platoon.

The ATAS platoon is an example of an aggressive approach to solving the problem of tactical refuel and rearm operations for the following reasons: the ATAS platoon, task organized under the AVIM unit, has the necessary leadership and maintenance support; the ATAS platoon has more personnel meet multiple mission requirements, and the ATAS platoon has a training program which not only increases flexibility for mission support, but also increase FARP safety by providing the cohesive training towards a definitive standard.

In my experience, I have not worked with a commander who was not concerned about FARP operations. Through the countless air mission briefings and Operations Order briefings, the commander always discusses the FARP. Although I don't disagree with the May 96 edition of Flightfax, I believe that hot refuel and rearm operations are the most hazardous of aviation operations for the reasons I discussed. For me, the 3/5 platoon leader, I've gained the experience of having managed the most difficult challenge of my life. For the aviation community, I hope the ATAS concept coupled with the standardization and training program provides you the tools for more flexible, more autonomous, and - most importantly - more safe refuel and rearm operations.

**

CPT Roncoroni is a student at the Aviation Officer's Advanced Course, Ft. Rucker, AL.

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Editor:

CPT Willis N. Dabbs, author of "Letters from the Dark Side: The Systematic Slaughter of Sacred Cows", brings out many interesting ideas. He speaks about the silly discussions regarding the constant change of aviation uniforms at great expense "...to enhance credibility for aviators operating in the Infantryman's TOC". Amen, and amen!

In this day of shrinking dollars, we need to be more concerned about the inside of soldiers heads instead of "conformity" in uniforms or whether they can do a certain number of push-ups or run a certain distance. We need to address the indecent waste caused by bickering between the services and consolidate such things as recruiting offices. Do we really need all the mili tary academies? No! Then, which would be the first one to be closed?

I talked with a recent graduate of West Point and asked about the Vietnam campaigns and Desert Storm campaigns he had studied. He said very little time was devoted to these but they had studied the Civil War for an entire semester and spent a week on the Battle of Gettysburg. That's twice as long as the battle lasted!

When you hear people complain about cuts in "military spending" ask about cutting waste and which taxes we should raise to provide more spending or should we borrow money. We know from the 1980's that there is no Easter Bunny when it comes to paying bills. We can make our Defense dollars go a lot further.

CW4 Carl L. Hess, Ret., U.S. Army

AAAA Distinguished Graduates

The AAAA provides awards to the Distinguished Graduates of certain enlisted, warrant officer, and officer courses at Ft. Rucker, AL, Ft. Eustis, VA and the Eastern and Western Army National Guard Aviation Training Sites that have been determined by the AAAA Aviation Center Chapter's Executive Council to merit a Distinguished Graduate Award. This information is provided and the awards are co-ordinated by the respective local AAAA Chapter's VP of Awards. The following is a list of distinguished graduates that recently received AAAA Distinguished Graduate Awards:

Class #508-96 (16 JAN 97), AH-64 Attack Helicopter Rpr Crs: PV2 Michael W. Frost
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Class #16-97 (28 JAN 97), AH-64 Arm/ Electrical System Repairer: PV2 Christopher S. Sullivan
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Class #1-97 (29 JAN 97), Aircraft Comp Repairer Sup Crs: SFC Christopher R. Dezero
Class #2-97 (29 JAN 97), Aircraft Comp Repairer Sup Course: SFC Kevin L. Webster
Class #1-97 (31 JAN 97), Aircraft Powertrain Repair Sup Crs: SGT Jeffrey T. Rutt
Class #1-97 (31 JAN 97), AH-64 Attk Helicopter Repairer Sup Crs: SGT Sean Faulk
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Class #30-96 (31 JAN 97), AH-64 Attack Helicopter Repairer Crs: PV1 James R. Jackson, III
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Class #2-97 (6 FEB 97), UH-60 Helicopter Repairer Course: AB Keith A. Clements
Class #4-97 (6 FEB 97), OH-58D Helicopter Repairer Course: PV2 Charles B. Johnson
Class #1-97 (7 FEB 97), CH-47 Helicopter Repairer Course: PV1 Darrell G. Lee, Jr.
Class #1-97 (12 FEB 97), Aircraft Powertrain Repairer Crs: PV1 Ernie Lazos Jr.
Class #1-97 (12 FEB97), Aircraft Electrical Repair. Sup Crs: SGT Harold T. Sullivan, Jr.
Class #19-96 (12 FEB 97), AH-1F Arm/ Missile Sys. Repair Crs: PV1 Christopher P. Smith
Class #4-97 (13 FEB 97), UH-60 Helicopter Repairer Course: PFC Justin P. Kragenbrink
Class #1-97 (13 FEB 97), UH-1 Helicopter Repairer Sup Course: SGT Kevin R. Karvinen
Class #3-97 (13 FEB 97), UH-60 Helicopter Repair Crs: PV2 Logan D. Shell

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Class #4-97 (28 FEB 97), CH-47 Helicopter Repairer Course: PV1 William S. Duncan
Class #501-97 (28 FEB 97), Aircraft Power-plant Repairer Crs: PV1 Nicole E. Nichols
Class #2-97 (28 FEB 97), Aircraft Powerplant Repairer: SGT Timothy G. Gilmore
Class #4-97 (28 FEB 97), AH-64 Attack Helicopter Repairer Course: PV1 Jerry P. Hutchens, Jr.
Class #501-96 (28 FEB 97), AH-64 Arm/Elec System Repairer Crs: PV1 Byron D. Singletary

Silver Eagles

The SILVER EAGLES program was established in 1988 to recognize those AAAA supporters who have been members for at least 30 years. Those 30 year members who joined AAAA in 1966 are:

Adams, Bobby R., COL
Adams, Harry B, Mr.
Ankenbrandt, William R., LTC, Ret.
Bailey, Vincent P., LTC, Ret.
Baird, Robert L., LTC, Ret.
Beasley, Lonnie S.Jr, COL, Ret.
Brantley, Jerry L., CW4
Bruns, Thomas E., COL, Ret.
Carlson, Lynn A., Mr.
Carroll, Edward I., MAJ
Chernowitz, George, Mr.
Christie, James, LTC
Cole, Thomas P., LTC, Ret.
Conner, Victor S., LTC, Ret.
Connors, Harry L.,Jr, MAJ, Ret.
Cook, Theodore L., LTC, Ret.
Couch, Jacob B.,Jr, COL, Ret.
Critchfield, John B., LTC, Ret.
Davidson, Stephen L., CW5
Del Grosso, Anthony J., Mr.
Dohm, David J., CW3
Donnelly, Henry J., COL, Ret.
Duffy, James W., CPT
Eason III, E. Allen, Mr.
Edwards, John P., LTC, Ret.
Fichter, Thomas A., LTC
Fields, James W., CW4, Ret.
Fluhr, Gilbert W., CW4, Ret.
Fossum, Earl G., II, LTC, Ret.
Fragola, Albert T., LTC, Ret.
Fuller, George D., COL, Ret.
Funkhouser, Jon J., Mr.
Garanzuay, Antonio, MAJ
Gingras, Herbert L., MAJ, Ret.
Glance, Jesse W., Mr.
Grow, John W., Sr, MAJ, Ret.
Harmes, Michael H., LTC, Ret.
Hatcher, Daniel P., MAJ, Ret.
Holder, James R., COL, Ret.
Irby, Richard L., MG, Ret.
Johnson, Gary D., COL
Johnson, Thomas E., COL
Jones, Robt. E. Jr, LTC, Ret.
Kalogris, Peter R., CW5
Kennedy, Geo. H, III, CW4, Ret.
Kenolio, David N. Jr, CW4, Ret.
King, Carl L., LTC, Ret.
Kobes, Eugene H., LTC, Ret.
Kovacich, George J., LTC, Ret.
Lawson, Willie A., LTC, Ret.
Letts, Clifford E., COL, Ret.
Lewis, Glenn W., LTC, Ret.
Little, John L., CW4, Ret.
Martin, Don L., MAJ, Ret.
Mazzuca, Jack G., MAJ, Ret.
McCullough, Baron L., CW2, Ret.
McKeown, William L., COL, Ret.
Morgan, Jerry L, Mr., Ret.
Morris, Leon P., CW4, Ret.
Paul, Harry L., CW4, Ret.
Peduzzi, Lawrence P., LTC, Ret.
Peterson, Robert M., CW5, Ret.
Price, Lucius D., CW4, Ret.
Radwick, Michael J., MAJ, Ret.
Russell, John G., Jr, CW4, Ret.
Scott, James A.III, LTC, Ret.
Shirley, Jerry D., CW4, Ret.
Shoults, William E., MAJ, Ret.
Shuman, Kenneth E., LTC, Ret.
Silva, Warren R., LTC, Ret.
Skaaden, Richard A., CW4
Soderlund, Paul R., COL, Ret.
Stacy, John M., LTC, Ret.
Stahl, William T., COL, Ret.
Strazzini, Edward M., LTC, Ret.
Thomas, James R., MAJ, Ret.
Voss, Daniel R., COL, Ret.
Wernli, Paul W., CW5, Ret.
Wilson, Eugene A., LTC, Ret.
Withers, Peter C., LTC, Ret.
Wood, Gail W., COL

FUNCTIONAL AWARD NOMINATIONS

Contact the AAAA National Office for nomination forms for these awards. Membership in AAAA is not a requirement for consideration.

SUSPENSE 1 SEP 97

AAAA AVIONICS AWARD

Sponsored by Cubic Defense Systems, Inc., the AAAA Avionics Award will be presented at the 1997 AEC Symposium to "the person who has made an outstanding contribution to Army Aviation in the area of Avionics during the awards period encompassing 1 August 1996 through 31 July 1997".

AAAA AIRCRAFT SURVIVABILITY EQUIPMENT AWARD

Sponsored by Lockheed Martin, the AAAA Aircraft Survivability Equipment Award will also be presented at the 1997 AEW Symposium. It will be presented "to the person who has made an outstanding individual contribution to Army Aviation in the area of ASE during the awards period encompassing 1 August 1996 through 31 July 1997.

SUSPENSE 15 OCT 97

1997 AAAA AIR/SEA RESCUE AWARD

Sponsored by Lucas Aerospace, the AAAA Air/Sea Rescue National Award will be presented "to the crew or crewmember who has performed a rescue using a personnel rescue hoist that saved the life or eased the suffering of an individual or individuals during the awards period encompassing September 1, 1996 through August 31, 1997".

A candidate for this AAAA National Award must be U.S. Army, Active or Reserve Component, and must have had an active role in an air rescue effort using a personnel rescue hoist.

1997 AAAA TRAINER OF THE YEAR AWARD

Sponsored by Hughes Training Inc., Link Division, the AAAA Trainer of the Year Award will be presented "to the trainer who has made an outstanding individual contribution to Army Aviation during the awards period encompassing September 1, 1996 through August 31, 1997".

A candidate for this AAAA National Award may be a military or civilian nominee and must be actively involved in Army Aviation training.

1997 ARMY AVIATION MEDICINE AWARD

Sponsored by Gentex Corporation, this National Award will be presented "to the flight surgeon or aeromedical physician assistant who best exemplifies the contribution to Aviation during the awards period emcompassing September 1, 1996 through August 31, 1997."

A candidate for this AAAA National Award must be U.S. Army, Active or Reserve Component, and must be actively involved in Aviation Medicine support to Army Aviation.

1997 ARMY AVIATION FIXED WING UNIT AWARD

Sponsored by FlightSafety International, the Army Aviation Fixed Wing Unit Award will be presented "to the unit or detachment with fixed wing aircraft that has achieved the highest level of excellence in training, safety, logistics, operations and support during the awards period encompassing September 1, 1996 through August 31, 1997."

A candidate for this AAAA National Award must be a U.S. Army, Active or Reserve Component, unit or detachment with fixed wing aircraft that has met the foregoing criteria.

1997 AAAA AIR TRAFFIC CONTROL AWARDS

Sponsored by AAAA, the Air Traffic Control Awards will be presented "to the facility, company manager, maintenance technician, and controller that have achieved the highest level of excellence in training, safety, logistics, operations and support during the awards period encompassing September 1, 1996 through August 31, 1997."

Candidates for this AAAA National Award may be a military or civilian nominee and must be actively involved in Army Aviation Air Traffic Control.

New AAAA Chapter Officers

Cedar Rapids:
Ms. Cynthia J. Colon (VP Membership); Mr. Walter Hepker (VP Programming)

Central American:
CPT Julian R. Medina (President); 2LT Stephanie Means (Secretary); CPT Lawrence T. Zaben, Jr. (Treasurer); CW3 Bruce C. Van Den Eng (VP Programs); SGM Jeffrey Bezore (VP Enlisted Affairs)

Central Florida:
MAJ Kurt A. Rhodehamel, Ret. (President); COL Mark W. Russell (Sr. Vice Pres.); Mr. Michael G. Younce (VP Membership)

High Desert:
CPT James R. Macklin, Jr. (VP Programs)

Lindbergh:
Mr. Harold P. Strickfaden (Treasurer)

Old Tucson:
MSG Larry D. Cook (Treas)

Ragin' Cajun:
CW2 James R. Greenwood

AAAA Aviation Soldiers of the Month

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

SGT David M. Porter
(March 1997)
Savannah Chapter

PV2 Patrice M. Gregory
(April 1997)
Land of Lincoln Chapter

Four Officer Candidates were branched and commissioned into Army Aviation in a ceremony held on 05 Jun 97. The OCS graduates received letters of congratulations from MG Petrosky, Commanding General, Ft. Rucker. AAAA provided the commissioned officers with their first set of aviation branch insignia. Pictured above from left to right are 2LT John H. Wall, 2LT Timothy F. Galecki, 2LT Tim Goloversic and 2LT Louis Woodson.

AAAA Member, CPT Bruce Ollstein, USAR, gets a big grin from GEN Dennis J. Reimer, Army Chief of Staff, while presenting the General with a signed copy of *Combat Golf*, (Bruce's hit book) at a party honoring West Point. Bruce was a former P.I.C. for the now COS when GEN Reimer was a Major General in South Korea.

AAAA Aviation Soldiers of the Month (cont'd.)

PFC Nickolas A. Goodwin
(May 1997)
Narragansett Bay Chapter
SGT Anthony J. Watkins
(May 1997)
Land of Lincoln Chapter
SGT David L. M. Nuttall, Jr.
Narragansett Bay Chapter

New AAAA Industry Members

Hitachi Software
Engineering America, Ltd.
San Francisco, CA
SEI Industries, Ltd.
Delta British Columbia, Canada

Aces

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

Ms. Mary M. Akers
CW4 J. D. Badgley
MAJ John J. Brooks
Mr. Joseph A. Caines
Mr. John R. Chapman
CPT Daniel L. Clark
CPT Daryl A. Doberstein
CW2 John P. Garske
Ms. Donna Griffis
CW3 Robert M. Kelly, Ret.
MAJ Kurt A. Kennard
SGM Ivonne M. Morrison
SFC Pamela L. Shugart
LTC Earl M. Yerrick, Jr.

Honorary AAAA Members

Mr. Henry "Hank" Ainsworth

AAAA Past President, MG Ben Harrison, Ret., recently took delivery of a custom built Magnum (above). Enroute from Birmingham, AL to his home in Belton, TX, Ben made the amazing discovery that the left auxiliary tank would not feed. Unfortunately, this was after the right tanks had been exhausted, hence the unscheduled visit to Broadus, TX. Fortunately he had practiced dead-sticks before he left Birmingham and the only damage was a slight dent to one strut and nicked paint on the other. Ben's conversation with the builder has been classified so we are unable to share it with you at this time, in a family magazine.

In Memoriam

LTC Willie W. J. Barrios, Ret.
MAJ Stanley L. Chambers, Ret.
Mr. Arthur M. Clarke
LTC Charles P. Damon, Ret.
CW3 Bradford W. Green
COL Frank O. Grey, Jr., Ret.
Mr. George Hogelin, Sr.
LTC Robert W. Koepp, Ret.
Mr. Robert H. Johnson
MG Delk M. Oden, Ret.
LTC John B. Reese, Ret.
Mr. Hugh E. Walker

2 for 1 Offer

AAAA now offers a two year membership for the price of one for all first-time new members

Join the Professionals! Join AAAA

Visit the AAAA Web Site!

http://www.quad-a.org

The AAAA's newest chapter, the Nile Delta Chapter, Cairo, Egypt as activated on 29 May 97. Some members above are J. Michael Gracey, Vice Pres., (9th from left), CW3 Douglas B. Brown, Sec., (4th from left), SFC Andrew S. Courturier, Treas. (kneeling, 3rd from left), and CW3 Don L. Brown, V.P. Membership (standing, 6th from left).

On 27 May 97 Cadet (now 2LT) Ryan G. Leonard received the Outstanding Aviation Branch Cadet, United States Military Academy. MG Carl H. McNair Jr., Ret. is pictured below presenting the award at Commandant's Awards Ceremony, Eisenhower Hall, West Point, NY.

AAAA CALENDAR

A Listing of Upcoming National and Chapter Events

September 1997

✎ **Sep 2-4.** AAAA Army Aviation Simulation Symposium, Crystal Gateway Marriott, Arlington, VA.

October 1997

✎ **Oct 13.** AAAA National Executive Board Meeting, Sheraton Washington Hotel, Washington, DC.

✎ **Oct 13.** AAAA Scholarship Foundation Executive Committee Meeting, Sheraton Washington Hotel, Washington, DC.

✎ **Oct 25.** Army Aviation Center Chapter 6th Annual 5K Fun Run and Chili Cook-Off Contest, Army Aviation Center Chapter, Fort Rucker, AL.

January 1998

✎ **Jan 30.** AAAA Scholarship Board of Governors Executive Committee Meeting, National Guard Readiness Center, Arlington, VA

✎ **Jan 31.** AAAA National Awards Selection Committee Meeting, National Guard Readiness Center, Arlington, VA.

April 1998

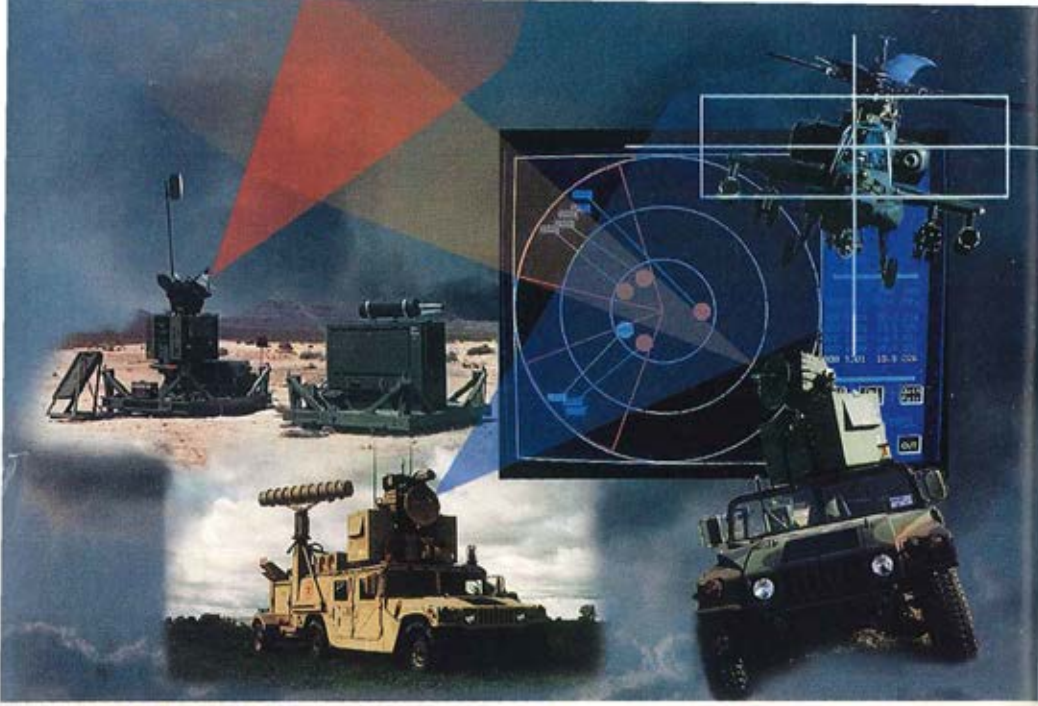
✎ **Apr 1-4.** AAAA Annual Convention, Charlotte Convention Center, Charlotte, NC.

CFC●CFC●CFC●CFC

CFC●CFC●CFC●CFC

The AAAA Scholarship Foundation , Inc. (AAAASFI) is now part of the Combined Federal Campaign (CFC), a workplace charitable fund drive conducted by the U.S. Government for all federal employees. It is the single largest workplace fund drive in the country, raising approximately $195M in pledges annually.

Please consider making a CFC-sponsored contribution to the AAAA Scholarship Foundation this year.



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