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A Different Way of Doing Business page 26

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Cover: A British Lynx display aircraft doing a back flip—certainly a "different way of flying." (Note the ground location below the top of the rotor disk.) The Lynx is currently the British Army Air Corps' primary attack/lift helicopter; story on page 26.

Theme: This issue concentrates on combined arms and joint forces operations. The lead article, "Restructuring the Warfighting Capability of the United States," starts on page 9. The author starts a two-part series dealing with the problems with American combat power, the concept of combined arms, and the need for a simplified structure for America's Armed Forces with recommendations and justifications for that structure.

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Major General Ronald E. Adams

Army Aviation in Theater Missile Defense

Theater Missile Defense (TMD)—*the integration of joint force capabilities to destroy enemy theater missiles in flight or prior to launch or to otherwise disrupt the enemy's theater missile operations through an appropriate mix of mutually supportive passive missile defense, active missile defense, attack operations, and supporting command, control, communications, computers, and intelligence (C^4I) measures.*

The location is Southwest Asia, February 1991; the time is 0230 hours on a moonless night. Bearcat 06 is an AH–64 Apache company commander leading his team on a zone reconnaissance about 80 miles into Iraq when he receives the following call: "Bearcat 06, this is Tomahawk 02 (Airborne Warning and Control System [AWACS]); contact Predator 16 (ground laser designation team) on FM 40.45 for possible Scud launcher target." Bearcat 06 acknowledges the call, having been briefed that this was a contingency mission. "Predator 16, this is Bearcat 06, request SITREP, over."

"Bearcat 06, this is Predator 16, I have eyes on target—stationary enemy launcher behind a bunker, grid NK 564426, alpha code, call laser on."

"Bearcat 06, roger."

At this time, Bearcat 06 enters the grid in the doppler and the data entry keyboard and gets a range to the target of 12 kilometers. He decreases his airspeed and lines the Apache up for a Hellfire shot. At 8 kilometers, he spots a vehicle but can't identify it yet. "Predator 16, this is Bearcat 06, spot on for identification." Predator 16 lases the target, and Bearcat 06 has positive identification. The launcher is tucked in next to a cement embankment, which causes the Apache to get closer to maintain adequate line of sight. All of a sudden, the enemy launcher starts to move; Predator 16 announces, "I can no longer observe the target." It's too late. Bearcat 06 reaches 4 kilometers tracking the vehicle, staying as low as possible; he has a clear shot, lases the target—all constraints met—and launches a Hellfire missile. Some 30 seconds later, the Hellfire slams into the target, setting off a huge explosion. "Tomahawk 02, this is Bearcat 06; one Scud launcher destroyed, end of mission."

This hasty engagement is an example of a TMD scenario, fictional and yet very plausible. A TMD engagement involving Army aviation can be as simple as just described or a preplanned detailed joint precision strike mission. TMD is a much–discussed topic these days. Who are the players? What is the mission? Should we develop a separate TMD doctrine? These are just a few of the questions involving this complex subject. One thing is certain—capitalizing on its versatility and mobility, Army aviation possesses an unparalleled capability to find, fix, and destroy TMD threats.

The recent tensions in North Korea highlight the unmanned tactical ballistic missile (TBM) threat. The risk from an enemy–manned fixed–wing threat has decreased while the unmanned threat from TBMs, cruise missiles, and other unmanned vehicles continues to grow. Both TBMs and cruise missiles possess many dangerous capabilities. They have many employment options; offer various warhead choices—to include nuclear, biological, and chemical; operate over extended ranges; and are relatively inexpensive. Cruise missiles pose a distinct threat. They can be a "poor country's Air Force." If given $50 million, any adversary could buy hundreds of "off–the–shelf" cruise missiles for the same dollars it takes to purchase four attack helicopters or one or two fixed–wing fighters. The bottom line is that the TBM and cruise missile threat is real and modernizing at an accelerating rate. Consequently, the Army has been focusing its resources, structure, and doctrine on this ever–increasing threat.

Theater Missile Defense is a joint issue. It is defined by four pillars: attack operations, active defense, passive defense, and battlefield management/command, control, communications, computers, and intelligence (BM/C^4I).

Attack operations involve the use of sensors and weapons to detect and attack threat launchers, missiles, support facilities, and C^4I with ground and air assets to prevent or reduce the launch of threat missiles. Along with U.S. Air Force aircraft—including the F–15 Eagle/F–16 Fighting Falcon—and the long–range Army tactical missile

system (ATACMS), national sensors, and intelligence assets, Army aviation plays a key role in this area, executing deep–attack missions and armed reconnaissance missions. Our weapons systems operate with less target error than other attack assets, provide near–immediate response, and can see, maneuver, and shoot deep. The varied weapons systems complement each other—the strong attributes of one compensating for the weak attributes of the other. As an example, a moving launcher may not be an appropriate target for the indirect fire weapon, whereas it can be a valid target for Army aviation.

Active defense is conducted to protect against theater missiles by acquiring and destroying missiles—"ensuring negation of warhead effects for weapons of mass destruction—in flight." An example of active defense is the Patriot missile as used during Operation Desert Storm. Air Defense Artillery is the predominant player in active defense.

Passive defense is the use of forces and elements to deny enemy reconnaissance, surveillance, and targeting (for example, military intelligence and chemical assets). It reduces the vulnerability of critical forces and supporting infrastructure by providing enhanced physical protection.

Battlefield management/C⁴I is the use of elements and systems that provide command, control, communications, computers, and intelligence to support timely and efficient execution of the TMD mission. C⁴I must become the common base or link between the other pillars of TMD. Army aviation cannot now provide C⁴I links to all joint assets, but communications materiel programs are in developmental stages to overcome deficiencies. The Airborne Command and Control System (AACCS) console on the UH–60 Black Hawk can serve as the critical link between various sensors and attack aircraft through digital links from joint surveillance and target attack radar system (J–STARS) aircraft. Another important aspect of C⁴I is immediate and responsive airspace management. Army Airspace Command and Control integrated into joint airspace management is an essential part of the successful employment of Army attack systems—to include Army aviation, ATACMS, and unmanned aerial vehicle (UAV) sensors.

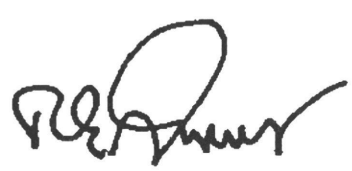
The Army, Air Force, and Navy are still discussing roles and missions in developing a joint system. Make no mistake about it, to accomplish our mission, we will rely heavily on other joint assets.

How about Army aviation's role in TMD? Here is an example. During the Persian Gulf War, 88 Scuds were launched and about 4,859 sorties were flown against these Scud infrastructures and forces. As of a few months ago, there were no confirmed kills of mobile Scud launchers; however, we now know that Army aviation was responsible for the destruction of enemy Scud launchers by aircraft belonging to the 160th Special Operations Aviation Regiment (SOAR). The fact is, to kill them, somebody has to see them—Army aviation can do this and confirm battle damage assessment (BDA).

Army aviation has been a participant in recent TMD demonstrations and experiments—our diligent effort must continue. Upcoming TMD experiments—such as the Advanced Warfighting Experiment (AWE), part of the Roving Sands exercise at Fort Bliss, Texas, in April 1995—are critical to interservice cooperation and battle lab experimentation in seeking viable solutions to TMD shortcomings.

Some of the challenges facing Army aviation are C⁴I integration of TMD assets to include airspace management, attaining and processing real–time targeting information, range of aircraft, payoff versus risk involving deployment decisions, and funding. While the challenges are many, Army aviation—with the AH–64D Longbow Apache and RAH–66 Comanche—brings to the TMD mission significant range, lethality, connectivity, and survivability enhancements. Our digitization programs will provide an important in–flight divert capability to high–priority targets, similar in context to the example at the beginning of this article. The key to destroying a TMD threat revolves around accurate and timely information—this is how digitization will pay huge dividends.

The TBM threat is real and undeniable. Mass proliferation of TBMs poses a serious threat to our maneuver forces during many potential contingencies. Numerous changes in our Army's force structure, mission, and doctrine have affected the way we do business over the past years. Theater Missile Defense is an important aspect of these changes, and our service leaders have placed a high priority on the TMD mission. Newer systems will enhance our TMD effectiveness, and we may change our tactics, techniques, and procedures based upon mission, enemy, terrain, troops, and time available (METT–T); however, our deep–attack doctrine provides a solid foundation for the TMD mission. *There is no compromise for protecting the force, and Army aviation has proven—in peace and in war—to be a major contributor in doing just that!*



News and Views

Are we soldiers first—or not?

The Aviation Branch, as the newest member of the combat arms family, has validated its inclusion at every opportunity since official designation in 1983. Operations Just Cause and Desert Storm were stunning successes. Many were surprised by the versatility and lethality of pure aviation forces and the effectiveness of support for other combat arms units. Desert Storm was not only phenomenal in its scope but also in the apparent savings of American lives and equipment by not having to go head–to–head with entrenched armor and mechanized infantry. Note that Army aviation was employed effectively and did its job well.

Why is it then, 11 years after branch formation with many combat successes, we are still not viewed as a full partner by the other combat arms branches? To those who disagree, I would suggest more study. I also ask you to read on. Attempt to understand my perspective as I have served mostly as the senior enlisted member in a variety of table(s) of organization and equipment (TOE) units since the branch birthday. My viewpoint that Army aviation is not fully accepted is unique and based on day–to–day operations and interaction with other combat arms units. It is also founded on relationships, since 1983, with other first sergeants, sergeants major, and command sergeants major.

I feel I know what acceptance is. I have experienced it. With more than 26 years of service, most in aviation units, I can remember only one tour in which I felt that my unit (Aviation Brigade, 7th Infantry Division, Fort Ord., Calif., 1989 to 1990) was not "those guys," but instead "one of us." It had to do with shared hardships. It also had to do with an attitude in the brigade in which we all played the game in training and in combat (Operation Just Cause). Creature comforts stayed home when at Fort Hunter Liggett, Calif.; the National Training Center, Fort Irwin, Calif.; and the Joint Readiness Training Center [which moved from Fort Chaffee, Ark., to Fort Polk, La., in 1993]. Warrant officers were "Hooaah!" Everyone painted up. All patrolled. All dug in. Noncommissioned officers (NCOs) moved the units on the ground, and officers/warrant officers flew.

This was certainly influenced by enlightened leadership at both division—now LTG (retired) Carmen Cavessa—and brigade (COL Douglas R. Terrell). Battalion commanders (now COL Benton H. Borum, for one) maneuvered their units with great success.

All was not roses though, as many young officers and warrants chose resignation or separation while some enlisted soldiers chose expiration term of service (ETS). Their image of what military service should have been—and what it had been to that point in their career—was not what they experienced. Task Force Hawk (Panama, June 1988 through May 1990) made life very complicated and not much fun: a 90–day rotation to Panama with the task force, then back in time to deploy for field exercises, and then another 90–day rotation. Families suffered, and soldiers got tired—but the mission was completed in a consistently excellent manner.

Having experienced this oneness after never having felt it before or since, I searched for a systemic problem as to why acceptance was not a reality. My conclusion is that we in Army aviation purposely set ourselves apart. The other combat arms do not do it to us—we are our own worst enemy in this area.

Nowhere in Army aviation is this more personified than in the aviation warrant officer (AWO). If the noncommissioned officer is the backbone of the Army, then the aviation warrant is the heart of Army aviation. Young aviation soldiers "wanna be" and identify more with AWO attitudes—and only reluctantly follow their sergeant's guidance if there are (and aren't there always?) differences.

Since the first rated aviation warrant officers were appointed, their service has been honorable, memorable, and nothing short of remarkable. They are a blend of experience (enlisted who apply and are selected for and who complete flight training), and young people new to the Army (high school to flight school). They are technically proficient and are doing something they love to do—fly! The fact that they are paid for flying is just icing on the cake for most. Their attitudes are generally laid back, easygoing, and focused on their flying mission.

In war, the aviation warrant has proven his or her worth, time and again. Flying artillery spotter, aerial observer, cavalry, attack, air assault, air mobile, and medical evacuation missions—they have greatly assisted in making Army aviation the lethal

combat arm it has proven to be. They also train officers and enlisted soldiers in aviation maintenance and operations skills. Before and since the Aviation Branch became a reality, the aviation warrant officer has consistently been on the forward, leading edge.

The aviation warrant personifies and perpetuates the mystique of flying. Recruiters use this image to successfully sell not only Army aviation but also the Army. You know of what I speak: something special—different—set apart. Remember the TV commercials!

Keep the preceding paragraph in mind because the next–to–last sentence is where I perceive the root cause of the difficulties other combat arms soldiers have of seriously accepting aviation as a combat arms brother. They appreciate our capabilities but do not wholly accept us because we insist on being different.

Consider priorities. Many aviation warrants consider themselves aviators first, then soldiers. This attitude is pervasive. It is consciously (and even unconsciously) projected to both officers and enlisted soldiers. Reinforcement is further continued in branch magazines. It is not wrong that these publications continually emphasize the glory and potential of Army aviation. They were designed to do that. What is not recognized by idea or story are the challenges faced by the majority of aviation soldiers who maneuver on the ground around the battlefield to support those who fly.

Remember also that Aviation Branch officers have vivid memories of the first major influence in their military career—the warrant officer instructor pilot. Other combat arms officers tell stories of their first platoon sergeant training and grooming them, but the first vivid image has already been implanted before the aviation lieutenant gets to his first platoon sergeant. Even this contact is not special because most aviation platoons have senior lieutenants as platoon leaders. Once again, the young officers (like the young soldiers) look for the most experienced person in the platoon—who always happens to be the chief warrant officer 3 (CW3), or senior CW2—to help shape their attitudes and behavior. Thus the cycle remains unbroken.

With this initiation, these same young officers will one day be making branch decisions. The first crop of lieutenants (year group 1983) will be battalion commanders in a few years. They cannot identify with the experiences of the Aviation Branch leaders of today who were branch qualified and served tours with other branches—mostly Infantry, Armor, and Field Artillery. The assumption of "soldier–first" thinking by these officers is not realistic at this point, nor could it be expected based on their beginnings.

This further limits their potential to lead the Army at division, or higher, command. Are not all combat arms officers logically supposed to be considered for these positions? Please remember that rated aviators have commanded divisions and have even been selected as the Chief of Staff, U.S. Army, but will an Aviation Branch officer ever be selected for division command? I think not, unless changes take place and have time to cycle through officer ranks from commissioning through retirement.

While this is "officers' business" and does not directly involve me, I am concerned with Aviation Branch noncommissioned officers who have the potential to serve as command sergeants major at every level—including the sergeant major of the Army. They will never realize this potential because they are not going to get the variety of experiences and exposure that will bring them to the level of expertise and reputation to even be slated for the division commander's consideration. Before branch formation, in 1983, aviation–background NCOs could be exposed to fields other than pure aviation in which their consideration and selection for division, and higher, command sergeant major billets were possible. The highest level billet that I personally know of being filled by an aviation command sergeant major was VII Corps in Europe in the early 1980s.

The high–tech battlefield dominates our daily training. The maintenance side of the branch is absorbing the black–box technology of the newer aircraft systems while the operations/air traffic control side is involved in the computerization of the battlefield, Army airspace command and control (A^2C^2), new equipment development, and secure data communications.

Are we becoming so specialized in our focus that we are maintainers, operators, air traffic controllers, etc., first—then soldiers? We say we can secure our own perimeters, but when deployed, we immediately start looking for infantry support rather than digging in, laying out fields of fire, and plotting predesignated fire–support targets. We fail to ensure that our sergeants accept these responsibilities either by only paying these requirements lip service (simulating) or leaving an officer back (who should be flying) who usually fails to emphasize the attention to detail needed to do these things correctly.

Trust me, in a hostile fire environment, the sergeants will be moving the convoys and will be responsible for securing the perimeter. Because of our leanness, those who fly will have to assist in this effort. There will be no other way to protect those multimillion–dollar machines. The infantry and armor units will be otherwise occupied. We will

have no priority to them. They expect their combat arms brother (us) to be able to look to our own defense.

Battalion command sergeants major (CSMs) must be prepared to move the battalion on the ground. First sergeants and supply sergeants will be moving back and forth between the trains/logistics support area and unit, bringing replacements and food and coordinating (scrounging) for all classes of supply. Platoon sergeants will move their platoons and see that assembly areas are secure and ready to receive the returning aircraft for maintenance, fuel, and rearm.

Units will "lighten up" quickly because our most valuable defensive measure is our ability to move at night—and move often. If we have to learn this on the battlefield, the educational cost will be expensive in lives and equipment. If we train this way now—and train tough—there will be no surprises.

Our combat arms brethren hear our talk but see us train. They see our assembly areas and listen to our requests for help in securing our own perimeters. They see the coolers, lawn chairs, etc., brought to field training—and they shake their heads. While they acknowledge they enjoy the ride in the UH–60 Black Hawks for air assaults and they love the power and destruction of the AH–64 Apaches and OH–58D Kiowa Warriors, they know we are not like them. We are different.

It is said that a problem should never be raised without having recommended solutions. I agree and have what, I feel, are the only possible solutions.

Solution 1

Leave everything alone. Change nothing. Just accept the fact that we as a branch will never be fully accepted as part of the Combat Arms family. Sure, they appreciate us for our lethality, but we will never be truly accepted and trusted. We will always be "those aviators."

Solution 2

Emphasize that we are soldiers first in all training. From the top down, cause more emphasis in evaluations to be on tactical "soldier skills." Aviation officers need to know how to command troops on the ground because that is where their soldiers will be. If they are not there to command, then this knowledge has been given to the first sergeant/platoon sergeant in the form of commander's intent and courses of action. Emphasize ground defense and maneuver. All battlefield operating systems (BOSs) must also be considered from the ground perspective. Do nothing to cause us to require special treatment as in "career tracking" for enlisted or lowering standards for what is considered "command" credit (companies the size of platoons 10 years ago) for officers. Ensure that we continue to look like other soldiers (love those battle–dress uniform [BDU] flight suits) and act/react as they do. Emphasize the noncommissioned officer's (section sergeant/platoon sergeant/first sergeant/sergeant major/command sergeant major) role in all phases of officer/warrant officer training. Promote "soldier–first" thinking and actions at all levels. Cause more ground–maneuver challenge successes to be recognized.

Solution 3

This last possible solution is the most outrageous but is in line with the expectations of many of our other combat arms brothers. Design uniquely different uniforms, start our own officer–producing school, pick a name (other than the U.S. Air Force—it's taken), and demand our recognition as a separate service—with different standards and our own way of doing things. Arrange for a Key–West–like setting to iron out our mission between the Air Force above and the soldiers below. We will then put our hands in our pockets, let our hair grow (some have gotten an early start), and glory in our achievements. After all, we know that, given the opportunity, we will win any war without any other service's involvement.

My choice would be, of course, Solution 2, but our perceived specialness did not happen overnight—nor will it be corrected immediately. In fact, it began in defense of a belief—the belief that Army aviation could perform in more than just a support role. The need for this defense was caused by shortsighted ground commanders who were unable to understand the concepts and felt threatened by the implication.

When considering this article, I talked to many to validate my observations and perceptions with their experiences. They all agreed to the basic premise—that we cause ourselves to be different and not accepted. They also left me with some additional comments. One Aviation Branch captain said that he too had enjoyed a similar experience to mine in the 7th Infantry Division. His was in a mechanized infantry division aviation brigade in Europe in the late 1980s. Another felt he would have been a more effective platoon leader if his sergeant had better emphasized the importance of soldier task training. He felt let down. I had no argument because I know we noncommissioned officers can always do better. I do believe this officer's aviation branch basic course instruction should have better prepared him for this challenge.

This article in no way should be construed as a slam on the aviation warrant or any other group. As the only advanced individual training (AIT) I ever attended was the 71P Flight Operations Course (now 93P), I also feel a parochial interest

in the future of our branch. My career in the Army and Army aviation has been blessed and—like the senior colonels and generals, both active and retired—we senior noncommissioned officers also want our branch to "be all it can be." In this, I have seen it, felt it, and been a part of it. I know what it is like to be fully accepted by our combat arms brothers. It is something I miss and hope to be part of again.

If reading this has caused you to think and reconsider, then I have accomplished my goal. Only by review and reflection can we cause change and improvement within our own personal area of influence. Be safe!

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Had enough of IHADSS policy

Issue 16, the March 1994 issue of the ***Apache Newsletter,*** had an article that described the IHADSS (integrated helmet and display sight system) shortage in the Army. The article indicated that "During a recent work group held in St. Louis the critical shortage of IHADSS was again the main subject of discussion." According to the article, "Fort Rucker has been directed to no longer allow students to leave the school with their helmet. Upon arrival at their new assignment, they will be issued a helmet and also refitted."

The Headquarters, Department of the Army, message, dated 251700Z Apr 94, SUBJECT: *AH–64 (APACHE) Integrated Helmet and Display Sight System (IHADSS) Integrated Helmet Unit (IHU) Accountability Procedures*, provided further directives to units regarding the accountability of IHADSS helmets. It required units to assume accountability and control for all IHUs in their organizations. Property book officers will add all IHADSS IHUs currently on hand in the unit to the property book. Then the IHADSS IHU will be sub–hand receipted to all AH–64 Apache pilots. Unfortunately, the entire message appears to be written by and for logisticians, with little input from commanders, safety officers, or AH–64 aviators.

Apparently this is the logistical answer to an IHADSS shortage problem. While this may seem logical to accountants, it was a bad decision for AH–64 units and aviators. The IHADSS has always been expensive. The logisticians lost control over this equipment years ago. This policy change appears to be a method of regaining control over the helmets—at the expense of units and aviators.

These "smart guys" obviously know absolutely nothing about the IHADSS—or the AH–64 or the aviators who fly it. The helmet is an integral part of the AH–64 weapon system. Without it, the aircraft visionics, weapons, and communications are rendered almost completely useless. This helmet is not like a Kevlar, which can be interchanged frequently. All AH–64 aviators know the long hours and extensive work it takes to properly fit the helmet. They also understand that even when fitted, it will take many flight hours to become comfortable in the helmet. A well–fitted helmet becomes an extension of the aviator and aircraft. A poorly fitted or uncomfortable IHADSS helmet affects aircrew safety and aircraft effectiveness.

One issue the article failed to address was "Who would fit each new helmet in the unit?" Of course, the book answer is the flight surgeon or ALSE [aviation life support equipment] technician. Those of us in the real world know that the Army's ALSE program is broken, without enough personnel or equipment to properly operate—without the additional time–consuming task of fitting all new personnel with IHADSS. Flight surgeons are also overworked, shorthanded, and untrained for this task. In overzealous efforts to regain control over this expensive equipment, logisticians failed to recognize another issue that will affect aviation readiness, training, and safety.

If an aviator leaves Fort Rucker without his or her custom–fitted IHADSS, how can the gaining unit commander ensure that an appropriate size is available to issue the new aviator upon arrival? The commander may have an inventory of small or medium sizes but may not have any large or extra–large helmets. What then "supply guys?" According to training circular (TC) 1–214, ***Aircrew Training Manual for Attack Helicopter, AH–64***, and TC 1–210, ***Aircrew Training Program Commander's Guide to Individual and Crew Training***, aviators must be integrated into the commander's aircrew training program within 14 days of arrival at a new unit. But if the new aviator does not have the proper–size helmet, he cannot fly or fight his weapon system. I know that this is a problem because my unit has recently received a new aviator without the IHADSS, and presently, none are available in his size. The Army has spent a lot of money training perishable flight skills to aviators. Every day that passes when we cannot fly this aviator equates to skills lost. If "time is money," how much money have we lost already because of this issue?

This will have yet another impact on AH–64 units. The unit will now have to pay for the additional parts necessary to refit the IHADSS helmet to new aviators. Purchasing new visors, which must be custom cut for

each aviator, will cost $888.00 for clear visors and $847.00 for tinted visors. It will take about three man–hours to cut new visors and rebuild and refit the helmet each time it is refitted to a new aviator. At an estimated $16.00 dollars per hour in labor, this will result in $48.00 of labor expenses. The total estimated cost to units for each new aviator will be about $1,783.00.

I do agree with the article's statement that "We can no longer allow unauthorized personnel to have IHADSS helmets under their desks and in the trunks of their cars." These are valuable tools of the trade for Apache pilots, which cannot be wasted. However, because of the very nature of its use, getting a different helmet at each new duty station is not an efficient answer. I understand better than most that these are times of shrinking budgets. But the only real answer is to purchase more IHADSS, continue to issue the IHADSS at Fort Rucker, and then laterally transfer them to the gaining unit.

The helmet will then stay with the aviator as long as he remains in an AH–64 flight slot. Measures can and should be implemented to ensure that when an aviator leaves an AH–64 tables of organization and equipment (TOE) slot, he then turns his helmet in.

The article indicated a new approach, which would be one step forward for "bean counters" but three steps backward for AH–64 Apache unit commanders and aviators. I only hope the leadership of the Army recognizes the importance of this issue and makes a decision based upon operational readiness, not logistical accountability problems. Let's not allow the logistical "tail" to wag the dog!

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APO AE 09140

Good Samaritan aviator of "Operation Provide Comfort" is sought

In late April 1991, an American helicopter pilot serving in Operation Provide Comfort made a most important telephone call to the United States. During a brief transmission, he revealed to a Kurdish woman living in the United States (Mrs. Safiya Dosky) that her daughter Gelawish, trapped in Iraq, was alive and among those Kurds forced to move to the border with Turkey to escape Saddam Hussein's wrath.

The story had begun some 16 years earlier (1975) when Gelawish, then two years old, was taken from her mother by the Iraqi police and the mother sent into Iran to find their husband and father. The hope of the Iraqi government was that the father, a leader in the Kurdish resistance forces who had escaped to Iran, would return to claim his baby daughter. The father (Mikail Dosky) would likely have been subjected to torture or execution. He wisely did not return to Iraq, and the family moved to the United States as refugees.

During the following years, the family tried through various channels to have their daughter released. No way was found to do this without the likelihood that other family members remaining in Iraq would suffer reprisals.

The American helicopter pilot's call set in motion many behind–the–scenes operations that enabled the girl's father to go to Iraq by way of Turkey, locate his daughter, and take her to the United States to be reunited with her family.

Because of the excitement related to the telephone call, the Kurdish mother failed to write down the name of the helicopter pilot. It is possible that he is unaware of the results of his call. The family would like to thank him for his immeasurable kindness. In addition, I am in the process of detailing the events of this story for possible publication, and would like to have contact with the pilot.

If you are the missing Good Samaritan—or have knowledge of his identity or whereabouts— please contact me, giving any details you may have on how to make contact.

Mrs. Carol Hamrick
3303 Dogwood Drive
Portsmouth, VA 23703

Air Assault Challenge

The Army Aviation Center at Fort Rucker, Ala., is gearing up for the Fourth Annual Air Assault Challenge, 16–18 November. Units from worldwide are invited to send their best teams to compete to see who is the most proficient in all areas of air assault operations.

Contestants—regardless of rank, service, or gender—are invited to enter, with teams of two each competing against each other.

After one day of inprocessing and refresher training (plus an Army Physical Fitness Test), contestants will have two days of tests and exams. This year, up to 60 teams will be able to compete in the challenge.

The champions last year were from the 101st Airborne Division of Fort Campbell, Ky. "We are looking forward to seeing who can meet their challenge this year," said CPT Bill Donatucci, commander of D Company, 1st Battalion, 10th Aviation Regiment, 1st Aviation Brigade (Air Assault). Donatucci said that teams need to get their registration in to reserve a slot. He added also that entries from other services, such

as Marines and Air Force, would make it more competitive. Females are also asked to enter.

The challenge has eight scored events. The Army Physical Fitness Test consists of push–ups, sit–ups, and a two–mile run. Contestants scoring 300 (100 in each event) will receive an additional point for each push–up and sit–up repetition and one point for each six seconds decreased in the run time maximum score.

Teams will then be given a base point, landing heading, and stakes to mark a helicopter landing point—based on standard distances between markings.

The obstacle course includes a confidence climb; low belly over; weaver; a swing, stop, and jump; and other obstacles.

The Slingload Inspection event will consist of preparation and rigging of four loads. Teams will be given two minutes to inspect all problem loads and find up to 16 faults.

Participants will then tie a complete Swiss rappel seat and climb the stairs of the 50–foot rappel tower.

The written academic exam will cover all phases of air assault training, including air assault, slingload, and rappelling operations. The exam will have 100 multiple–choice questions to be completed in 15 minutes.

Competitors will be required to demonstrate hand–and–arm signals such as "move aircraft upward," "hover," and "cut slingload."

Teammates must finish the 12–mile foot march within 10 feet of each other. Team time stops when the last team member crosses the finish line. Contestants will be carrying an M16 rifle mockup and a rucksack with prescribed equipment.

The top three teams in the competition will receive plaques, according to Donatucci. Each member of the first–place team will receive a choice of handguns. Second–place winners will each receive a survival knife, and third–place team members will each receive a leatherman's tool.

A prechallenge pamphlet and entry information are available by writing to—

Commander, D Company
Air Assault School
1st Battalion
10th Aviation Regiment
1st Aviation Brigade (Air Assault)
Fort Rucker, AL 36362–5000.

The Air Assault School can also be contacted at 205–255–1118 or 9790 or DSN 558–1118 or 9790. The deadline for registration is 2 November.

Seventh National Conference on High Power Microwave Technology

The theme for the Seventh National Conference on High Power Microwave (HPM7) Technology is "HPM—Technology in Transition." The conference will be 31 October–4 November, at the Naval Postgraduate School, Monterey, Calif. This conference is sponsored by the Space and Naval Warfare Systems Command, Arlington, Va., and the Naval Research Laboratory, Washington, D.C.

A free short course on HPM effects assessment will be held with HPM7. The course will run on Sunday, 30 October, 1300 to 1700, and on Monday, 31 October, 0900 to 1700, in the conference auditorium (King Hall). To take this course, write in red ink on the bottom of your preregistration form "HPM Short Course."

For more information, call the registration office for the HPM conference at 804–255–0409 or fax 804–255–0056. Or write to—

HPM Conference Registration Office
P.O. Box 2218
Suffolk, VA 23432.

Conference on photonics

The Research, Development, and Engineering Center at the U.S. Army Missile Command, Redstone Arsenal, Ala.—in cooperation with other agencies—will sponsor "Manufacturing Process Development in Photonics." The conference will be 1–2 November, at the Redstone Arsenal Rocket Auditorium, Huntsville, Ala.

For more information, contact Susan T, Caldwell, commercial telephone 205–895–6343, extension 277, or fax 205–895–6581.

Horizontal Technology Integration workshop

The Research, Development, and Engineering Center at the U.S. Army Missile Command, Redstone Arsenal, Ala.—in cooperation with other agencies, including the Night Vision and Electronic Sensors Directorate, U.S. Army Communications–Electronics Command, Fort Monmouth, N.J.—will sponsor a workshop on "Horizontal Technology Integration," 15–16 November, at the Redstone Arsenal Rocket Auditorium, Huntsville, Ala.

More information is available from Susan T. Caldwell at 205–895–6343, extension 277, or fax 205–895–6581.

Restructuring the Warfighting Capability of the United States

Part I

Lieutenant Colonel Jack A. Kingston, USAR
U.S. Army War College, Class 1994/DCS
Chairman, National Security Advisory Board
Washington, D.C.
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Part I addresses the historical background, critical components, and existing problems with regard to American combat power. Part 2 discusses the concept of combined arms and the recommendations and justifications for a simplified, yet optimal, structure for America's Armed Forces.

Introduction

The origins of the American Armed Forces are founded in the concepts and doctrine of both Frederick the Great and Napoleon—read Clausewitz and Jomini. In the intervening centuries, the uniquely American practical application of those concepts has resulted in decisive tactical and strategic victories on the battlefield. Consequently, many currently argue that the United States is now the sole remaining superpower whose Army, Navy, and Air Force enjoy an unprecedented land, sea, and air supremacy.

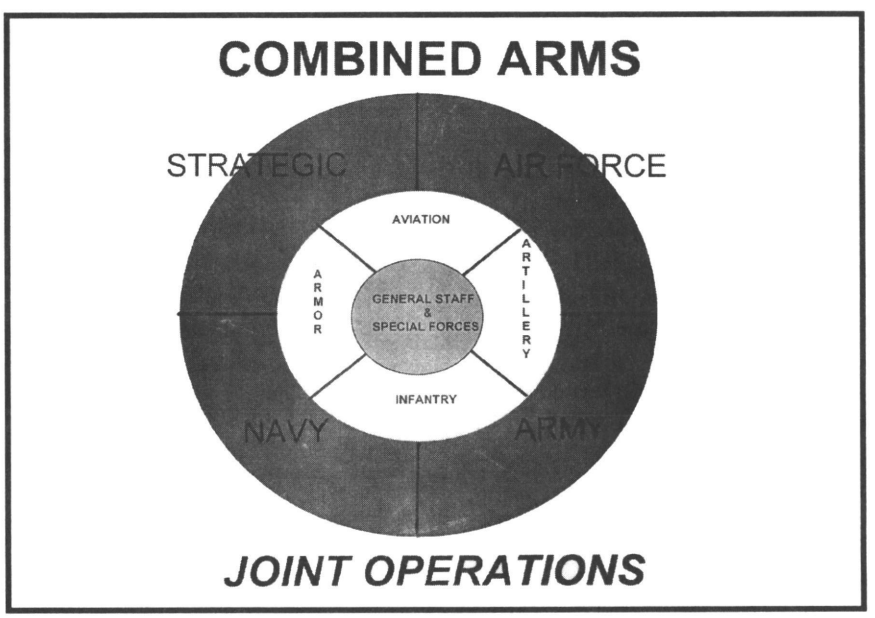

Figure 1

Scope

General Clausewitz's rule for rules is "Rules are made for idiots." This rule governs the obvious limitations in attempting to determine the relative advantages to a theoretical relationship. His rule is certainly true, especially when conceptualizing under the framework of a new paradigm. Consequently, the statistics can be readily manipulated. Each service's parochial, self–centered approach to evaluating roles and missions demonstrates this fact. Rather than rely on the recitation of masses of facts or statistics to prove an intuitive concept, this author relies on the research of past and present correlations in the search for new relationships and answers the following questions:

. What is the status quo; are service roles and missions traditional?

. How have geopolitics (the U.S. Code) affected the current roles and missions?

. What are the components of the concept of combined arms (Figure 1)?

. How does the continuum of operations and echelons drive the structure?

. What are the current recommendations of the Chairman, Joint Chiefs of Staff (JCS)?

. Is there a systematic process and precedent for change?

Historical Background

In 1776 the "Continental" Army of the United States was the defensive ground force. The Navy was

confined to the sea and, with the Marine Corps, projected American power internationally.

In 1943, anticipating a massive strategic victory in World War (WW) II, Brigadier General William F. Tompkins, Special Projects Division, Army Service Forces, advocated the creation of a single Department of War. The Department would be organized into Ground Forces, Air Forces, Naval Forces, and a Supply Department.

Tompkins recommended that each service procure its respective equipment. This "would provide centralized control of procurement, supply, and service functions of the three combat forces."

Rivalry among the Services

The National Security Act of 1947 created the Department of Defense (DOD) and the Joint Staff. In 1948, despite the efforts of Tompkins and President Harry Truman, Secretary of Defense (SECDEF) James Forrestal was confronted with the spectacle that the services could not agree on their proper functions. He caused the service chiefs to forge an agreement at Key West, titled the "Functions of the Armed Forces and the Joint Chiefs of Staff." This agreement has survived intact for four decades as the Functions Directive, DODD 5100.1.

Although Forrestal tried, his efforts were futile because Title 10 of the U.S. Code is so general and vague as far as functions that the Air Force is charged only with "offensive and defensive air operations."

Consequently, justifying missions or weapons systems has resulted in disincentives to cooperation and intense rivalry for specific missions. Those missions include strategic bombing, air defense, close air support (CAS) and aviation systems in general.

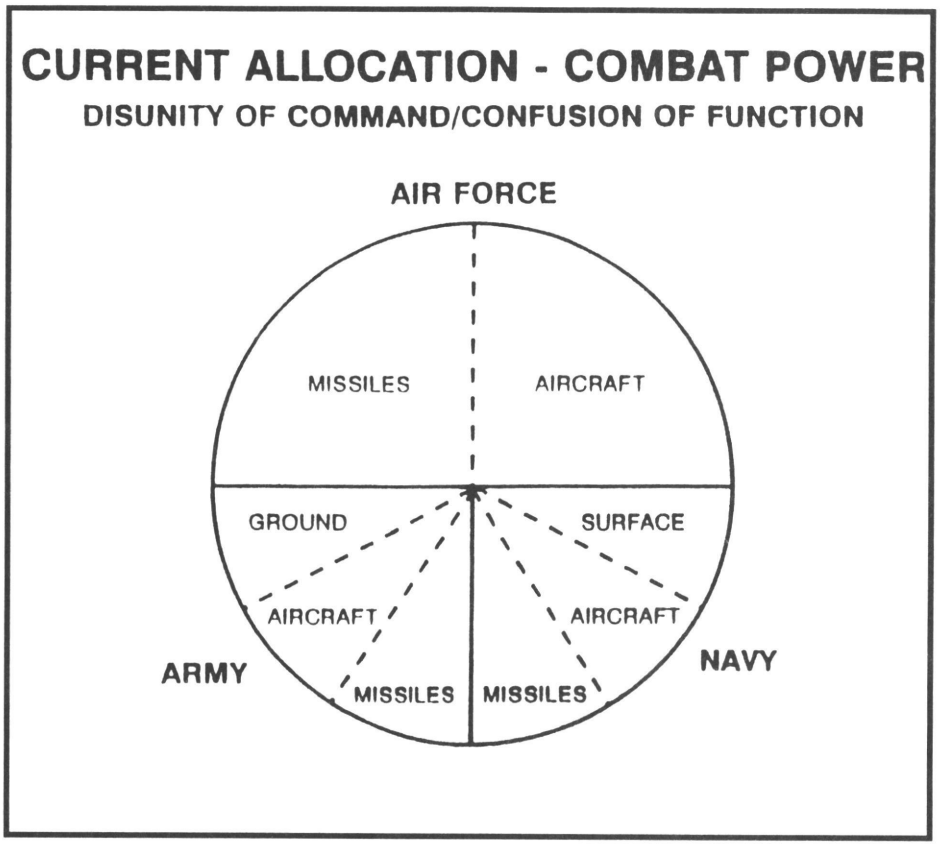

Figure 2

Geopolitical Effect on Roles/ Missions

On the other hand, one result of geopolitics (the U.S. code) has been to insist on relative parity in developing service doctrine, the allocation of the budget, and troop strengths.

Presently, all of the services provide striking contradictions; most notable, they have thousands of aircraft and aerial weapons:

. The Army and Marine Corps have boats, ships, and combat and transport aircraft.

. The Army also has ballistic missiles, civil engineers, and a space command.

. The Navy has a ground force and air force but is short on sealift and troop ships.

. The amphibious Marines have tanks, aircraft, and artillery.

. All the services have separate acquisition, intelligence, maintenance, special operations, and support branches.

Operational Dysfunctions

Operational dysfunctions are just as prevalent (figure 2):

. The Army, Marines, Navy, and Air Force provide CAS.

. The Marines and Army both provide heavy combat and airmobile assault.

. The Army is developing deep attack missiles while the Air Force develops $50 million fighters for missions that could be replaced by artillery, multiple launch rocket systems, or attack helicopters.

. Of course, the Navy is always ready to develop strategic bombing aircraft or super–carrier alternatives to Air Force long–range bombers.

. The ground combat arm has more pilots than infantry officers and can kill more tanks with helicopters than with tanks.

Wartime Infighting

It is also no secret that there have been tragic consequences and bitter infighting in wartime, despite the

overall success of American arms. For example, the first war of the United States would have been with France in 1799, but the war was narrowly averted because of interservice rivalry between the Army and the Navy.

This rivalry was much to the chagrin of President Thomas Jefferson who joined the fray:

"I have always cried, Ships! Ships! Hamilton's hobby horse was, Troops! Troops!...His object was the command of 50,000 men. My object was the defense of my country, and that alone, which I knew could be effected only by a Navy."

Continuing down that rocky road, the Spanish–American War approached disaster when overly independent Naval commanders foolishly separated the fleet, thereby risking piecemeal destruction. Then they virtually abandoned the Army at the siege of Santiago. The Army retailiated by seizing Spanish vessels, not only to injure the enemy, but to infuriate the Navy; both objectives were accomplished.

Subsequent operational disasters related to interservice rivalry include, but are not limited to, Pearl Harbor, the battle of Leyte Gulf, the Son Tay Raid, the capture of the U.S.S. Pueblo, and, of course, Desert One.

Peacetime Interservice Dysfunctions

Ironically, periods of relative peace have witnessed the outbreak of the most intense and acrimonious interservice feuds. During the Army Aviation Systems Program Review in 1982, General Vessey declared, to 51 flag officers of all services:

"Army aircrews are ground troops."

This was an example of the doublespeak and nonsense that formed the rationale and conceptual framework for developing comprehensive doctrine, organization, and training as well as research, acquisition, testing, and fielding of billions of dollars of equipment.

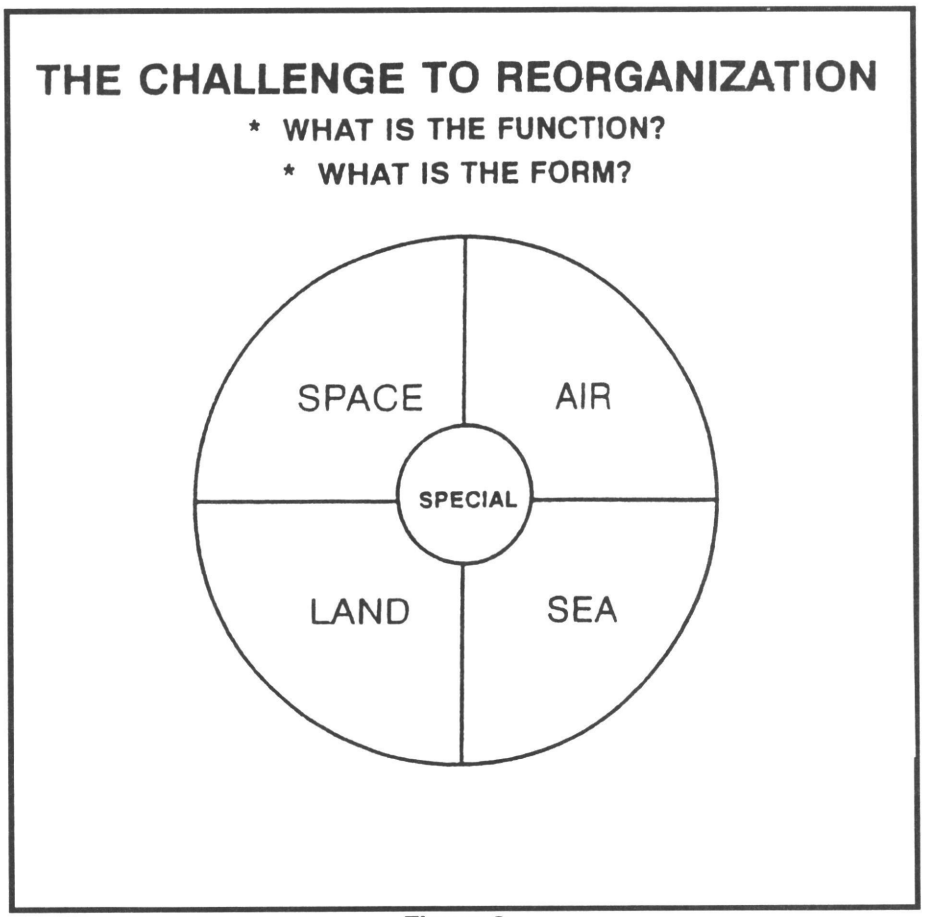

Figure 3

This insiduous dysfunction and confusion are unnecessary, considering the normal friction of warfighting and several new paradigms: the military technical revolution, the new world order, and the drastic cutbacks in U.S. National Defense spending as directed by Congress and the President.

Simplifying Roles/Missions

The resultant equation involves a leapfrog in precision and lethality combined with an uncertain diffusion of the threat, increased missions, and resources that are being restricted by one–third. This dynamic confluence of events and capabilities is not unique in the American experience as it is a general syndrome that has followed most wars.

However, the current order of magnitude of change and the potential impact on national and international security are unique. If properly understood, this apparently negative situation can be converted to a positive opportunity and act as the catalyst for a radical simplification of service roles and missions.

A true revolution in U.S. warfighting capability will be achieved when the new technology, organizations, and doctrine are maximized and recombined in a holistic approach to provide both offensive and defensive capabilities. This restructure can be achieved when form follows function (figure 3).

Breaking the Traditional Approach to Change

To be sure many topical concepts are being published in professional journals by the best and the bright-

est that advocate change. Some examples are "Profound Change in the Army"; "Rewinging the Air Force," or better, "Reshaping the Air Force"; or "Navy's Role Expands, Fleet Shrinks"; and "Army Aviation's Stellar Plans Hamstrung," etc.

Unfortunately, not one of these distinguished leaders can break the traditional approach to untyping the "Gordian Knot" of interservice rivalry confronted by the new paradigms. The traditional approach is downsizing in the same old relationships with increased redundancy in roles, missions, or equipment confounding any gains in efficiencies or the logical pre–eminence of any system, service, or new model.

Historical Precedent/Evolution

It is no secret that DOD is one of the largest, most diversified, farflung, and, decidely, the most complex of all institutions in the world. In light of the order of magniture and nature of the recommendations of former JCS Chief Colin Powell and former SECDEF Les Aspin, objections and uncertainties arise. Is there a historial basis for such dramatic changes? Can so many changes be effected and, if so, what is the process? The answer is yes, in all cases.

Consider this evolution in development of the services:

. The senior service, the Army, was first supplemented by a coastal/riverine, "brownwater" Navy.

. This second service developed into an international "gunboat" power and evolved into the ultimate blue–water, nuclear Navy complete with intercontinental ballistic missiles/sea–launched cruise missiles, aircraft, and Marine infantry armed with tanks and heavy artillery plus Naval light infantry commandos or "Seals."

. The light cavalry became heavy Dragoons, which reverted to light cavalry, then "trains."

. The light cavalry then became pack–mule artillery; the horses disappeared, but the cavalry mechanized, then went heavy with tanks, fast with wheels, and even got helicopters to become air cavalry.

. The siege/fortress artillery grew wheels. It became highly mobile horse–artillery, which reverted to armored emplacements. Then it sprouted tracks powered by engines to become both man–battle tanks and self-propelled artillery, as well as the rockets of the air–defense artillery and missiles of the Army Space Command.

. The hallowed infantry itself has metamorphosed, through unorganized militia, to minutemen, to Indian–fighters, to mounted infantry to foot cavalry, back to skirmishers, then to sharpshooters, machinegun battalions, antitank teams, and armored infantry as well as airborne, air–assault, counterguerrilla, "special" forces, and finally, predominately mechanized infantry armed with miniguns, automatic canons, grenade launchers, mortars, missiles, and rockets.

. The Army Signal Corps developed balloons that became lighter than air "ships," which became powered aircraft, which blossomed into the Air Force, an independent service complete with missiles, deep space rockets, airborne 105mm artillery, and airborne light–infantry "pathfinders."

. Co–incidentally, both services have developed a command that operates in space.

. Finally, the Army medical service with the artillery's forward observers developed helicopters and spotter air planes into the fourth largest air force in the world with medical evacuation, assault, scout, armed reconnaissance, aerial artillery, attack, electronic warfare, antitank, and antihelicopter, combat aircraft or "flying tanks."

The Systems and the Process

With that as background, the DOD uses various human, hardware, and software processes and systems to manage a myriad of problems: establish strategic direction; determine national policy; provide resources; and coordinate the resultant military capability and plans into effective military operations in peace and war.

The main systems that provide this framework and constitute the process for effecting change are the Joint Strategic Planning System (JSPS); the Joint Operation Planning and Execution System (JOPES); and the Planning, Programming, and Budgeting System (PPBS). Theoretically, there is no formal relationship among these systems but, in practice, they are closely interrelated.

The JSPS, as defined by Federal law is the formal means by which the Chairman, JCS, with other members of the JCS and the commanders–in–chief, carries out his statutory responsibilities as the principal military advisor to both the President and the SECDEF.

Reasons for Korean War/Vietnam War Stalemate

Interestingly, it could be observed that both the Korean War (the "Forgotten War") and the Vietnam War (the "War Our Boys Weren't Allowed to Fight) were stalemated precisely because they did not ring the elements of a winning strategy into full effect. The questions remain: Was failure due to—

. Fears of an unlimited nuclear holocaust?

. A misunderstanding of the impact of geopolitical forces?

. Doubt that the conflict might be controlled regionally within the low– to mid–intensity spectrum?

. Interservice rivalry prompted five separate air campaigns?

. The fact that the vehicle for effective change was lacking?

The answer may never be known; however, the Persian Gulf War did seem to bring it all together again at full–speed ahead for America's Army, Navy, and Air Force, at least to the layman observer. The consequences of that victory at once reestablished the elements of the winning strategy of WW II. They paved the way for bolder and more innovative strides into the future by relying on a military technical revolution and an effective understanding of the past. In short, the status quo demands change.

Analysis of Ongoing Changes

To be sure, the forces of the Army, Navy/Marine Corps, and Air Force are designed and equipped to deter conflicts through a visible capability to resist aggression against any country or vital U.S. interests. Of course, inherent in these forces should be the capability to conduct military operations at any required level of conflict, while providing credible nuclear deterrence, and still offer escalation options to the National Command Authority.

Arguably, historical fact verifies the fact that the Armies of the United States have met this test in the past, however close some of the battles have been (i.e., Trenton, Bull Run, Kasserine, Suwon). However, a review of the structure, organization, equipment, training, and personnel, as well as the roles and missions of the services, indicates that all of these have, in the past, been successfully adapted to the prevailing circumstances, albeit it in a dynamic, often radical way.

In analyzing the ongoing changes, one could say that the Armed Forces are at least half–way to the the optimal force, at least half–way to the ideal design of roles and missions. When the optimal organizational changes are effected, with the technical revolution, a further quantum leap in combat power will result. Although the precedent and the process for change exists, at this point, Congressional leaders such as Senator Sam Nunn and civilian experts may be more capable of effecting the required changes. Senator Nunn has, in fact, stunned the Pentagon by calling for a fundamental restructuring of roles and missions. He has identified at least 10 areas that are fraught with redundancy and duplication of effort. This situation requires a "visiting surgeon" like Senator Nunn because the uniformed senior leadership of the departments cannot revisualize or readily alter their own self–images and role models to accommodate a new paradigm.

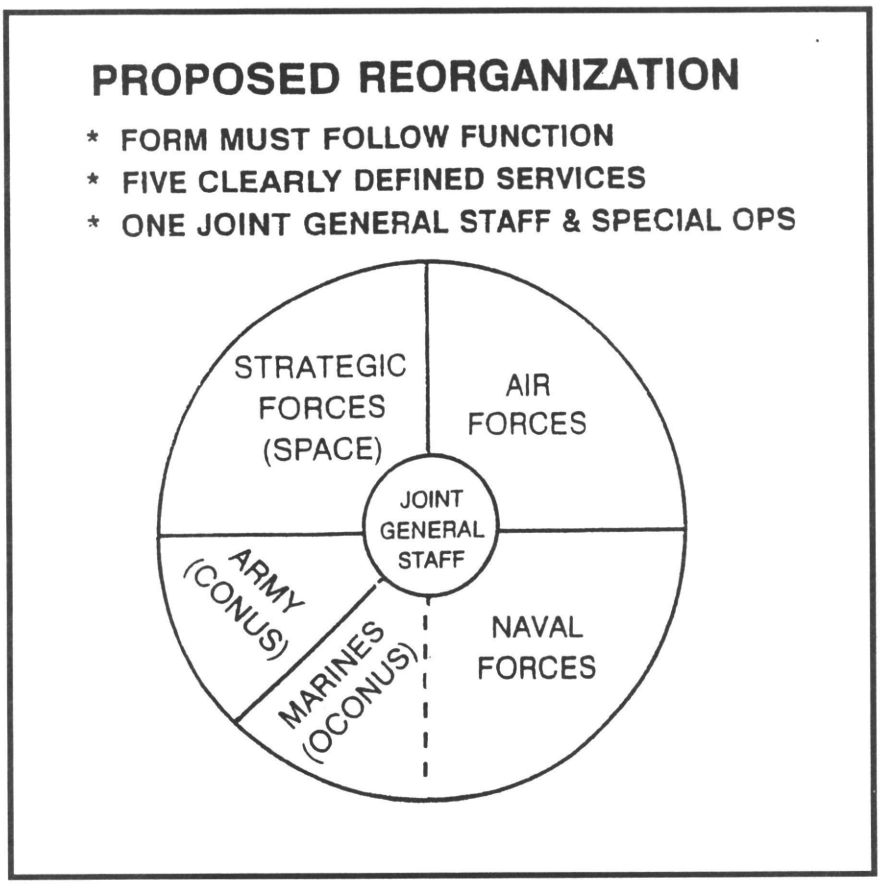

Figure 4

Conclusion

The simplification of service roles and missions to basic functions is desperately needed to eliminate the redundancy and dysfunction of the current status quo. Part 2 of this article, which will appear in the next issue of the ***Aviation Digest***, will list the author's recommendations for a simpler, yet optimal, structure for America's Armed Forces (figure 4) and discuss the necessary justifications for these recommendations.

"Part of the vision for the future is a process to focus...control, direct, and understand change—a concept to provide leadership on the way to our vision of the future of the Army."

General Gordon R. Sullivan, CSA

SCRUTINIZING SEAD PLANNING

Captain (P) Peter E. Curry
Captain (P) W. Thomas Rice
Fire Support and Combined Arms Department
Tactics Branch
U.S. Army Field Artillery School
Fort Sill, Oklahoma

"Skepticism is a hedge against vulnerability"
—Charles Thomas Samuels

Introduction

We, the authors, are skeptical about suppression of enemy air defenses (SEAD) planning. The Army's current approach to preventing aircraft from being shot down seems to miss the mark. At best, Army plans are too rigid. At worst, planners ignore SEAD all together.

We do not want to comment on SEAD techniques, rather we want to discuss the thought process that allows aviation planners to arrive at their solutions.

Our assignment at the U.S. Army Field Artillery School (USAFAS), Ft. Sill, Okla., gives us a unique perspective. We frequently see a contrast between what Army aviators write in aviation publications and what USAFAS teaches. This article is a summary of our observations and thoughts on the subject.

Two Approaches in Hyperbole

Rigid and detailed. We have observed two main approaches to SEAD. The first relies on long, 72–hour time lines, unlimited resources, the devoted attention of combat support branches, and an enemy who is not smart enough to avoid the pasting that we've planned. Once we pound him with artillery, and jam his socks off, he won't dare to shoot back at us. We will fly in, conduct our mission, and fly home with a wall of steel acting like a beacon to the penetration point. There will be no need for deviation. The plan will work.

Check the block. In the second approach, planners design enough of a SEAD plan to keep those combat training center observer controllers or the higher headquarters off of their backs. Throw up a few charts, draw a few boxes on some acetate, brief it well, and one is "good to go." The brief is a pain in the neck; however, when we fly, we will do what we must to get the job done. This plan may work if the aircrews have a lot of savvy and experience. Many times though, that is not enough.

Too often, the results are the same. The battlefield is littered with the simulated burning wreckage of rotary–winged aircraft. Maybe these units are poorly trained, do not understand how SEAD fits into their plans, or view the battle as a series of formulae that, if followed, assure success.

Current SEAD planning is broken for most units.

Our conclusion is that SEAD, or maybe the way we view SEAD, is "broken." A lack of training may be why planners and fire supporters all too often misunderstand SEAD for Army operations. Perhaps this is why Army SEAD doctrine has changed little in the past quarter century.

We must abandon the attrition warfare view of SEAD as merely target destruction, and focus on the enemy. In short, we must adopt a maneuver view of SEAD.

SEAD 101:Down and Dirty

To establish a common starting point, we begin by defining SEAD as it is currently written. Then we will reevaluate the way Army aviation thinks about it.

Field Manual (FM) 90–15 divides SEAD into three categories: complimentary suppression, campaign SEAD, and localized SEAD. ***Complimentary suppression*** refers to aircrew self–defense and targets of opportunity. ***Campaign SEAD*** is the theater–wide plan to reduce the overall threat to friendly aircraft despite the mission. It orients on the air war. ***Localized SEAD*** orients on ground maneuver operations and usually supports operating close to or across the forward line of own troops (FLOT). For our purposes, we will focus on localized SEAD.

Localized SEAD supports combat aviation operations throughout the battlefield to include such high–risk operations as deep attacks and air assaults. While the speed and shock effect of such operations will have a profound influence on the battle, the potential for the sudden loss of large numbers of personnel and valuable weapon systems requires that the commander weigh his options carefully. In most cases, the payoff must be extremely high to justify the risk. The operation, therefore, will likely be the main effort while crossing the FLOT and flying deep.

Given this fact, commanders at corps and even echelons above corps (EAC) will probably support the division's operations with a myriad of assets. A major challenge for division planners is the development of a SEAD plan that effectively uses all assets available. By using

the targeting process of decide, detect, and deliver (as described in FM 6–20–10), planners can develop a localized SEAD plan.

Simply stated, this means friendly forces engage only known (seen/identified) air defense artillery (ADA) targets. While the soldiers in the air might find comfort in thinking field artillery is blasting every possible ADA site, the division does not have the assets to accomplish such a mission. So, even with corps augmentation, targeters must carefully select radar, command and control (C^2), or even specific weapon sites, and target them for both lethal and nonlethal fires.

To do this, division planners should always consider corps and EAC assets. Not only does corps have assets such as multiple launch rocket system, Army tactical missile system, and Army air to attack the enemy, but the corps fire support element is tied directly into the battlefield control element (BCE). The BCE is the Army liaison to the joint force air component commander (JFACC). The BCE and the JFACC are both found in the air operations center, and can provide U.S. Air Force (USAF) assets to support the division's intelligence effort and SEAD plan.

The JFACC, usually a USAF or U.S. Navy senior commander, conducts campaign SEAD to achieve air superiority. Campaign SEAD has a much larger focus than localized SEAD supporting Army aircraft. Though each type of SEAD tends to target different types of threat ADA systems, any destruction of enemy air defense benefits all aircraft, and the JFACC recognizes our mutual interest in supporting Army localized SEAD operations. Intelligence and electronic warfare (EW) platforms, as well as C^2 platforms, may be allocated to support large deep operations. Though not often available, these systems can provide the real–time intelligence and targeting information necessary to successfully fly deep in a high–threat environment.

In summary, intelligence preparation of the battlefield and joint assets can provide the foundation for division planners to effectively target threat ADA assets. Once targeted, planners can apply organic Army and joint systems to direct lethal and nonlethal fires against the enemy.

OK...What's the Problem?

SEAD planning sounds simple and straight forward. However, after reviewing several articles submitted from the field and observing some examples of how units practice SEAD on corps and divisional exercises, we believe that problems exist in the application and interpretation of SEAD planning by many units in the field. We do not intend to address the apparent lack of attention that SEAD planning generally receives, but rather the perspective from which Army planners approach SEAD.

Common Myths

• ***SEAD is a separate mission.*** For the Army, SEAD is a task within a mission. It is something that is part of, and in support of, a mission.

At the campaign level, SEAD can be a separate mission. While Army aviation may participate in this mission, the Army is not the driving force. Similarly, localized SEAD is a term with some utility to the other services. They view it as something that supports ***campaign SEAD.*** However, we feel that ***localized SEAD*** is an unnecessary term from the Army perspective. It is actually a fancy term for fire support of air maneuver.

If SEAD is difficult to understand, aviation made it that way. At the localized SEAD level (corps, division, and below), planners try to wedge higher level of thinking and execution (theater–level, ***campaign SEAD***) into our tactical arena. Army planners try to put a round peg in a square hole.

• ***All battlefields are linear.*** Most scenarios look at aviation elements trying to penetrate a deliberate defense with a deliberate deep attack. Planners mentally draw a line in the sand with "us" on one side and "them" on the other. It becomes a high stakes game of capture the flag. Review any article. You will most likely see a clean plan with computer–generated graphics. The plan contains lots of lines, arrows, and charts. It is beautiful and based on "great" enemy intelligence. What happens when the reality of operating in a decentralized war draws near? Operations in Panama and Somalia are prime examples. The "one solution fits all" approach to SEAD becomes inadequate.

•***Absolute intelligence of the enemy is possible.*** With the advent of "wondrous" technology, planners should know more about the enemy than ever before, but this does not equate to a complete view of the enemy. Our faith in this technology makes decisionmakers lazy. Americans, especially aviators, love gadgets, because they make life easier. If allowed, these gadgets can create a seductive, passive, and many times false analysis.

Human intelligence, such as long–range surveillance (LRS) forces, is always in the right place at the right time in training scenarios. In reality, LRS forces must do a lot of walking that limits them to a very localized area. Planners tend to underuse their organic reconnaissance (recon) assets. Too often, we see units flying in large formations penetrating the forward edge of the battlefield with recon aircraft only a few kilometers ahead. This "iron cloud" cannot react effectively to enemy actions, and leaves itself open for too many surprises.

Even with the aid of technology, organic assets, and human intelligence reports, planners must get into the enemy's head, and ask the questions, "Why is the enemy in that location, what is his purpose, and is it critical to us?" Aviation brigades cannot always expect to see timely finished intelligence products from higher headquarters. Aviation units must take some responsibility for their own intelligence.

•***The enemy is stolid and unimaginative.*** There is still a tendency to view enemy forces as inferior and incapable of using techniques that deviate from their written doctrine. The April 1993 "Red Thrust" clearly shows that many foes (particularly combat intelligence system–type armies) will deviate from doctrine. This is particularly true when they must defend against U.S. air assault attacks.

We also are seeing a "Son of Desert Storm" mentality that views all enemies as confused, disorganized, stationary, and generally dim–witted. America's potential adversaries will read our battle reviews and take steps to actively counter our SEAD plans. The idea that "the enemy would never do that: it's not doctrinal," is irrelevant and dangerous to assume.

Other Handicaps

•***Highly centralized planning.*** A high degree of centralized planning often translates into centralized execution with

little "bottom up" refinement. To take proper advantage of intelligence from all sources, SEAD plans are contrived at division level or higher. Planners attempt to process, analyze, and develop plans with the aviator in mind. All the aviator must do is follow the plan. Unfortunately, units tend to doggedly adhere to these plans that were developed hours before, separately from their air maneuver plan. The plan becomes a script with little room to ad lib.

These operations are always communications intensive. Centralized execution requires extensive coordination to effect changes, and loses the benefits of flexibility and timeliness. The result is a highly cumbersome system that does not deal well with the realities of combat. Unable to alter routes and penetration points quickly, aviation units miss the mark too often and must fight under unfavorable conditions.

•***Unrealistic expectations of the fire support system in SEAD.*** While the artillery is not the only means available to SEAD, it may be all that is available. Joint Chiefs of Staff Publication 1 defines suppression as, "to temporarily degrade the performance of a weapon system below the level needed to fulfill its mission."

•***Suppression must be understood.*** The effects of suppression are temporary at best. To suppress a target effectively, artillery must explode within 100 to 150 meters of the target. Small arms, heavy machineguns, and shoulder–fired ADA systems are very difficult to target. Historically though, these are the very weapon systems that are most effective at destroying helicopters. Even if planners could target these systems, the artillery available to support most operations has neither the number of tubes, the logistical support, nor the range to effectively suppress even a small portion of the threat ADA.

Like it or not, aviation does not have any direct support (DS) artillery. Division planners allocate fire support assets based on the mission. Human nature is such that few ground maneuver brigade commanders will easily give up "their" habitually associated DS battalion. The idea that aviation is a maneuver arm is still relatively new, and not universally accepted in the field. In any case, aviation units are more likely to have a general support artillery unit temporarily assigned as DS. Such an arrangement requires a lot of coordination and practice.

Aviation, like the rest of the Army, has trouble telling fire supporters the objective for fires. We have seen units tell fire supporters to "shoot anything that moves," which leaves them with no real scheme or focus. The concept of a rolling wall of steel leading aircraft deep is as insupportable as it is ineffective. Particularly with the depth of the modern battlefield, "blowing up dirt" is not logistically supportable.

EW assets provide electronic fires that can be a dual–edged sword. Commanders must use suppression through jamming judiciously. Given the mobility of most systems, suppression is more easily briefed than executed.

The most fundamental error in the Army's current approach to SEAD is to view localized SEAD as a battle of attrition rather than as fire support for air maneuver. Fire supporters and even aviation commanders seem to rely exclusively on firepower, and focus on the number and type of ADA systems they can target and destroy. The current approach to localized SEAD suffers from excessive rigidity and a high rate of consumption of limited resources.

A Solution: Adopt A Maneuver View of SEAD

Objective. The objective of any military operation (at the theater or operational level) is to break the enemy's will to fight or resist by destroying his center of gravity. All else is subordinate, and our actions at the tactical level must support this objective. Planners do this by identifying the enemy's critical vulnerabilities and focus combat power to attack them. To protect his weakness, the enemy must react to our hard push. Our forces must push him onto the horns of a dilemma by acting faster than he can react.

As far as SEAD, the normal solution of creating or blasting a gap in the enemy's air defenses is the worst solution for helicopter operations. The optimum solution is to launch preemptive attacks before the enemy can establish a cohesive defense. Another good solution is to slip by and avoid the ADA strengths all together. Usually, a longer but lightly defended air route is preferred to what we do now. This is the use of maneuver over firepower. Currently, planners tend to take the most efficient (shortest) routes and force a gap. Such an approach inevitably leads to predictability, and requires a heavy concentration of fires on enemy ADA systems. Our objective, however, is not usually the enemy ADA. Enemy ADA rarely constitutes his center of gravity. Their destruction costs time and resources that hamper our efforts to strike at the main objective.

Recon must be deliberate, aggressive, and properly supported. Recon efforts from corps to company should overlap. The corps may identify a weak area, but a company–level unit will locate the actual gap. In maneuver warfare, gaps are key planning factors and should be exploited ruthlessly. Ideally, our recon will find the gaps. As a last resort only, we can create them.

In brief, the corps intelligence network will find the enemy acquisition radars, among other systems, and push the recon forces to the gap. The company performing the recon will then locate the actual gaps between the guns or missiles, and pull the main body through. The maneuver view, then, relies on intelligence, recon, and maneuver to a greater degree than firepower to protect aircraft from enemy ADA systems.

•***Optimize fire support.*** Some critics of maneuver warfare say maneuver advocates make too little mention of the value of firepower. On the contrary, firepower is essential to maneuver success. The difference is the way maneuver advocates look at firepower. The number of kills is not as important as the effect of the fires on the enemy forces. "Maneuverists" do not seek targets to destroy unless they support the commander's intent.

Massed, timely fires on proper targets (radar, C^2 centers, and communication nodes) allow air maneuver to avoid the threat ADA and successfully attack its objective. Planners must focus the full weight of their lethal and nonlethal fires on the threat ADA's critical vulnerabillity, whatever it may be. Once properly focused, both the SEAD planning process and the operation itself is more effective. If units are fast and smart

enough, many enemy guns or missiles can be avoided. Using fires to rapidly maneuver, we can create a dilemma for the enemy. Faced with two bad choices—remaining to be cut off or moving and risking destruction—we have entered the enemy's decision cycle.

•***Fit SEAD into the "big picture."*** Though planners should concentrate on the vulnerabilities of enemy ADA, they must guard against tunnel vision when planning SEAD. SEAD is a means to an end, not the end itself. An armor battalion's destroying the enemy's rear units may be the action that unhinges the enemy's defense. SEAD may be irrelevant beyond this point in the battle, because effective enemy resistance, along with critical ADA assets, has collapsed. Conversely, striking our objective may deal the enemy's death blow. Destroying the enemy's resistance by any means just may be the best SEAD program of all.

Planners have to keep the commander's intent always in mind. If the aviation brigade's attack or air assault is the division's main attack, then every unit's action must relate to it. In other words, significant assets should be allocated to support the operation. Other combat operations would be designed to support it. Likewise, if the aviation brigade's operation is not the main attack, then its supporting attack must assist the main attack. We must never lose sight of how our actions, both fire and maneuver, impact the main attack. Fire and maneuver from all areas of the battlefield can suppress enemy air defense. The point is, it does not matter who suppresses the threat ADA as long as it happens.

•***Control measures should support maneuver, not hinder it.*** Effective SEAD requires a flexible maneuver plan. However, Army aviation control measures do not support maneuver planning or flexibility. This is especially true in our deep attack scenarios. Pick up any manual or article on the subject. You will find sweeping air axes for the attack. Axes are, by definition, permissive in nature but, because of the way we view airspace, they have become restrictive. These air axes have evolved into very low, low–level transit routes. Aviation has boxed itself into a strike close air support mission profile instead of a maneuver mission. This creates a dependency on the fire plan to blast a hole and restrict maneuver through the avenue that it has created. The cart leads the horse.

Do not blame the JFACC, it is "our" airspace. By "our" airspace, we mean aviators must fly, fight, and survive in this arena. Army aviators have an interest in taking responsibility for the control measures that apply to them. The JFACC recognizes the Army operates in the ground regime, and usually allocates airspace to the Army from the surface to a coordinating altitude. Army aviation has influence here.

Do not blame our manuals. FM 100–103, "***Army Airspace Command and Control in a Combat Zone,***" states many times that, from the division rear area forward, effective Army airspace command and control (A^2C^2) emanates from the maneuver plan.

Hovering helicopters can gain and maintain contact with the enemy. Aviation units remain in the area, maneuvering to gain positional advantage on the enemy. This requires aviation commanders and planners to speak the language of maneuver. From the ground maneuver brigade rear boundary forward, the factors of mission, enemy, terrain, troops, and time available drive rotary–wing operations. The A^2C^2 control measures, such as safe air flight routes, high density airspace control zones, restricted operations zones, etc., do not mean much to combat staffs trying to engage the enemy. Obstacle plans, axes of advance, no fire areas, and other combined arms measures mean more. These allow more flexibility.

One weakness is planners simply do not talk to the appropriate ground commanders or do not communicate well. In other cases, planners do not coordinate with the appropriate unit. Notice, we said coordinate, not ask permission. Aviation must meet them half way though. Any time aviation units maneuver over someone else's ground, they are actually conducting a passage of lines. A passage of lines requires coordination, and planners should use many of the same considerations as two ground maneuver units. Within a division, units should use standard procedures for this information exchange.

•***Accept the fact that combat has many uncertainties.*** The battlefield is a chaotic place, and maneuver warfare embraces this chaos. One way to accelerate our reaction time is to employ mission orders when planning SEAD.

Mission orders place trust in subordinate leaders to make appropriate changes to plans within the framework of the commander's intent. The intent provides the vision from which to operate, but it is the man on the spot and under fire who must make the decisions. He is the one with the most real–time intelligence. This concept is crucial when one considers the operational tempo under which aviation units operate. Aviators have less time to wait for orders from higher headquarters, because our windows of opportunity to exploit fleeting situations close rapidly. Our units are always "burning gas." A good, simple plan executed now is better than a perfect plan executed too late.

SUMMARY

The aviation community needs to look again at SEAD. Our planners should take a more active role in the development of localized SEAD. Planners should—

•Focus on critical air defense vulnerabilities,

•Allocate significant recon efforts to find the gaps in ADA,

•Understand the capabilities of all combined arms that can suppress enemy ADA,

•Understand SEAD is not a separate operation and weave SEAD into the maneuver plan,

•Be flexible so as to enhance the SEAD effort.

Commanders and trainers should reduce dependency on clean, linear battlefields and accept the chaotic battlefield where lines, charts, and matrices are only aids. The competence of frontline leaders' making real–time decisions is the key to success.

We should not look at SEAD as a separate, distinct, or phased operation, but rather as a means to enhance aviation maneuver. SEAD is a continuous process involving all arms that must capitalize on the fleeting opportunities of combat. We must attain not only a physical agility, but a mental agility to operate on today's battlefield.

Night CAS on the Conventional Battlefield

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Night close air support (CAS) is inherently more difficult for both the pilot and ground forward air controller (GFAC). This article addresses several challenges associated with night operations, and offers techniques to overcome these challenges.

INTRODUCTION

According to multiservice night and adverse weather combat operations, Tactical Air Control Pamphlet 50–44, "Night complicates all aspects of combat operations, and presents challenges, problems, opportunities, and risk."

Before the Gulf War, night CAS had not been actively pursued within the U.S. Air Force (USAF). Night CAS/air interdiction had been dedicated almost exclusively to special operations forces (SOF) contingency operations. However, during Desert Shield, the need for night CAS, on the conventional battlefield, became very apparent. Aggressive night CAS training programs were implemented for both pilots and tactical air control party (TACP) personnel.

This training raised serious questions concerning such issues as target acquisition, friendly position, and terminal control by GFACs. A myriad of different "field expedient" techniques were developed to support the night CAS mission. Unfortunately, very little information on night CAS filtered into the post–war training publications (MCM 3–1, ***The Air Land Sea Bulletin, Weapon Review***, etc.).

CHALLENGES

Fighter/attack aircraft enjoy a significant advantage during night operations. The aircraft are less vulnerable to optically sighted, surface–to–air threats. However, darkness also limits the pilot's ability to visually acquire targets and friendly positions. Generally speaking, as the threat intensity decreases, target acquisition improves. Likewise, as radar–guided surface–to–air missiles and antiaircraft artillery intensifies, accurate night CAS employment decreases.

Positive identification (ID) of target locations and friendly positions not only is the most important task, but also the most difficult task on a fluid battlefield. When this task is combined with night operations, it can be virtually impossible for the pilot to distinguish who's who without the assistance of a GFAC. The GFAC must be able to provide target and friendly positions, using the best means available. An accurate target ID improves the probability of a successful first–pass attack by the fighters. In addition, an accurate mark reduces the risk of fratricide.

MISSION PLANNING

Successful night CAS operations require extensive mission preparation by both the fighter/attack crews and the TACP personnel. Pilots should address how tactics, formations, interflight deconfliction, terrain, and contingency plans are affected directly by night operations. TACPs require detailed integration with all available fire support element assets.

Tactical Air Control Pamphlet 50–44 lists the following planning factors:

•Location of friendly forces

•Method of target and aircraft ID

•Availability of mortars or artillery for target illumination and suppression of enemy air defense (SEAD)

•Infared (IR) and laser capability of CAS aircraft

•Laser designation capability of the TACP or fire support team

•Aircraft support for illumination with aircraft flares (LUU–1 or LUU–2 from OA–10 Thunderbolt II or U.S. Marine Corps (USMC) OV–10 Bronco)

•Friendly and enemy air defense systems

•Deconfliction of airspace control areas and other procedural control measures used to prevent fratricide for direct and indirect fire support.

TARGET ACQUISITION

With few exceptions, conventional brigade/battalion size units possess the organic assets necessary to mark and/or illuminate a target during hours of darkness. These assets include flares, artillery, and laser designators. The TACP selects and integrates the assets that best suit the fighter/attack aircraft's capabilities.

The illumination flare is currently the most commonly used asset for target acquisition. Flares can be fired from artillery, mortars, or naval gunfire. The flare can be set either to "air–detonate" for airborne illumination, or can be set to "ground-detonate" to impact the ground and burn for about 10 to 15 minutes. Air-released flares (LUU–1, LUU–2) also can be dropped by an airborne forward air controller fighter or flare–ship. Higher threat environments may preclude this type of flare delivery.

Ground–detonated (GND) flares serve as excellent target marks, and can be used as a common reference point (a CAS bullseye) for the fighters. The GND flares allow additional targets to be located by referencing the target to the flare by cardinal direction and distance. GND flares do not affect night vision devices (NVDs) to the same degree as airborne flares. In addition, GND flares do not offer the enemy an illumination source that can be used to his advantage.

Artillery and mortars also can deliver white phosphorous (WP) or high–explosive–type rounds to impact in the target area. This type of mark also serves as SEAD for the fighters. WP is an excellent heat source; however, if the fighter is using a forward looking infared (FLIR) system, the WP smoke can obscure the target area.

Laser–designating devices are, by far, the most accurate means to mark a target or friendly location. Laser designators allow for target acquisition without the use of conventional illumination devices. TACPs with access either to the laser target designator, or the ground/vehicle laser locator–designator equipped with NVD/thermal sights, can ensure positive target ID/mark. Aircraft equipped with the laser spot tracker (LST), or pave penny pod, can acquire the laser spot and attack without "visually" identifying the target. Aircraft equipped either with self– or pod–contained LSTs include the A–6E Intruder, AV8B Harrier, A/OA–10, F–15E Eagle, F/A–18 Hornet, F–111F Aardvark, OH–58D Kiowa Warrior, AH–64 Apache, and AC–130 Spector. The use of laser designators to mark targets also carries an additional advantage: a ground laser can provide terminal guidance for laser–guided munitions. This type of employment requires a very high level of proficiency and planning by both the aircrew and the TACP.

Hand–held, near–IR lasers can be used not only to designate targets, but also mark friendly positions. The LPL–30 and the personal illumination marker (PIM) are lightweight, cigarette pack–size/flashlight–size laser systems, respectively, used to point out targets with unpulsed laser energy. They produce a near–IR spot invisible to the naked eye, but easily seen with NVDs. Aircraft equipped with NVDs can visually acquire the near–IR spot/mark. This type of designator requires an unobstructed line–of–sight to the area being designated. It also allows anyone with NVDs to see both the designated target and the designator.

FRIENDLY LOCATION

During night operations, the risk of fratricide increases dramatically. Normal ground references used during day operations are not available to the pilot or GFAC. The GFAC must be able to provide the fighters with a mark to provide the relative position of friendlies. This mark greatly reduces the possibility of fratricide; however, the mark must be employed in such a way as not to compromise friendly forces.

Visual marking devices must be shielded from direct enemy observation. The marking devices can be "hidden" by direct terrain masking (operating the devices from behind a hill or other land mass), or by using vehicles parked in either a "V" or "U" pattern. Directional near–IR lasers and blue lighting are the preferred devices for covert marking of friendly positions. A position marked with white lights can be seen easily with the naked eye and undoubtedly will be compromised. In contrast, use of IR marking devices are invisible to the naked eye and require the enemy also to use NVDs to acquire the marks. A narrow beam, or focused light, similar to the MAG–LITE, equipped with either IR or blue light filters, can be used with NVDs to mark positions. The light can be made directional by fitting a tube, or sleeve, over the end of the light. The sleeve overcomes the "halo" effect that most flashlights produce. The sleeve makes the filtered light difficult to observe by

anyone except by the aircraft at which the light is being aimed. The light can be "aimed" at the aircraft with NVDs. This type of mark is seen easily by fighters in a low–threat, wheel-type formation. The LPL–30 and PIM also can be used in a similar manner.

IR strobe lights also can be an effective mark; however, when used as the "only" mark, the strobes are difficult for the fighter to detect. A strobe can be enhanced by placing it beneath a piece of thin white fabric. This fabric should be suspended from the side of a vehicle or vegetation. The fabric enhances the flash. The fabric must be shielded from direct enemy observation.

Friendly locations also can be identified to the fighters with an accurate grid or latitude/longitude position. Currently, all TACPs are equipped with the global positioning system (GPS). The GPS allows a TACP to accurately fix its position. This information can be passed by secure voice, or Have Quick ultra high frequency radio, to the fighters. This will allow the pilots to build a "picture" of the battlefield, and to increase the pilots' situational awareness (SA). Pilots must understand which grid is the target area and which grid is the friendly position. Grid information is meant to increase SA; it normally should not be used as the only means of "marking" friendly positions.

TERMINAL CONTROL

One of the most difficult tasks for the GFAC is the safety of friendlies. Night operations present the GFAC with many of the same challenges faced by the pilots. Those challenges include visual acquisition and depth perception, which directly affect when clearance to employ ordnance is given to the fighters. In addition, aircraft capabilities (LST, FLIR, or NVD) affect how the GFAC will employ the fighters in the target area.

The GFAC must establish positive control of night CAS operations. Thorough mission preparation is a must if the GFAC expects to maintain SA during the operation. If the situation permits, the GFAC should reconnoiter the observation position and general area of operations. Selection of initial points (IPs) will dictate attack geometry. The IPs will allow the GFAC to have some idea where he can expect to visually acquire the fighters before employment of ordnance. A thorough reconnaissance will help in the visual acquisition of the fighters. Mandatory radio calls from the fighters, (Departing IP, 1 minute out, 5 miles out, joint light amplification by simulation emission of radiation calls, etc.) will help build the GFAC's SA. The fighters can expect to receive an earlier clearance to drop, if the GFAC knows where the fighters are during an attack. These control measures allow the GFAC to ensure safety of friendlies and increase the chance for target destruction on the first pass.

Visual acquisition also can be assisted if the fighters are equipped either with external IR position lights or formation tape lights. The GFAC also should know the fighters run–in altitude during the attack. This data will give the GFAC a "piece of sky" to search, instead of scanning an entire horizon or tree line.

Because of the inherent risks involved with night CAS operations, minimum safe distances should be based on aircraft capabilities, type of target mark, attack geometry, and ordnance fragmentation patterns. Aircraft equipped with operational LSTs, NVDs, or FLIR, and a compatible target mark can be brought in as close as 1 kilometer (km) to friendlies. Aircraft attacking "grid only" should be brought in no closer than 2 km to friendlies.

Despite aircraft capability, attack geometry will affect minimum safe distances. If the attack heading is parallel to friendlies (+ or - 30 degrees), the minimum safe distance should not be affected. However, if the attack heading is perpendicular to friendlies, the minimum safe moves out to at least 2 km. In a troops–in–contact situation, the decision to employ ordnance inside the night minimum safe distances would still fall to the Army ground commander.

CONCLUSIONS

The Gulf War has shown that the USAF must be able to provide night CAS for Army operations. In most situations, the Army will conduct offensive operations during periods of darkness to exploit their technological advantage. Aircraft equipped with LSTs and NVDs greatly enhance the fighters' ability to pinpoint target locations and accurately identify friendly positions. The U.S. Navy (USN) and USMC currently have a night CAS capability with the F/A–18, A–6E, and AV8B. The USAF is slowly developing this capability with the acquisition of NVDs for both the A/OA–10 and F–16 communities. This acquisition will require both CAS pilots and TACPs to establish building–block training programs for night CAS operations. Until USAF operational fighter squadrons can offer this capability, TACPs can train with USN/USMC assets.

Night CAS requires equipment not currently authorized for most conventional TACPs. The "high" cost of this equipment may be prohibitive for a conventional TACP's budget. The table of allowances needs to be adjusted to reflect night CAS requirements. TACPs should be equipped with IR position markers and IR target–designating devices. Without this type of equipment and training, the USAF cannot provide accurate night CAS support for ground forces.

You fight like you train....

How to Win at the JRTC— Twelve Hints for Success

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Introduction

For an aviation unit, the Joint Readiness Training Center (JRTC) is an extremely demanding and unforgiving training experience. It combines force-on-force actions, multiple integrated laser engagement systems (MILES), continuous and sustained operations, and a demanding higher headquarters with the goal of accomplishing a series of missions. There is no better training for tomorrow's battlefield than the combat training centers (CTCs) as established by the U.S. Army.

When units prepare for rotation, they undertake a flurry of efforts. Obtaining previous afteraction reports; reviewing field manuals and tactics, techniques, and procedures; and receiving guidance from the higher headquarters are merely a few. When they receive this deluge of information, most commanders realize everything is important and has a high priority; therefore, they can identify no one specific subject to train.

This article should assist the aviation battalion commander in winning on the JRTC battlefield. The 12 areas discussed will allow him to focus his preparatory efforts. All of these techniques are usable on the combat battlefield. Certainly, they all are necessary on the JRTC battlefield.

These 12 hints are based on two successful rotations at the JRTC—combined Special Operations Forces (SOF) and conventional units. They are extracted from lessons learned that may be helpful for other aviation commanders who will have the unique chance of participating in a JRTC rotation.

Battlefield Preparation

"Winning at JRTC" means—

o The ground force commander states Army Aviation effectively and efficiently supported his overall tactical plan.

o Aviation accomplishes all major missions.

o Aviation does not radically restructure its tactical standing operating procedure (TAC SOP) during the JRTC training.

o Destroyed aircraft do not exceed 10 percent of the total aviation force.

oThe mishap rate does not exceed peacetime rates.

Task Force (TF) 1-160, a subordinate unit of 160th Special Operations Aviation Regiment (Airborne), took part in two JRTC rotations. The first was JRTC 92-4; the second, JRTC 93-6. In both instances, TF 1-160 received conventional aviation assets. The 75th Ranger Regiment requested these assets from the U.S. Army Forces Command (FORSCOM) (XVIII Airborne Corps, Fort Bragg, N.C.).

In the first rotation, 8 aircraft were provided; in the second rotation, 42 aircraft. The rest of this article relates to the second rotation, JRTC 93-6.

Figure 1 shows the command and control (C^2), units, and number of aircraft (minus spares) used for the JRTC 93-6 rotation. This task force apparently was manned and equipped primarily with conventional assets.

The home station locations and parent unit designations are—Fort Campbell: MH–60, 1/160; MH–47, 2/160; MH–6, 1/160; AH–6, 1/160; UH–60, 4/101; ATC, 1/58. Fort Bragg: CH–47, 2/159; OH–58D, 4/17. Fort Rucker: AH–64, 2/229. Fort Benning: UH–60V, 498.

A mission essential task (MET) for TF 1-160th is "Accept OPCON [operational command] of other aviation forces." We best achieve this through taking part in JRTC. The C^2 for the overall aviation force fell under TF 1-160.

Five in process reviews were conducted to prepare for this exercise. One limited command post exercise (CPX) (Wargaming), one CPX, and two decentralized field training exercises (FTXs) with subordinate teams were conducted later. Our primary concern for JRTC 93-6 was responsiveness to the ground force commander and coordination of integrated flights with SOF and non-SOF attack, assault, and cargo aircraft. Many other divisional task forces have had the chance to establish a continual, habitual relationship. In this instance, it was not possible. The task force had never worked together before this rotation. However, OPCON of unfamiliar forces replicates what may occur in a real world situation. As a result, JRTC further assisted us in the "train as you will fight" philosophy.

The extreme diversity of aircraft, crews, and their capabilities in this rotation probably had never before been matched at any CTC, JRTC, or national training center (NTC). We viewed this diversity as our largest challenge. Safety aspects of this rotation were huge, but not unsurmountable. Composite crews of different companies within battalions, unfamiliar leadership styles, powerfully demanding ground force commanders, units unfamiliar with the SOF chain of command, and significantly dissimilar aircraft mandated caution, precision planning, and painstaking risk assessment.

Execution

The 12 areas an aviation unit must be proficient in before arrival at JRTC to put success within their grasp are discussed below.

1. ***Relationships between commanders***: We learned that by far the most im-

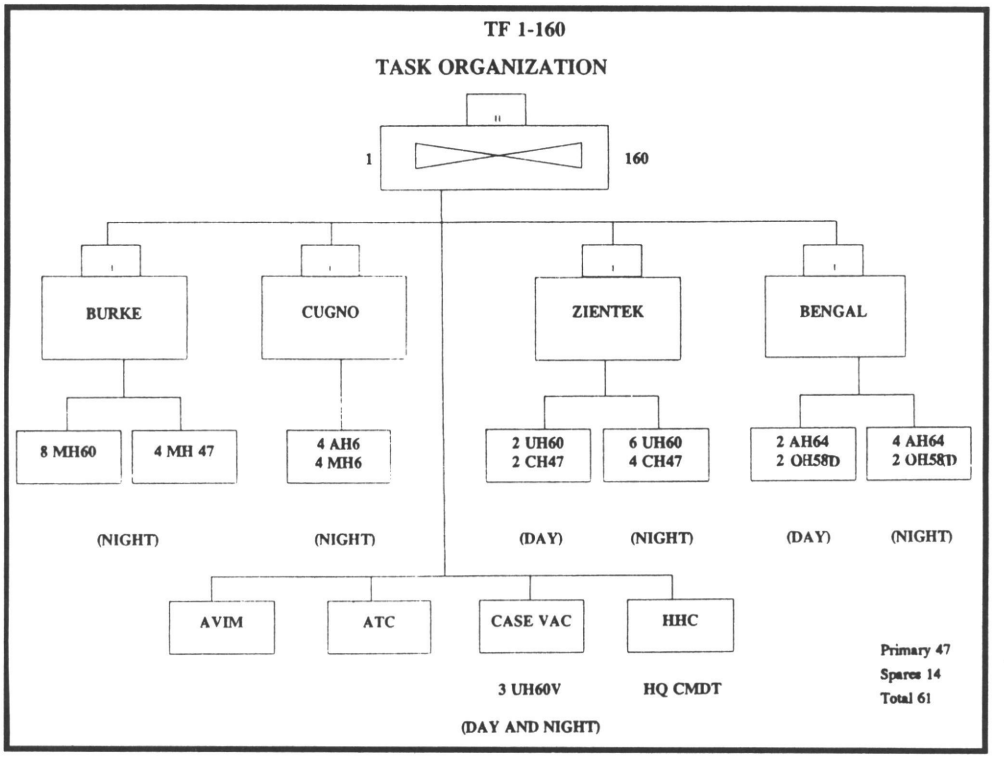

Figure 1

portant element to ensure success is a binding and honored professional relationship with the ground force commander. In our case, we worked for the 75th Ranger Regiment (1/75; 2/75; 1/508), a headquarters that understood the capabilities and limitations of SOF aviation. However, the presence of conventional aviation required a heightened sense of awareness. The ground force commanders respected the opinions of the aviation commanders and the planners. As a result, only infrequently, if at all, were the aircraft or crews committed above their capability.

On the other side, the aviation commanders realized the Rangers and paratroopers were in pitched, committed battle. As such, aviation assets were essential. Aviation commanders continuously tracked the progress of the ground force. This immediate awareness allowed for no notice or short notice mission adjustments to support the tactical plan. Collocation of headquarters assisted considerably.

This mutual dedication to the mission ensured understanding, a sense of compassion, willingness to compromise, and timeliness in planning and execution of all missions. This bond between the aviation commander and the ground force commander could not have been stronger than that between TF 1-160 and the 75th Ranger Regiment.

2. ***Day/Night cycles***: A clear, adhered to apportionment of day and night forces is essential (see figure 1). The battle wages 24 hours a day. TF 1-160 and the 75th Ranger Regiment had an initial agreement to dedicate two-thirds of aviation assets for night and one-third for day operations. At our wargaming session, we decided those assets were not enough for night operations so the mix was changed to three-quarters night and one-quarter day. The 75th Rangers adhered to this throughout the preponderance of the battle. This allowed night crews to establish a good night regime, enhanced their alertness, and provided less fatigued pilots for demanding night vision goggles (NVG) missions. It allowed day crews to focus on day flight, tactics, planning, and coordination.

This is an invaluable technique as long as the ground force commander adheres to it. When he requests additional aviation assets that require a switch from day or night, which causes an adjustment in their cycles, the ground commander temporarily loses assets as a result. This relationship can be adhered to so long as the aviation task force commander reminds the ground force commander of the importance of maintaining the day/night structure and the ground force commander understands the problems encountered when the ensuing structure is not maintained.

3. ***Aviation area of operation (AO)***: Providing the aviation task force commander his portion of the battlefield (AO) allows uncommitted aviation assets to prepare the battlefield for future operations. Later in the rotation, it was decided to provide TF 1-160 its own AO. Usually it was that portion of the battlefield the ground force commander would be operating in in follow-on operations. Doctrinally, TF 1-160th was able to prepare the battlefield by conducting deep or semideep operations (within the parameters of a restricted training area).

A good example was when TF 1-160th obtained AO Stalker, which is in the vicinity of Rattlesnake Drop Zone (see figure 2). Aviation assets patrolled and engaged targets in those areas both day and night, 2 days before the Rangers moved into it. As a result, numerous enemy forces were destroyed to include a forward area rearming and refueling point (FARP), supply area, along with significant disruption of infantry operations of the opposing force (OPFOR).

The OPFOR commander, during the midterm afteraction review, said this was the first time he had been restricted in his movements as a result of aviation's being so aggressive on the battlefield.

Another key factor in aviation's having its own AO is that it does not have to wait for clearance to fire. This aviation task force was heavy with attack assets; however, sometimes the task force found itself frustratingly delayed, waiting to obtain clearance for firing when working in AOs where friendly forces were operating. Consequently, the targets occasionally escaped. Having a specific AO for aviation allows more responsive fires, which provides near instantaneous destruction on observed enemy forces.

4. ***Company-level training***: The chief

aviation controller provides all incoming commanders with an "Aviation Lessons Learned" packet. A primary training deficiency noted was that individuals, crews, and teams were adequately trained at their own level, but they were not adequately trained at the company level. TF 1-160, as identified at figure 1, was organized into four teams. The organic 1-160 teams, Team Cugno and Team Burke, routinely worked together so that, by the time of their arrival on the JRTC battlefield, cohesiveness was already established. Team Bengal, composed of assets from Fort Rucker, Ala., and Fort Bragg, initially was not adequately trained. However, its two pre-JRTC FTXs provided the infusion of team work and cohesiveness. Team Zeintek, which received forces from Fort Bragg and Fort Campbell, did not have the opportunity to work together at all before arrival. During the first day mutual planning areas were provided, limited rehearsals were conducted, and team work and cohesion were rapidly developed.

The overall task force did not work together before its deployment to JRTC. Yet at no time during this exercise did the four teams fail to perform in a less than excellent manner. Receptive, flexible, aggressive commanders and air mission commanders who drew together the planning process were key to the team concept. Even more so was the precision displayed by the warrant officers in coordinating the plan as flight leads and pilots-in-command. The aviation task force felt fortunate the parent headquarters of our attached units provided absolutely superb personnel and supported the operation in a self-less manner.

5. ***Accurate intelligence on the battlefield***: Intelligence on the battlefield is provided in two ways. First, we templated enemy forces. All battalion and brigade S-2s receive OPFOR template training. Unfortunately, repeated use of this perishable skill does not occur in units routinely and, therefore, can be lost easily. Templating OPFOR is essential to success at JRTC. Continuously templating the OPFOR throughout the battle and across the battlefield allowed us to search for potential air defense positions and destroy or suppress them. It allowed us to discover and destroy supply areas, monitor main supply routes, establish a pattern for OPFOR air, and destroy surface-to-surface missiles.

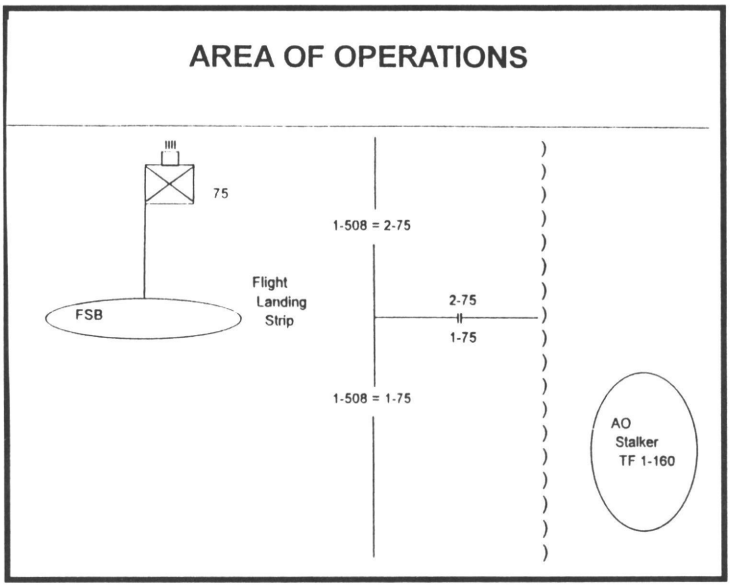

Figure 2

We view templating as the second most important intelligence source to kill the enemy on the battlefield. The Ranger Regimental Intelligence section was flawless in templating. Coupling their skills with the aviation S-2 section proved to be immensely successful.

The second way information was gathered on enemy forces was through reconnaissance reports. Whether tactical recon and security teams, unit patrols, aviation spot reports, or special forces operational detachment Alphas, this was real-world, timely intelligence that needed to be acted upon immediately. Reconnaissance reporting was the first most important intelligence source. No information on enemy forces is more accurate and timely. Commanders must develop these individual reporting skills so accurate and timely reports are made. These two sources of intelligence, templating and spot reports, clearly allowed the ground force commander to seize the initiative. Without good templating and good reconnaissance reporting the ground force commander can potentially lose the initiative and be vulnerable to the OPFOR.

6. ***Aircraft maintenance***: TF 1-160 received OPCON assets with superb aircraft maintenance and maintenance teams, and excellent aviation intermediate maintenance (AVIM) support. A consolidated maintenance effort with selected decentralized activities proved successful. Task force level class IX (Air) was preplanned for unit search, unit cross-leveling, search at Fort Campbell, and then search at home station. A good and responsive repair parts supply system is essential. Our soldiers will work all day and all night to repair aircraft; our key stumbling block is repair parts. So, an efficient system established by aviation task force higher headquarters to get repair parts to the JRTC battlefield is absolutely essential. Without that, failure is imminent. The theater commander-in-chief (CINC) (FORSCOM) provided excellent air transportation to get parts from continental United States (home station) to the theater of operations (JRTC).

Aircrews must have full and complete confidence in their equipment. If aircraft are sent to JRTC in an inoperative status, they usually are not repaired while there. All soldiers involved feel a nagging sense of futility. A good aircraft maintenance plan should be set up and aircraft should be continuously prepped before arrival. Surge operations should be expected throughout JRTC.

7. ***Consideration of day and night flying***: The first battalion conducts extensive night flying. Night flying usually precludes being shot down by enemy forces in a low-intensity environment. During this rotation, the ground force commander agreed to minimize day flights. However, selected day flights were essential and included limited air assault, casualty evacuation, and resup-

ply. A pre-JRTC plan should be set up to ensure these tasks can be accomplished with day crews. Three things are necessary for aviation day operations.

. Day crews must have some form of escort aircraft to suppress or intimidate the ground forces. Even if the escort aircraft does not shoot the ground forces, the enemy realizes the AH-64 Apache, OH-58D Kiowa Warrior, AH-1 Cobra, or the AH-6 Cayuse, can provide immediate suppression. As a result, the enemy either will not shoot or will shoot in a more haphazard manner. Escort aircraft must go on day missions.

. A good review of the most current enemy threat is necessary to preclude overflight of last known enemy locations. As a result of accurate templating and reporting, a good review of the threat can be made. The OPFOR forces routinely do not move very far from their last known location, usually less than 500 meters on foot. Therefore, grid square deviations or offsets can ensure success for a follow-on mission from a route previously flown and known to have enemy.

. Maximize use of terrain flight techniques. Aircrews must arrive at JRTC proficient in day and night nap of the earth (NOE) skills. Without NOE skills, immediate destruction by the enemy is probable. The NOE skill is the one training skill that is absolutely essential and must be accomplished at the home station. If aircrews are not proficient in day terrain flight, especially in NOE, their life expectancy on the JRTC battlefield will be very short. TF 1-160 learned day flight was inherently more dangerous than night. Losses for the rotation were three times higher at day than night. The aviation and ground force commanders must discuss day missions and weigh their risks. Shoot downs are inevitable. They will occur and cause even bigger problems. If a mission can be delayed until night, it should be.

8. ***Casualty evacuation (CASEVAC)***: To see an American soldier die on the battlefield, simulated as the experience is at JRTC, is still very unsettling and disturbing. It causes a sense of failure and frustration in all participants. DOW (died of wounds) implies that the casualty evacuation system has failed. CASEVAC missions are extremely hazardous in the day environment. As a result, escorts should be provided. Equally important is the ground force commander's providing a landing zone (LZ) that is secure from enemy fire. The risk of picking up wounded in an unsecured LZ usually means four more will die or be wounded, plus a aircraft recovery effort will be required.

Last, and probably most important, is that initial CASEVAC calls should come over the command net, not the admin and logistic net. This allows command involvement early. Aircraft (attack, assault, or medical evacuation (MEDEVAC)) will proceed rapidly to the location. Animosity developed as a result of not getting wounded soldiers off the battlefield. The situation was almost unbearable. Thank goodness this was only a training battlefield. During this rotation, we probably never mastered the CASEVAC procedure, but we know we are week in this procedure and we will train for it in the future.

9. ***Forward area refueling and rearming points (FARPs)***: The enemy targets friendly FARPs with monotonous regularity. As a result, numerous things need to done to protect a FARP. First, the FARP should be dug in. Engineer support needs to come into the area and dig in the FARP. This protects the FARP from indirect fire, observation, and small arms fire.

Our ground force commander put a high priority on the FARP's protection; therefore, we received the needed engineer support. As a result of that priority decision, we did not have serious disruptions of refuel operations in the maneuver area. In both rotations, we were subjected to the FARP's being overrun or destroyed by fire. However, this was minimized by being dug in.

In addition, the FARP should rotate frequently to different locations. The rotation will prevent the enemy from zeroing in on a specific FARP's being used repeatedly. For the flight landing strip (FLS), we dug in four separate FARP positions—we only occupied one at a time—and then a fifth, dummy FARP. Although one of our FARPs was overrun during a night operation, a second, similar attempt by the OPFOR was defeated. Our dummy FARP was mortared routinely. The only time we lost a heavy expanded mobility tactical truck (HEMTT) to enemy forces was when we were initially moving to occupy the FLS position. We minimized activity at the FARP to limit enemy knowledge of its location and its importance. We viewed our use of the FARP as successful.

10. ***Command and control (C^2) (forward)***: Collocated at our FARP was our C^2 node (forward). Units call it many different things: jump TOC, assault command post (CP), TAC CP, or whatever.

Despite what it is called, it needs to provide the following services: Flight following in the battle area (deep, close, and rear); immediate fire support coordination; dissemination of enemy intelligence; information on friendly ground situation and operations; and knowledge of friendly aircraft in the sector.

It should have a communications net adequate to accomplish those services, be dug in, protected, and camouflaged. Radios ought to be remoted, even if there is a possibility of repositioning this node to different areas within the FSB or the main battle area, remoting should be done.

Aircraft should always check in, receive a radio update on enemy/friendly situation, be able to receive fuel in that area, and proceed with its mission. If an aircraft is shot down or delayed, this node can provide the information to higher headquarters. C^2 forward can coordinate a recovery. In some instances, an aircraft went to the battlefield, was not tracked by its C^2 node, and was believed to be lost. TF 1-160 did not use its C^2 node forward as well as it should.

Upon completion of the rotation, we discovered the C^2 node also needed to have all the information as far as friendly aviation missions and the ground force commander's tactical plan. By the end of the rotation, we were able to use the C^2 node probably at 70 percent efficiency.

11. ***Unit standard operating procedure (SOP)***: The staff must have its TAC SOP in place and ensure it is a functional, usable document. The SOP must include the mission planning pro-

cess: the staff receiving a mission, analyzing it, providing commander's guidance, developing courses of action, providing the operations order, coordinating with supported and supporting units, and disseminating information to the subordinate and lateral commands—the normal military staff planning sequence.

Finally, if possible, the staff must conduct a rehearsal, or limited CPX to ensure all units know and understand their missions. The staff needs to be able to follow this procedure flawlessly. Each staff section must know exactly what their specific functions are and memorize them. The aviation staff should conduct parallel planning and continuously coordinate with the ground force staff.

Since we were a composite unit, we learned that higher headquarters can not impose a master TAC SOP on OPCON units in a short notice, come-as-you-are battle. The staff must learn how the separate units operate and accommodate them. Basic SOPs must be similar (FARPs, calls for fire, etc.).

Complex, integrated missions must be avoided. With OPCON units, operations must be simple. The key to success on the battlefield is synergizing the activities of all elements.

The staff coordinates the activities; the commander executes the activities. If the activities are not coordinated in the planning stage, they certainly will not be accomplished on the battlefield ansd during the execution phase.

The staff also needs to have the capability to plan future operations. Sometimes the brigade headquarters coordinate the procedures. Other times assets from within the battalion staff coordinate the procedures. When that happens, the staff must show up at JRTC with a redundant, robust, and aggressive future operations planning cell.

12. ***Army Airspace Command and Control (A^2C^2)***: A^2C^2 is a ground force commander's responsibility. During this rotation, the group force commander gave it to aviation because of logical parallels.

Integration of fires, air movement, and control measures are complex. However, A^2C^2 for day operations is relatively simple. It predominantly uses coordination and the proper doctrinal procedures such as safe air routes, high-density traffic areas, restricted operations zones, etc. Problems usually will not occur. However, night operations are completely different. At night the adage "see and avoid" is not present. If you do see and you have to avoid, an erratic movement in the aircraft under NVGs could result in catastrophe. Therefore, A^2C^2 for night operations is dramatically more difficult than in day operations.

This command mastered A^2C^2 by deconfliction in three ways: Time, route, and altitude. We always tried to combine two of the three. Throughout this rotation, even with 47 aircraft on the battlefield, at no time was there a near miss or a problem with aircraft formation flights.

Heads-up planning and awareness occurred one night when a delayed air assault mission was to transition directly through the screen of an air cavalry unit. This situation was detected about 10 minutes before the air assault formation reaching the screen. The C^2 node provided proper diversionary information. As a result, neither flight saw one another. A^2C^2 must be done continuously throughout planning and mission execution. A dedicated cell proved invaluable. Especially during execution, the aircrews must be alert to the possibility of poor navigation, intermingling of flights, or delayed missions.

Although aviation safety was not identified separately as a subject that warranted specific attention, it must be discussed. A unit's safety program is founded on an effective standardization program. The safety program must be in place at the home station.

To keep the operation safe at the JRTC, we ensured maximum tactical information was provided during the planning stages, in-depth briefings, adequate rest areas, no high-risk missions flown (JRTC-directed), and routine but continuous coordination with key staff sections (A^2C^2, fire support, logistics, communications, ground force). This precluded unplanned mission change during execution.One mishap occurred: a blade strike. This happened during a day CASEVAC mission in which the aircraft was avoiding small arms fire

Conclusion:

This command based its success in JRTC 93-6 on many things. Some may say "Oh, they're an SOF command and they get plenty of money for training; therefore, they should be good." In this instance, that argument does not stand. We fought 24 special operations aircraft and more than 37 conventional aircraft. The 37 aircraft came from many different posts and many different units.

This mission succeeded because success was achieved in the 12 areas we discussed above. Some success was a function of an SOF staff; other successes were a function of a cavalry squadron commander, an attack battalion commander, or a Chinook or Blackhawk battalion commander's ensuring their troops were resourced and properly trained for a dynamic JRTC. A final factor was a ground force commander's being astute and shrewd in how he employed Army Aviation whether it was SOF or conventional aviation.

"Winning at JRTC," which in our view focused on our 12 hints, does not mean other routine, standard functions, or battlefield operating systems can be ignored. Fire support, personnel replacements, reliable communications, establishment of unit class III and V resupply, etc., must be addressed and accomplished. We recommend placing moderate attention in routine areas, and special attention on our 12 hints.

We would be remiss in not saying all 12 of these factors were based on one ingredient—the Army Aviation soldier, male and female. The soldier could have been a pilot, a mechanic, a FARP specialist, an operations sergeant, or a soldier of any military occupational specialty.

The superb training each one received at Fort Rucker or Fort Eustis was the foundation on which our success was built at the JRTC.The superb training in units at home stations reinforced this foundation of individual skills. The common thread of all actions that occurred in JRTC Rotation 93-6 was individual aviation soldier training. The SOF soldiers are convinced we can go on the battlefield, accept OPCON of any Army Aviation unit, and be successful. That is a tribute to Army Aviation.

A Different Way of Doing Business

Captain David P. Rodgers
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This article addresses and familiarizes you with the British Army Air Corps flight training process.

Introduction

Ever wonder how another developed country trains its aviators for the modern battlefield? With today's world situation, it may not be so unusual to find yourself conducting operations somewhere along the operational continuum with an allied unit alongside yours. It happened in the Gulf War. It would have happened if the Soviets had started World War (WW) III. With the United States' getting involved in multinational peacekeeping and humanitarian operations around the world, it can and will happen in the future. This should lead you to further ponder thoughts about those other people making their living in the third dimension of the battlefield. Who are they? Are they as good as we? What kind of training did they get?

This article addresses those questions and familiarizes you with the British Army Air Corps flight training process. I do not intend to specifically compare their system with the U.S. Army system because this would be too difficult when considering only the size of each force and the resources available.

Overview

The best place to start is with a brief overview of the force and the home of the Army Air Corps (AAC). A total of 156,000 personnel are in the British Army. After the current draw down, the total will be about 119,000. The AAC's slice of this is about 3,000. A total of just over 300 helicopters and 28 fixed–wing aircraft are in the AAC worldwide. As you can see, we're not talking about a force of the same size as the U.S. Army Aviation Branch.

The home of the AAC is the Army Air Corps Centre (AACC) at Middle Wallop. This is where all AAC pilots learn to fly. During WWII, the U.S. Air Force

(USAF) was based at Middle Wallop for about 8 months. From here, the USAF conducted tactical reconnaissance of the beaches of Normandy just before the D–Day invasion. Middle Wallop is about 65 miles southwest of London. It sits on the eastern edge of the Salisbury Plain Training Area, which is one of the largest training areas in the country. All of the arms use the training area for anything ranging from troop transport to artillery live fire.

The AACC Airfield

The airfield has five hangars that house the training aircraft. Fifty–seven helicopters and 23 fixed–wing aircraft are used to train pilots at Middle Wallop. The helicopters used are the Gazelle, Lynx, and the Scout. The fixed–wing aircraft used are the Chipmunk and Islander.The airfield also houses the Development and Trials Squadron and the AAC Historic Flight, which consists of yesteryear aircraft flown for display and includes the Bell Sioux. The AAC display team, the Blue Eagles, also operates from the airfield.

Blue Eagles—British Army Air Corps Display Team—four Gazelles and one Lynx

The airfield itself has no asphalt runways, but it is a very interesting set up compared to a traditional airfield. Picture a field the size of Hanchey Army Heliport, Fort Rucker, Ala., with grass as the landing area and with an active runway that can change within 20 minutes of the wind shifting. The change results in about six different options for traffic patterns flown at the airfield and that does not include the fixed-wing traffic, which has another six!

The Selection Process

The selection, which is the first step in the flight training process, differs greatly from ours. The qualification criteria for a soldier and an officer who wishes to enter flight training are different. A pilot can come from any of the arms, whether combat, combat support, or combat service support. Something you must understand before reading any further is the AAC has flying noncommissioned officers. The caliber of these individuals is not unlike U.S. Army warrant officers: motivated technical experts with some prior military experience and a keen interest to fly.

Another point to understand is an arm of the British Army is similar to a branch in the U.S. Army. A soldier must start flight training before his 34th birthday, hold the rank of Lance Corporal, be recommended for promotion, and have completed 4 years of service. For the commissioned officer, he must start the course before his 30th birthday, must have completed 2 years of commissioned service, and incurs a 4–year commitment upon completion of training.

The soldier from the other arms will remain in his parent arm to fly but is basically on loan to the AAC until his 4–year commitment is up. At which time, he will revert back to his parent arm, usually never to fly again. On the other hand, some of these individuals will apply for a transfer to the AAC;

however, the AAC does not accept all of them.

If an individual has an interest in flying and meets the criteria, he applies through his chain of command. Once the personnel branch receives his application, they schedule him for aptitude and aircrew medical tests. The medical tests are similar to ours. The aptitude tests cover subjects such as hand and eye coordination, logic, and short–term memory. If he is fit to fly and possesses the aptitude required, he then proceeds to Middle Wallop for the next stop in the selection process.

The AAC administers written tests that last all morning and cover areas in simple arithmetic, weight and center of gravity calculations, navigation and mapreading, aerodynamics, general military knowledge, basic engineering, and radio communications. The scores achieved become part of his overall assessment.

After completing the tests, a selection board interviews the candidate on the same day. The board consists of three senior officers and includes the commandant of the AACC or his representative. With everything completed, the board informs the candidate of his acceptance or rejection for Flying Grading.

Flying Grading

Flying Grading is not actual flight training, but the final portion of the selection process. It consists of 14 hours in a Chipmunk (similar to what the U.S. Navy uses)—a tandem, fixed–wing trainer with a very experienced instructor/assessor. The instructor/assessor is part of the Basic Fixed Wing (BFW) flight training organization, which consists of civilian contract instructors. Like our civilian instructors, virtually all of them, whether fixed–wing or helicopter, are ex–military aviators. The assessment lasts 3 weeks, depending on the weather. Up to this point, the candidate has been screened medically, given aptitude tests, and written tests. The selection board has further reduced the candidates to the ones with character, mental agility, background knowledge, and potential to be aircraft commanders.

Flying Grading further narrows the candidates to those who have the "right stuff" to complete the Army Pilots Course.The Grading Board makes the final decision whether the individual scores a Pass or Fail. For those who fail, this would be their last chance to fly for the AAC.The AAC might select some with lower than average selection grades, but this depends on the needs of the service. In any case, all of them return to their units. When their units release them, those selected report to Middle Wallop for the Army Pilots Course.

Course Instruction

Similar to the U.S. Army Aviation system, the course starts with 2 weeks of classroom instruction, except the instruction covers navigation, meteorology, aerodynamics, airmanship, and engineering. The instruction in ground school subjects continues throughout the remainder of the flight training. Typical course enrollment consists of personnel from all the arms, the AAC, and the Royal Marines.

Flying begins in the third week of the course. A student picks up where he left off in the Flying Grading. BFW teaches him to fly the Chipmunk. During his flying in BFW, he will concentrate on general handling, navigation, and instrument flying. Except for a short and unsuccessful trial period of "all–through" rotary training in the 1970s, the AAC always has used fixed-wing initially to train all their pilots. The Chipmunk has seen 40 years of Army service and is an inexpensive, dependable, stable, and demanding basic trainer. After 6 1/2 weeks and 31 flight hours, the student is well on his way to developing his flying skills and becoming an AAC pilot.

Survival Training

Before he kicks off the next stage, which is Basic Rotary Wing (BRW), and his first taste of trying to hover, he gets a complete break from flying. He attends a week of survival training. This training starts with 2 1/2 days of aeromedical studies very similar to what we cover. Following this, he attends a half a day at the Royal Navy Underwater Escape Center for Dunker training. To wrap it up, he spends the final 2 days on survival training at the Royal Air Force Survival School.

Initial Rotary Wing Training

After surviving the training, it's back to Middle Wallop, where he is glad to see an aircraft and ready to start flight training again. He now begins to learn how to fly a helicopter. He receives 54 hours of flight instruction in the Gazelle through the next 11 weeks. This is an awesome and very humbling experience for the student because he has flown only fixed–wing aircraft up to this point. This part of the training is very similar to our contact phase in which the student learns general handling of the helicopter. Academic instruction continues with more navigation, flight planning, and air traffic procedures. The BRW organization also consists of civilian contract instructors.

Advanced Instruction

After finishing the basic instruction, it's on to advanced instruction. This is the first time the military conducts all the flight training. This part of the instruction is where the meat of the training takes place. Before flying, the student receives a week of tactical academics. While in the advanced phase, the student reports directly to the flight line for the entire day/night. There is no formal classroom type instruction during the advanced phase. However, the student receives tactical flight classes at the flight line.

The initial instruction during this phase qualifies the student on instruments. The student then learns to navigate and mapread while flying at low level. He also learns to fly in close formation and conducts a long navigational exercise (international flight).

During this phase, he finds himself hovering over a mountain crag while learning the mountain flying techniques in the Snowdonia mountains of Wales; however, the majority of the instruction in this phase concentrates on tactical flying and fieldcraft. The student learns how to use the ground to see without being seen, tactical formation flying, underslung loads, and reconnaissance and observation techniques.

The Gazelle helicopter is used for initial flight training.

Instruction includes internal security exercises that teach the student to operate in areas such as Northern Ireland where he may conduct observation of terrorists' activities from an aerial platform. Numerous tactical scenarios are flown against an enemy force and some scenarios are briefed and flown by students alone! Culmination of tactics training is a deployment for a week-long exercise conducted in a tactical training area away from Middle Wallop.

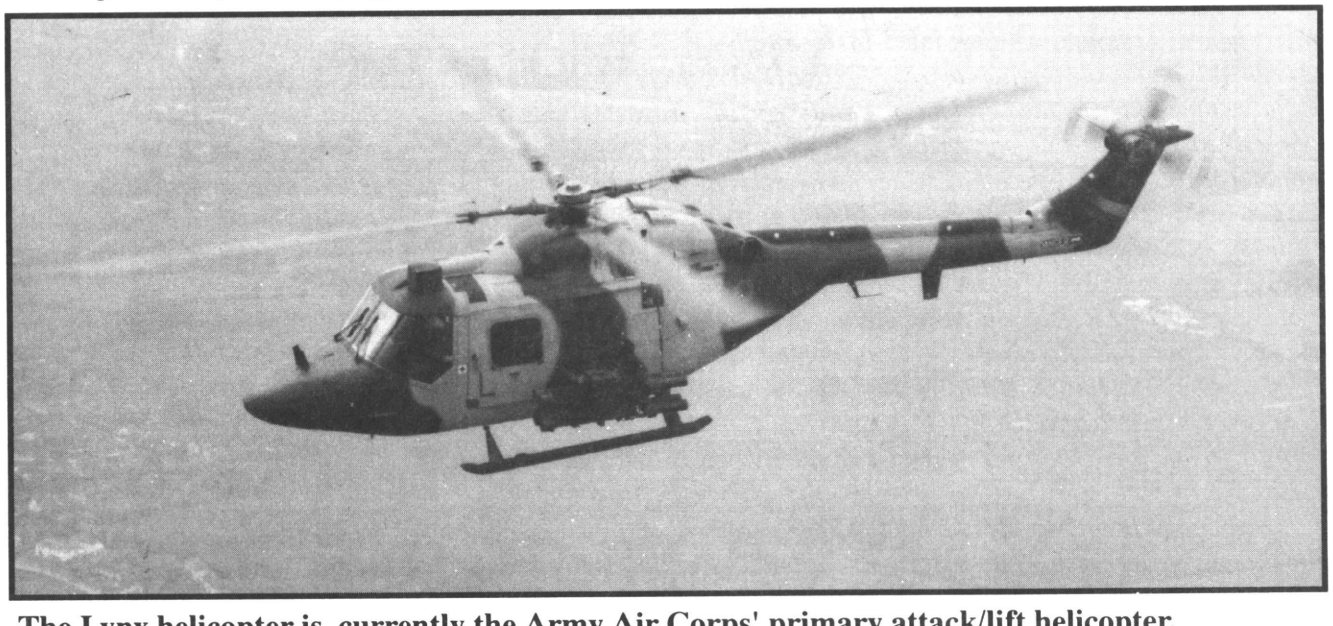
Between all the tactical training, the student flies general handling sorties, ensuring he still possesses the abilities to safely handle the aircraft. He also flies night and night vision goggles throughout the phase. The student ends this phase with a total of 107 hours of flight instruction, which includes 17 hours of solo time.

Conclusion

Something you must realize is **all** the instructors in this phase are certified and teach all of the aforementioned training. Unlike the U.S. Army system, there are no night specialists or specialists in certain areas only; the instructors teach it all! The Gazelle is the only helicopter used in initial flight training. For all the other aircraft that the AAC operates, a separate transition is necessary after the initial flight training.

The final product leaves the school after about 39 weeks and some 206 total flight hours. Of every 100 who come forward, roughly 90 pass the initial screening,; the board selects 72; 42 pass the Flying Grading; and 33 finally get their wings. As you can see, the British AAC flight training system is extensive and thorough. The result of this successful and established system is an excellent product.

The next time you are flying on a mission, possibly in a foreign country, and you look out of the cockpit and see a British Army Lynx or Gazelle helicopter, you will understand what the pilot went through to earn his right to fly.



The Lynx helicopter is currently the Army Air Corps' primary attack/lift helicopter.

(A current bidding is taking place for a new attack helicopter; the decision will be in 1994. The AH–64 Apache is a contender.)

Aviation Intelligence Operations at Green Flag 94–3

CPT Max J. Corneau
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B Company, 15th Military Intelligence Battalion (Aerial Exploitation)
Fort Hood, Texas

Imagine that our nation, once again, is at war some where in Southwest Asia. Army aviators and their aircraft play a key role in the fight. Helicopters maneuver inches above the powdery sand while fixed–wing aircraft orbit six miles above to gather critical communications intelligence. Although we own the skies in this battle, the threat is more capable and better trained and has the will to fight. In this scenario, Shooter is a U.S. Air Force F–15C Eagle CAP (combat air patrol), Bulldog is a U.S. Air Force E–3 AWACS (Airborne Warning and Control System), and Rail is an Army RC–12D Improved Guardrail V.

"Shooter–15, this is Bulldog; you have a bandit, MiG–29 inbound, from 3 o'clock for forty miles."

"Bulldog, Shooter copies; I'm locking up the target now. He's still BVR [beyond visual range]."

"Shooter–15, this is Bulldog; I confirm your kill; say again, good kill on the bandit. Shooter, you have a new target, a leaker. The bandit is behind your position for five–zero miles. He's closing on the HVAA [high value airborne asset] aircraft."

"Shooter–15 copies. We won't make it, Bulldog. Send the reset CAP, or we're going to lose tonight."

"Rail–09, this is Bulldog; bandit on the nose for one–five miles."

The crew of Rail–09 orbiting at 29,000 feet has been monitoring AWACS' threat advisory frequency and has been advised of a bogey, which is an unidentified, possibly hostile, aircraft.

"Pilot, we have an air threat. I confirm he's locked us up with radar. AWACS called the bandit at 15 miles."

Silence is broken in the cockpit of Rail–09. "Copilot, we're breaking right, breaking right. Arm the countermeasures, and give me flares in the break. Clear my flight path; try for a visual on the missile. Break right!"

The pilot of the RC–12D reacts as he has been trained; he seeks comfort by reciting the evasive maneuver procedure. The sweat pouring from his face goes unnoticed as his hands crush down on the yoke. "Power idle, props forward, the nose is down, airspeed coming up to the barber pole."

"Pilot, chaff . . . chaff . . . chaff. I see the missile. Turn back to the left 90 degrees and dive. Chaff . . . chaff. We cleared the missile, now where's the MiG? Negative visual on the bandit."

"Rail–09, this is Bulldog; the CAP will be on your station in 45 seconds. Your picture is not clear; the bandit is circling back to the east—appears to be reengaging you."

"Bulldog, Shooter–15, I have a target on the nose—engaging."

"Shooter, Bulldog, it appears you have a good kill. Rail–09, good job; your picture is clear."

B Company, 15th Military Intelligence Battalion (Aerial Exploitation), of Fort Hood, Tex., became the first Army fixed–wing unit to take part in Green Flag, an annual U.S. Air Force exercise. The exercise, which took place at Nellis Air Force Base, Nev., focused on training in an electronic warfare environment.

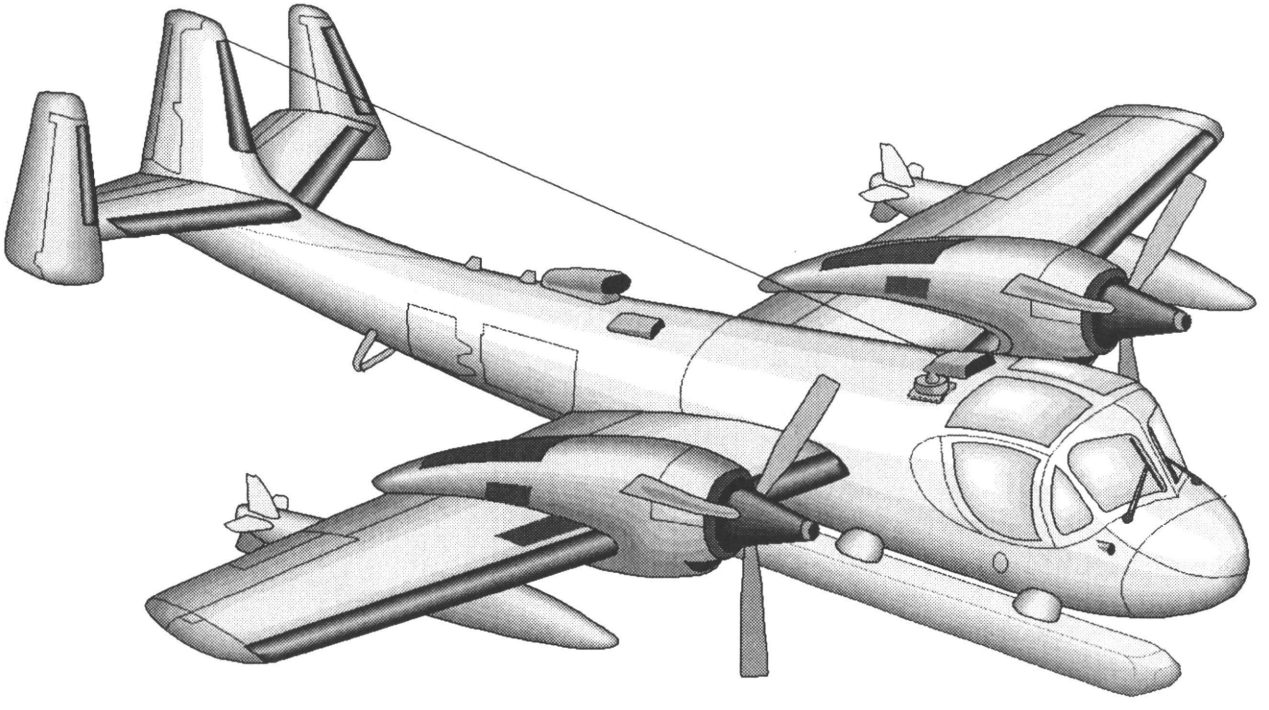
This scene, as just described, unfolded countless times at Nellis Air Force Base (AFB), Nev., during the annual Green Flag exercise. This year, the Army was represented by B Company, 15th Military Intelligence (MI) Battalion (Aerial Exploitation). This exercise marked the first time that any Army fixed–wing unit has participated in this intense training in an electronic warfare environment at Nellis AFB. The exceptional mission essential task list training we accomplished at Green Flag could not have been executed anywhere else in the world. Army aviators, intelligence analysts, and maintainers trained—just as they would fight—at Nellis AFB.

The need for a special electronic mission aircraft (SEMA) unit, such as B Company, to participate in Air Force exercises was clearly illustrated when the 15th MI Battalion deployed to Operation Desert Shield in 1990. Supported commanders immediately needed the valuable intelligence provided by the battalion's OV–1D Mohawk observation/forward air control/electronic intelligence, and RU–21H reconnaissance/electronic–intelligence aircraft. Unfortunately, we could not fly missions in the Air Force's airspace then because we were not integrated into the airspace control order (ACO) and the air tasking order (ATO) planning cycle. After the valuable training at Green Flag, every one of the nine officers who participated could act as a liaison to an air operations center (AOC) or assist in a battlefield coordination element (BCE).

Only one aerial exploitation battalion exists in each corps:

> **Corps can expect to operate in peace, war, and conflict. They may have to conduct both war and operations other than war [OOTW], always prepared for decisive combat occurring simultaneously with noncombat operations.**[1]

A unit, such as the 15th Military Intelligence Battalion, could find itself high on the TPFDL (time–phased force and deployment list) in a force–projection operation. The unit's ability to self–deploy and integrate immediately into joint–use airspace is key to successful intelligence operations—whether in a mature wartime theater or newly inserted in OOTW. Our mission at Green Flag was to integrate fully into the Air Force planning cycle and use all available aircraft survivability equipment (ASE) and evasive maneuvers to defeat threat aggressor aircraft. In addition, we had to overcome the age–old problem of interservice communications. Each day's mission success was partially based on connectivity with AWACS. We had to be able to communicate in three ways: secure KY–58 radio, frequency hopping with Have Quick II, and conventional ultra high frequency/very high frequency (UHF/VHF). Our integration



The OV1–D Mohawk was among the Army fixed–wing aircraft participating in aviation intelligence operations during the Air Force's Green Flag 94–3.

mission was twofold: to expose Army personnel to Air Force operations and future Air Force leaders to Army fixed–wing operations, needs, and requirements. We accomplished all of our stated training objectives.

The war we fought had a Southwest Asian flavor. The total of participating aircraft included 57 friendly aircraft and 17 aggressor aircraft. Every front–line type of aircraft in the Air Force inventory participated, to include—A–10 Thunderbolt II; B–1B bomber; F–4 Phantom II, F–15C, F–16 Fighting Falcon, F–111 Aardvark fighter–bomber; EF–111 Raven electronic–warfare aircraft; E–3 AWACS; E–8 J–STARS (joint surveillance target attack and radar system; RC–135 reconnaissance aircraft; KC–135 Stratotanker; and C–130 Hercules/ EC–130 Hercules (command and control, electronic surveillance, and communications jamming aircraft). Each day, our aircrews stepped up to the map table with their Air Force counterparts and stated their objectives for the next day's strike package. In Air Force terms, a mission is referred to as a *package*. Normally, the package commander is a strike pilot. Packages contain all necessary aircraft required to accomplish a mission, similar to the way we break down assets in a slice. We were well received by the Air Force officers who, at first, didn't know the Army had airplanes!

Field Manual 100–5, ***Operations***, explains that teamwork is a fundamental requirement for individual trust and unit cohesion. Army units operating in a joint environment must forge the team.[2] The joint team was forged early in the two weeks of mission planning, execution, and debriefings at Nellis AFB by the aviators from the 15th Aerial Exploitation Battalion.

The Air Force's big teaching point at Green Flag is to allow junior officers to come up with the strike plan that includes fighters, strike aircraft, and electronic combat and support aircraft. Recall the raid on Libya several years ago; the strike force contained all of the assets just mentioned. They accomplished a specific mission—then returned to their home bases.

The junior Green Flag planner's challenge is to provide resources for the aircraft, protect the aircraft, and provide timely intelligence and command and control. Finally, the pilots get to do what they like best—which is to fight the aggressors, drop bombs on the range targets, and conduct electronic combat operations. I was surprised at how much real play happens at Green Flag. From live ordnance drops to telephone monitoring by the aggressors, the exercise had a real flavor. On the days when security was compromised, the aggressors immediately jammed our key frequencies and knew just where to strike at our soft underbellies.

My unit's initial planning for Green Flag 94–3 took place in November 1993. At the initial planning conference at Nellis AFB, all logistical, training, and administrative requirements were detailed. The

battalion executive officer, MAJ Rick Bedwell, attended the conference and walked through each step of the exercise. MAJ Bedwell worked closely with Army representatives from the Green Flag and Red Flag staffs. Green Flag, which concentrates on the electronic combat environment, is an offshoot of Red Flag, which focuses on strike and air–to–air missions.

A successful deployment required home station and preoperational training for aircrews and maintenance personnel. Aircrews were given copies of Red Flag SPINS (special instructions) to learn how to operate safely over the 3.2–million–acre Nellis Range complex. Training classes on Have Quick II radios, evasive maneuvers, and ASE were continuous up to the deployment. We learned a valuable lesson about Have Quick II radios; in an intense jamming environment, they are our only viable means of communicating. Many aircraft ARC–164 radios are Have Quick capable; I suggest you train with them. Have Quick can be used at the unit level using a frequency management table (FMT) that is designed for unit operations. If the ARC–164 radios have a white sticker containing the letters "EMB" on the control head, then the radio is Have Quick capable. The EMB stands for extended memory board.

Green Flag turned out to be the most realistic aircraft survivability training imaginable. Nowhere else can fixed–wing aircraft operate in a live environment against a real threat. Over the Nellis Range Complex, aircrews performed evasive maneuvers while dispensing flares and chaff during each engagement. Our maneuvers were recorded by the aggressors, and we were able to retrieve and archive the gun–camera footage. The entire Nellis Range is fitted with cameras and telemetry devices to facilitate the after–action review (AAR). Known as RFMDS (Red Flag Monitoring and Debriefing System), the system allows real–time monitoring of each aircraft on the Nellis range. In the debriefing process, we were able to determine which maneuvers were most effective against air threats. Although the Nellis Range has many surface–to–air missile (SAM) sites, we were never in range of these systems. Because of our collection range, short–range SAM systems are not a threat to the RC–12. Each of the two daily strike packages was fought at 600–plus knots and only spanned one–and–one–half to two hours—so that we never had enough time during each battle to fly deep into the short–range SAM's envelope.

Attack helicopter units can benefit from the Air Force's Red/Green Flag series of exercises in several ways. First, as we saw in Desert Storm, attack helicopters play a key role in going deep to destroy a sophisticated enemy integrated air defense system (IADS). Next, the air and ground threat on the Nellis Range is remarkable. Aircrews need a complete intelligence and operations picture to succeed against this IADS. The tools are at Nellis for battalion/squadron staffs, as well as aviators, to hone their warfighting skills.

If your unit wants to participate in the Red/Green Flag series of exercises, follow these steps. In January of each year, a scheduling conference takes place at Langley AFB, Va. The January conference decides the schedule for all of the Flag exercises for the upcoming fiscal year. Contact Headquarters, Air Combat Command (ACC), at DSN 574–4093 or commercial 804–764–4093, to determine the final schedule and see if it is compatible with your long–range training plan. The formal request for Red/Green Flag participation goes to—

MAJ Reid Roberts
HQ, ACC/DOXEX
114 Thompson Street
Langley AFB, VA 23665–2789.

In your request, specify who you are and what your mission is, what unit training objectives you wish to accomplish, and how the training can benefit both the Army and Air Force.

The Army has a ground liaison officer permanently stationed at Nellis AFB. CPT Rod Swanson is an invaluable resource to an Army unit interested in operating at Nellis AFB. He can provide information on funding, which for an Army unit is usually at the unit's own expense. During my unit's exercise at Nellis, he did an outstanding job of assisting us. CPT Swanson can be reached at DSN 682–2903 or commercial 702–652–2903; or write to—

Commander
414 Combat Training Squadron
ATTN: Army Liaison Officer
3662 Tyndall Avenue
Nellis AFB, NV 89191–6022.

Guardrail!

Notes

1. General Gary Luck, *Corps Force–Projection Operations*, ***U.S. Army Professional Bulletin 100–93–12***, ***Military Review***, December 1993 (Fort Leavenworth, Kan.), page 14.

2. U.S. Department of the Army Field Manual 100–5, ***Operations***, June 1993 (Washington, D.C.: U.S. Government Printing Office), page 6–5.

THEY ALSO FLEW: PIONEER BLACK ARMY AVIATORS

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This is Part 1 of a series of articles on experiences and contributions of African American pioneer Army aviators. Part 2 will be published in the next issue and covers training at Tuskegee and later developments.

The African American aviators of Army Air Forces during World War II (WWII), popularly known as the "Tuskegee Airmen," are justifiably renowned as the first group of black American military aviators. Their trials and tribulations, training program, combat experiences, and legacy have been researched and widely publicized. It is well known that their success as combat aviators contributed significantly to the desegregation of the armed forces after WWII and indirectly to the American Civil Rights Movement of the 1950s and 1960s.

Almost nothing has been published, however, and very little is generally known about another group of black pilots of WWII—the aerial field artillery observers of the Army Ground Forces. These aerial observation pilots of WWII received their training and went into combat during the same period as the Tuskegee Airmen. The majority of them received their primary training at Tuskegee Army Airfield, where the Tuskegee Airmen were being trained.

A major difference between the two groups was that they served in different divisions of the Army: the Tuskegee Airmen were part of the Army Air Forces, which became the U.S. Air Force in 1947; while the aerial observer pilots were part of the Army Ground Forces, out of which grew modern Army aviation.

Pre–WWII Background

Before WWII, the U.S. armed forces were strictly segregated. There had been separate black Army regiments (brigades and divisions during wars), with white officers for the most part, since the Civil War. Black troops fought bravely and well in the Civil War, the Indian wars of the late 19th century, the Spanish American War, WWI, and other engagements. On the eve of WWII, however, there were only two black infantry regiments and two black cavalry regiments of about 4,000 men. During the Great Depression of the 1930s, the Army was small and jobs were scarce. African Americans were accepted into this peacetime Army only to fill the occasional vacancies in these black regiments. While there were several African American National Guard officers in northern cities in 1939, the active duty black regiments had white officers,

A group of Tuskegee airmen trained at Tuskegee Army Airfield.

and there were only two black Regular Army officers in the Army. The Army Air Forces (formerly the Army Air Corps), the Marine Corps, and the Coast Guard totally excluded African Americans from their ranks (the Air Forces until 1941 and the other two until 1942). The Navy accepted blacks only as mess attendants until 1942.[1]

Black American aviators were as rare as black military officers until the eve of WWII. Excluded from opportunities for flight training in the American military, blacks had to finance their own training (if they could find a flying school that would admit them) or learn to fly in the military service of another country. During WWI, for example, Eugene Bullard from Columbus, Ga., joined the French Foreign Legion, earned the **Croix de guerre** as an infantryman, and then transferred to the French Flying Service. Albeit in the service of France rather than of the United States, he was the first African American to participate in aerial combat.

Bessie Coleman, after being refused admission to several American flying schools, also learned to fly in France and became the first American black woman to hold a **Federation Aeronautique Internationale** pilot's license. She flew as an exhibition pilot from 1922 until her death in 1926—like that of so many white exhibition pilots, in a tragic crash.

Several other black Americans overcame the obstacles of discrimination and cost, and learned to fly during the late 1920s and 1930s: These included James H. Banning, John C. Robinson, Charles A. Anderson, and the Jamaican–born Albert E. Forsythe.

Tuskegee Institute, the famous black school in Alabama, actively promoted aviation during the late 1930s. Major centers of black aviation developed in Chicago and Los Angeles. Bessie Coleman Aero Clubs were organized in several cities, and the black press publicized the achievements of African Americans in aviation.[2]

Black Americans avidly read about the experiences and exploits of the pioneer aviators of their race. To many if not most white Americans at that time, however, only white pilots were really capable of conquering the skies; they basically

Bessie Coleman—America's first black female pilot

agreed with Charles A. Lindburgh, who wrote in 1939 that aviation was "a tool specifically shaped for Western hands, a scientific art which others only copy in a mediocre fashion,...one of those priceless possessions which permit the White race to live at all in a pressing sea of Yellow, Black, and Brown."[3] Getting into the world of aviation, especially military aviation, during that period was a difficult process for African Americans.

Civilian Pilot Training Program

The first opportunity for significant numbers of African Americans to enter the field of aviation resulted from the creation of the Civilian Pilot Training (CPT) program and passage of Public Law 18. These two historical events took place during the first half of 1939. The CPT program, directed by the Civil Aeronautics Authority, aimed at creating a reserve of civilian pilots to be called into the military in the event of war. Several black colleges, including Tuskegee Institute in Alabama, were selected to take part in the program.

Public Law 18 provided for future large–scale expansion of military aviation by contracting colleges to provide primary flying training for the military. This law required at least one of these colleges be designated to train African Americans.

The Army Air Corps, as well as the Marines and Navy, continued excluding blacks for 2 to 3 years after the passage of these acts, but significant numbers of black men took advantage of the opportunity offered by the CPT program to become aviators.[4] Because of deep–seated opposition to blacks in military aviation, Public Law 18 did not result directly in significant benefits for African Americans. The CPT program, however, was the gateway through which many black as well as white graduates eventually entered the world of military aviation.

The CPT program also propelled Tuskegee Institute to the forefront as the national center for black aviation—especially after it was selected as the one school that provided advanced aviation training to black graduates of the elementary CPT course. Both aviation at Tuskegee and the cause of blacks in aviation in general were given an additional boost when First Lady Eleanor Roosevelt visited Tuskegee Institute in March 1941. At that time she flew with Charles A. Anderson, who had been named chief instructor pilot in the advanced CPT course (see next page).[5]

The Tuskegee Airmen

In the meantime, pressure mounted on the Army Air Forces and other military services to admit blacks into their ranks at all levels. The leaders of the National Association for the Advancement of Colored People, the Brotherhood of Sleeping Car Porters, and other African American organizations pressed unrelentingly, throughout the election year of 1940, to obtain equal rights for blacks in all services and in the defense effort in general. President Franklin D. Roosevelt named a prominent African American judge, William H. Hastie, as civilian aide to the Secretary of War. Hastie promoted equality of opportunity with dedication and zeal. The wives of both the president and Wendell Wilkie, the Republican presidential nominee in 1940, did likewise.

In October 1940, the War Department announced a new policy of assigning black units to all arms and services of the Army in numbers proportionate to the national population. President Roosevelt approved the policy. In reality, the number of blacks remained disproportionately high in some branches

and low in others; however, the Army Air Corps and other formerly all-white branches were eventually forced to admit blacks. The Air Corps developed plans, during late 1940, to establish pilot and mechanic training programs. Both the Chicago area—where training would presumably to be somewhat less strictly segregated—and Tuskegee were considered as possible sites for the "experiment" in black military aviation. In January 1941, the War Department announced the plan to establish a base for training black aviators at Tuskegee and to create the 99th Pursuit Squadron. If pressure from the black community required it, additional squadrons could be created and trained at Tuskegee.[6]

Organic Army Aviation

The U.S. Army Aviation Branch evolved directly from organic Army aviation, established on 6 June 1942. After extensive tests of artillery fire adjustment by aerial observers in planes organic to the artillery units, the Secretary of War ordered the establishment of organic air observation for field artillery. The Army Air Forces retained the responsibility of assisting in providing artillery fire adjustment, but the Army Ground Forces, specifically only field artillery initially, were to have their own small planes organic to battalions, brigades, and divisions.[7]

A few days after the memorandum of 6 June, the Army Ground Forces established the Department of Air Training in the Field Artillery School at Fort Sill, Okla. The tactical flight training classes were conducted at Fort Sill's Henry Post Field. Small, single–engine, fabric–covered airplanes, including the Piper Cub J–3 (later designated the Army L–4 "Grasshopper"), were used. The students in the first classes already had civilian licenses; therefore, they were to go directly into tactical training upon being accepted into the aerial artillery observer program.[8]

Primary Training for Organic Aviation

By September 1942, field artillery's requirements for licensed pilots exceeded the number available. Since the Army Ground Forces lacked authority to rate pilots, the Army Air Forces were asked to train and rate them. Those initially selected and supplied to the Field Artillery School for the aerial observer program were air cadets who had been eliminated after 60 or more hours of flying and enlisted Army Air Forces personnel with previous flying experience. These personnel were sent to Fort Sill as staff sergeants with liaison pilot ratings.[9]

A large portion of the pilots sent to Fort Sill under this initial program proved unsatisfactory as aerial artillery observers. A series of disputes occurred between the Ground Forces and Air Forces over the matter. The Air Forces advocated the use of enlisted liaison pilots to be accompanied by field artillery officers who would adjust the artillery fire. The Ground Forces, on the other hand, preferred officer pilot–observers; they also desired authority to train and rate their own pilots so as not to depend on the Air Forces. In compromise agreements reached in late 1942 and early 1943, the Ground Forces failed to realize their goal of rating their own pilots; however, they won on the issue of selecting field artillery officers for Army Ground Forces pilot training. A few Army Air Forces personnel were to continue to be rated and sent to Fort Sill until 9 April 1943, but after that time, only artillery officers selected by the Field Artillery Branch were to be trained and rated by the Army Air Forces to become aerial artillery observers.[10]

Throughout WWII, and for several years afterwards, the Army Air Forces/U.S. Air Force insisted on referring to the Army Ground Forces aviators they trained as "liaison" pilots. Upon completion of primary training, these aviators were awarded the same liaison pilot wings awarded to enlisted Army Air Forces pilots. The Army Ground Forces strongly objected to the liaison designation, however, as it was deemed to imply less skill, quality, and rank than a nonliaison rating. The pilots in the program especially objected.

From an objective perspective, the term "liaison" seemed appropriate only for the Army Air Forces training program and perhaps for the Army Air Forces personnel trained and sent to Fort Sill for further training. "Aerial artillery observer," the preferred term of the Army Ground Forces, more accurately described those students who had completed the advanced tactical portion of the training program at Fort Sill—especially when they were field artillery officers. Although they still had liaison wings because they could only receive them from the Army Air Forces, their training at Fort Sill caused them to be quite different from the liaison pilots of the Army Air Forces.

In accordance with the aforementioned 1942 and 1943 agreements, the Air Forces converted two glider training schools to contractor–operated li-

During First Lady Eleanor Roosevelt's visit to Tuskegee in March 1941, she flew with "Chief" Charles A. Anderson.

aison pilot schools. The glider school at Denton, Tex., was converted to liaison training in November 1942, and the school at Pittsburg, Kans., began liaison training in February 1943. These schools provided primary flight and ground school training for field artillery officers, who then received advanced tactical training at Fort Sill. Most primary classes lasted about 9 weeks, but changes were made in both the length and content of the course as required. The two primary schools combined admitted as many as 50 students a week during early and mid–1943, the period of greatest demand for training new field artillery pilots.

In October 1943, the flow was reduced to 50 admissions each 2 weeks, and the school at Denton was closed. The school at Pittsburg was closed in October 1944. During the 20 months of its operation, the Pittsburg school admitted 1,859 field artillery officers (in 39 classes) and graduated 1,501. During the Denton school's 11 months of operation, it graduated 910 officers out of the 1,138 who reported there for training.[11] The two schools combined graduated and rated a total of 2,411 pilots with average elimination rates of between 19 and 20 percent.

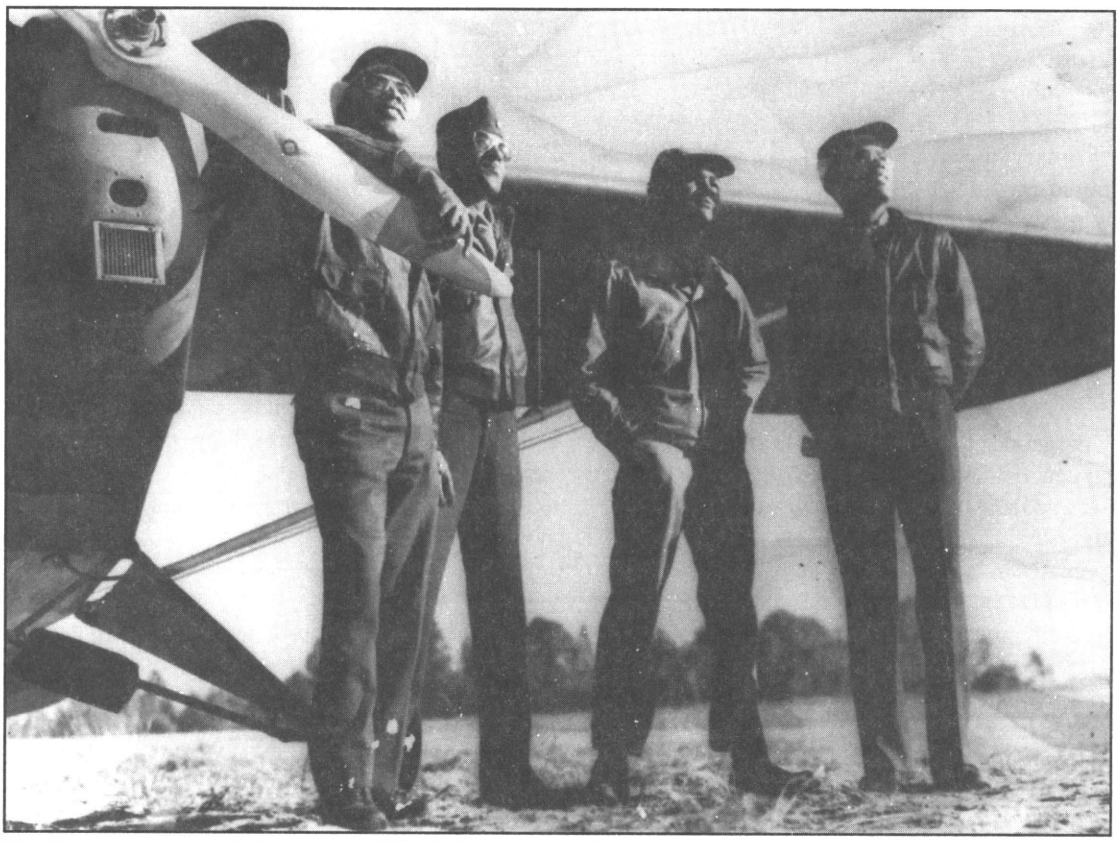
During 1945, the Army Air Forces provided primary training to a few more field artillery observers at Sheppard Army Airfield, Tex.[12]

The First Black Army Ground Forces Aviators

The War Department policy announced in October 1940 forced the Army Air Forces to train black aviators and create black squadrons. It also required that field artillery create black artillery battalions and regiments. Several battalions were activated during 1941 and considerably more during 1942 and early 1943. By 15 April 1943, 23 black artillery battalions had been formed. Many of these units went into combat and required aerial artillery spotters the same as white artillery units. Senior officers and many junior officers of black battalions were initially white and were only gradually replaced as black officers were trained and commissioned. Some of the aerial observers in the black units also were white—especially during the early part of the war. By mid–1943, however, a few black observation pilots had been trained. The Army Air Forces supplied the earliest of these black aerial artillery observers to the Field Artillery School's Department of Air Training just as white aerial observers were being supplied—from the Army Air Forces' air training program.

Since the Army Air Forces trained black pilots only at Tuskegee Army Airfield, the first blacks were sent to field artillery from Tuskegee. Although there seems to be no record of the event in surviving Army Air Force records relating to the Tuskegee Army Airfield, at least six air cadets who were eliminated from Army Air Forces training at Tuskegee were sent to Fort Sill during the latter part of 1942 to become field artillery observer pilots. The names of these six were Octave J. Rainey, Langston Caldwell, Elvatus Morris, James Christian, Tully Hickman, and Lawrence Johnson. After elimination from flight training, they were sent to Fort Sill for artillery observer tactical flight training. Arriving at the Field Artillery School during the period of the aforementioned disputes and negotiations between the Air Forces and Ground Forces, these men were not sent to officer candidate school before being given tactical training in January 1943. Some of these men had completed the CPT Program before the war and had considerable flight experience. Since they had been eliminated before completing their training at Tuskegee, however, they had not been rated as military pilots and awarded wings. Since the Army Ground Forces could not rate them, they were sent to an Army airfield in Texas. An Air Forces officer there certified them in liaison–type aircraft and awarded them wings. Of the six, Rainey, Caldwell, and Morris were assigned to the 93d Infantry Division at Fort Huachuca, Ariz. The other three were assigned to the 92d Division. The 93d Division was later deployed to the Pacific Theater and the 92d to the Mediterranean. These aviators served as staff sergeants during the months immediately following their completion of tactical training at Fort Sill. Indications are that five of the six were later commis-

LT Charles M. Brown, Jr.—first African American field artillery officer to be trained as an aerial artillery observer



LTs Davenport and Hayes, SGT Bixby, and LT Brown were assigned to the 350th Field Artillery Battalion, an all black unit at Camp Livingston, La.

sioned; Rainey received his commission in early 1944, as the 93d Division (including the 593d Field Artillery Battalion to which he, Caldwell, and Morris were attached) was en route to the South Pacific. When Rainey and Morris were separated later in 1944, Morris had not received his commission, which had purportedly been sent to Europe rather than to the Pacific. According to two other Army aviators who served with Christian, Hickman, and Johnson in the 597th Field Artillery Battalion in Italy, these three also eventually received commissions. Whether Morris was ever commissioned has not been determined.[13]

Black Artillery Officer Aviators

The Army's officer candidate schools—established in 1941 with no reference being made to race—constituted an important exception to the racial segregation that prevailed in the Army during WWII. As black artillery battalions were created, significant numbers of black artillery officers were commissioned through the officer candidate school at Fort Sill. Therefore, there was a pool of African American officers from which prospective aerial observer pilots could be selected for the black field artillery battalions. Since there was no separate program or school for training black Army Ground Forces aviators, the first of these black officers were integrated into regular classes for both primary and advanced training.

In April 1943, Second Lieutenant (2LT) Charles M. Brown, Jr., who had recently completed the Field Artillery Officer Candidate School, was sent to the Army Air Forces' school at Pittsburg for primary pilot training. Brown was apparently the first African American field artillery officer to be trained as an aerial artillery observer; he was enrolled in class number 43–EL–22, the sixth class trained at Pittsburg. Upon completing primary training, as the only black student in a class of 49, LT Brown received his liaison pilot rating and proceeded to Fort Sill for advanced tactical training.

In August 1943, after completing the course at Fort Sill, Brown was assigned to the 350th Field Artillery Battalion at Camp Livingston, La. Brown's white commanding officer, skeptical about a black pilot, refused to allow Brown to go near his still–crated aircraft until directed to do so by his own superior. Brown was joined at Camp Livingston by two other black field artillery officer pilots, LTs Ernest Davenport and Elvin L. Hayes, both of whom had completed primary training at the Army Air Forces liaison training school at Denton before their advanced tactical training at Fort Sill. Brown later was transferred to Europe, where he served with the 351st Field Artillery Group from 1943 to 1945.[14]

LTs Davenport and Hayes are the only two black artillery officers who have been identified as having completed primary aviation training at Denton. In addition to LT Brown, at least one other black officer was sent to Pittsburg for primary training during 1943. After re-

porting to Pittsburg, however, this officer (whose last name was apparently Parker) was ordered to Tuskegee for flight training. His father then wrote an angry letter objecting to the change in station and to the segregated training being conducted at Tuskegee. At Pittsburg, the father wrote that his son was "known to be Colored but was treated as an officer, but at Tuskegee, he will be treated as a Colored officer."[15]

After the three classes of black field artillery officers received primary aviator training at Tuskegee Army Airfield during the latter part of 1943, four more black officers were sent to Pittsburg for primary training in predominately white classes. The last one graduated in June 1944.[16] Only one of these four pilots, Welton Taylor, has been identified by name. No evidence has been uncovered of any African Americans being trained as aerial observers between mid–1944 and the end of WWII.

ENDNOTES

[1] Jack D. Foner, ***Blacks and the Military in American History*** (New York and Washington, Praeger Publishers, c. 1974), pp. 133–145, passim; Morris J. MacGregor, Jr., ***Integration of the Armed Forces, 1940—1965*** (Washington: Center of Military History, 1981), pp. 7–16, passim.

[2]Regarding the development of interest in aviation among black Americans and news accounts of the experiences of the pioneer black aviators, see the sections on aviation in John W. Kitchens, ed., ***Microfilm Edition of the Tuskegee Institute News Clippings File*** (252 microfilm reels and printed guide, Tuskegee, Ala.: Tuskegee Institute, 1978), (hereinafter cited as ***Tuskegee News Clippings File***). For an excellent narrative summary of these topics as well as of the development of interest in aviation at Tuskegee Institute, see Robert J. Jakeman, ***The Divided Skies: Establishing Segregated Flight Training at Tuskegee, Alabama, 1934–1942*** (Tuscaloosa and London: The University of Alabama Press, 1992), pp. 1–32 and 53–68.

[3]Charles A. Lindburgh, "Aviation, Geography, and Race," ***Reader's Digest*** (Nov. 1939), p. 64, cited by Jakeman, ***Divided Skies***, p. 52.

[4]***Tuskegee News Clippings File***, reel 60, frames 598–644; Alan M. Osur, ***Blacks in the Army Air Forces during World War II*** (Washington Office of Air Force History, 1977), pp. 20–23.

[5]Jakeman, ***The Divided Skies***, pp. 133–157, passim.

[6]Ibid., pp. 183–214; Osur, ***Blacks in the Army Air Forces during World War II***, pp. 20–25; Ulysses Lee, ***The United States Army in World War II: The Employment of Negro Troops*** (Washington: Center of Military History, 1963, 1994), pp. 111–15, passim.

[7]Memos, WDGCT 320.2 (2–5–42), Brig. Gen. I. H. Edwards for commanding generals of the AAF and AGF, 6 June 1942, sub: Organic Air Observation for Field Artillery, Aviation Branch History Office (ABHO) files. See also, Kent Roberts Greenfield, ***Army Ground Forces and the Air–Ground Battle Team including Organic Light Aviation*** (Study No. 35, Historical Section, Army Ground Forces, 1948), pp. 23–25.

[8]William Wallace Ford, ***Wagon Soldier*** (West Redding, Conn.: Excelsior Printing Co., 1980), pp. 120–27; Richard Tierney and Fred Montgomery, ***The Army Aviation Story*** (Northport, Ala.: Colonial Press, 1963), pp. 65–79.

[9]"History: Army Air Forces Central Flying Training Command, 1 January 1943—31 December 1943," vol. III, pp. 753–54, Air Force Historical Research Agency (AFHRA) 223.01.

[10]Ibid., vol. 4, pp. 753–58, vol. 6, pp. 1291–92; "History of Army Air Forces Training Command, 7 July 1943—31 December 1944," vol 6, pp. 1353–55, AFHRA, 220.01. The best account of the dispute about selecting and rating field artillery aerial observers and of the compromise agreements is in Kent Roberts Greenfield, ***The Army Ground Forces and the Air—Ground Battle Team*** (Historical Section, Army Ground Forces, 1948), pp. 25–26, 57–58.

[11]"History: Army Air Forces Central Flying Training Command, 1 January 1943—31 December 1943," vol. 4, pp. 758–67, vol. 6, pp. 1291–92, AFHRA, 223.01; "History of the Army Air Forces Training Command, 7 July 1943—31 December 1944," vol. 6, pp. 1353–71, passim, vol. 13, doc. 220, AFHRA, 220.01.

[12]General Orders No. 69, Headquarters, Army Air Forces Training Command, 15 Dec. 1944, Organization of the 2618th AAF Base Unit, AFHRA, 220.01, vol. 13, doc. 227; "History: Army Air Forces Central Flying Training Command, 1 November—31 December 1944," vol. 2, pp. 389–90, AFHRA, 223.01.

[13]Notes on telephone interviews by author with Mr. Octave J. Rainey, 1 and 23 Aug 1994; Notes on telephone interviews by author with Mr. Horace Oats, 19 and 24 Aug 1994; Notes on telephone interview by author with Mr. Ernest Davenport, 29 Aug 1994; ***Chicago Defender***, 27 Mar 1943; ***Atlanta Daily World***, 3 Apr 1943; and ***Houston Informer***, 16 Sept 1944, all in ***Tuskegee News Clippings Files***, reels 83 and 87. Rainey does not charge racial discrimination in the matter of commissions, but the African American newspapers of the time did make that charge. According to Rainey, he was told during the period he was awaiting his commission that there was no record he had ever attended the advanced tactical school at Fort Sill, and Morris was told while flying for the 93d Division in the Pacific that his records had been sent to Europe.

[14]Notes on telephone interview by author with Maj. (Ret.) Charles M. Brown,12 Aug 1994; Memo No. 23, 2d AAF Liaison Training Detachment, Pittsburg, Kansas, 22 April 1943; Special Orders No. 202, Headquarters, Field Artillery School, Fort Sill, Oklahoma, 24 August 1943, all in Charles Brown file in ABHO.

[15]Cited by Osur, ***Blacks in the Army Air Forces during World War II*** p. 163. It has not been determined whether the son actually underwent liaison training at Tuskegee. He possibly went to Tuskegee but was placed in an Army Air Forces training program instead. At any rate, no one by the name of Parker graduated in any of the classes of black artillery officers trained there.

[16]"History: Army Air Forces Central Flying Training Command, 1 January 1944—30 June 1944," vol. 4, pp. 690–691, AFHRA, 223.01.

Update on Chief Warrant Officer 5 Positions

CW5 Clifford Brown
Aviation Proponency
U.S. Army Aviation Center
Fort Rucker, Alabama

As the U.S. Army Aviation Branch continues to implement the Warrant Officer Leader Development Action Plan (WOLDAP), several queries have been received from agencies concerning creating positions for chief warrant officer 5s (CW5s). Many of these queries have been attempts to stabilize an aviation warrant officer (AWO) who has just come out on a CW5 promotion list. *The Aviation Branch does not code a position for CW5 just because the officer in the position is in CW5–promotable status.*

Warrant officers and their commanders need to understand that just as a major on the lieutenant colonel (LTC) promotion list should be looking for a LTC position, the CW4 on the CW5 promotion list should be looking for a CW5 position. This often means a permanent change of station move much sooner than expected. Many positions in both the modification table of organization and equipment (MTOE) and tables of distribution and allowances (TDA) Army have been coded for CW5s. These positions are in accordance with the Warrant Officer Management Act (WOMA) and the WOLDAP.

With authorizations capped at only five percent of all warrant officer authorizations, CW5 positions must be carefully allocated to ensure maximum impact on the mission of the Aviation Branch.

The following CW5 position descriptions are extracted from a change, approved by the Deputy Chief of Staff for Personnel (DCSPER), to Army Regulation (AR) 611–112, *Manual of Warrant Officer Military Occupational Specialties,* which will appear in Update 6.

Safety. As a senior command level aviation safety officer, develops, integrates, manages, and evaluates the commander's safety program and serves as the interface between division, corps, installation, MACOM [major Army command], Department of the Army, and subordinate elements. Is the chief advisor to the commander concerning flight and ground safety and is a subject matter expert in career field.

Standardization. As a senior command level standardization officer, develops, integrates, manages, and evaluates the aircrew training and standardization programs. Is the standardization and aviation training interface between division, corps, installation, MACOM, Department of the Army, and subordinate units. Is the chief advisor to the commander concerning aircrew standardization and training and is a subject matter expert in career field.

Maintenance. As a senior command level aviation materiel officer, monitors and evaluates aircraft maintenance operations, processes, and procedures, and aviation materiel readiness status. Is the aircraft maintenance interface between division, corps, installation, MACOM, Department of the Army, and subordinate units. Develops, manages, and evaluates the maintenance test pilot standardization and training program, is the commander's chief advisor on aircraft maintenance and is a subject matter expert in career field.

Operations. As a senior command level tactical operations officer, plans, schedules, coordinates, and briefs approved aircraft missions to subordinate elements and develops and manages the flying hour program. Uses aviation mission planning station to disseminate mission data to subordinate elements. Oversees the functions of subordinate unit ALSE [aviation life support equipment] programs. Is the electronic warfare officer recommending battalion battle positions, optimized ingress and egress routing, and prioritized threat listings. Is the commander's chief advisor on

aircraft mission planning, tasking, status, and ASE/EW [aircraft survivability equipment/electronic warfare]. Oversees subordinate units' flight records programs and is a subject matter expert in career field.

• As a training systems integrator supervisor, develops and evaluates course content, provides technical training advice and guidance, and writes doctrine pertaining to area of technical specialty. Develops, conducts, and supervises the instruction of student personnel in Army, Army Aviation, or technical subjects.

• As a TDA section, detachment, branch, or division chief, supervises the development, planning, implementation, execution, and evaluation of plans, programs, processes, and systems pertaining to training, personnel accessions/training/distribution, research and development, force modernization, force design and structure, system integration and analysis, simulation, and budget.

• As a chief engineering test pilot, supervises projects, develops, manages, and evaluates test programs for aircraft designs and flying qualities.

• As a senior command level Materiel Acquisition Manager, supervises acquisition processes, supervises development and implementation of plans to test, develop, acquire, and distribute aircraft and aircraft systems.

Aviation Proponency Office

Readers may address matters concerning aviation personnel to—
Chief
Aviation Proponency Office
ATTN: ATZQ–AP
Fort Rucker, AL 36362–2359.

U.S. Army Class A Aviation Flight Mishaps

Fiscal Year	Number	Flying Hours	Rate	Military Fatalities	Total Cost (in millions)
FY 93 (through 31 August)	21	1,193,129	1.76	22	100.3
FY 94 (through 31 August)	21	1,193,129 (estimated)	1.76	11	76.6

Into the next century:

The Test and Experimentation Command Prepares for the Future

Mr. Wayne E. Hair
Public Affairs Officer
U.S. Army Test and Experimentation Command
Fort Hood, Texas

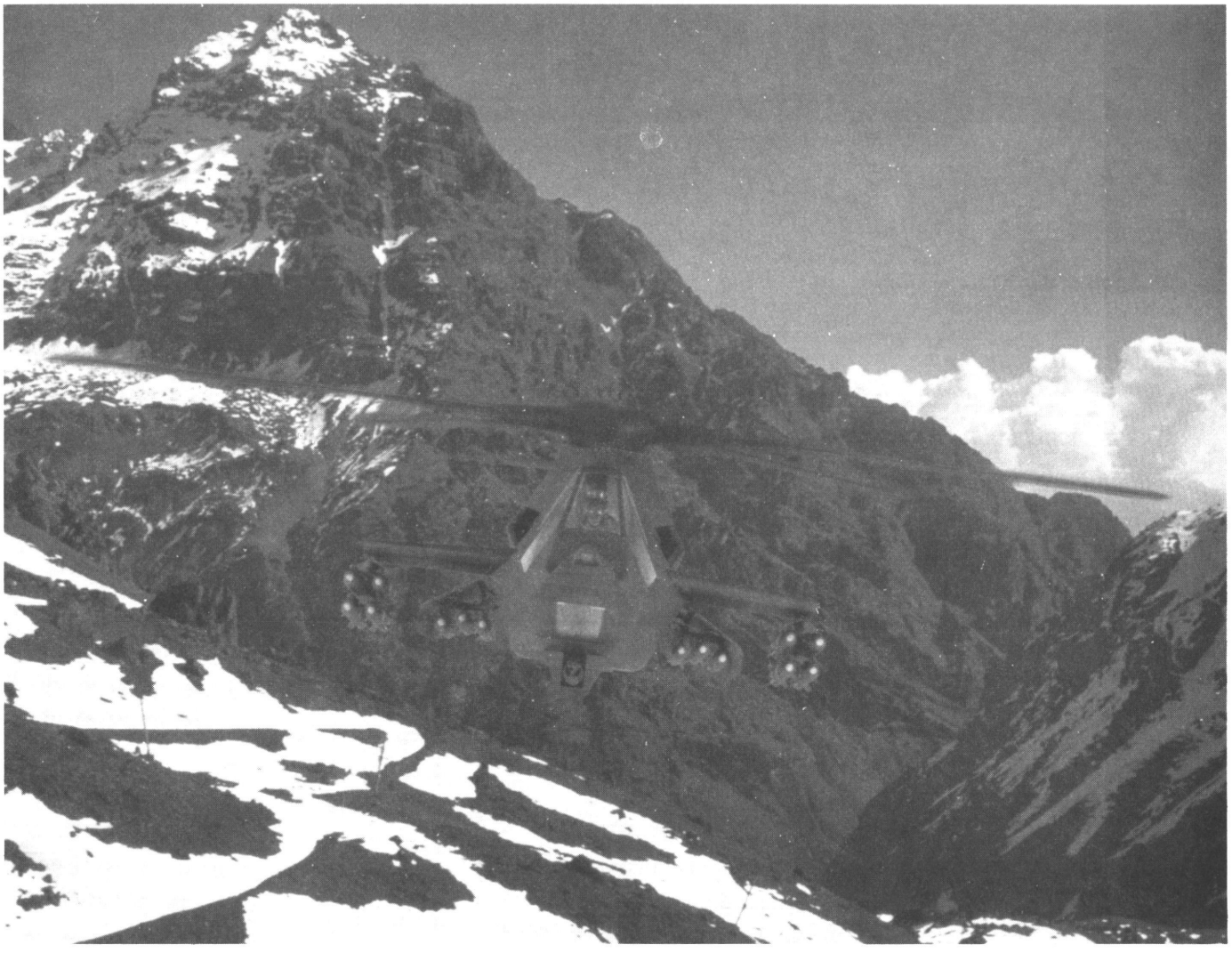
In the July/August issue of the ***Digest*** (pages 46–47), the lineage and history of the Test and Experimentation Command (TEXCOM) were outlined. As TEXCOM celebrates its twenty–fifth anniversary, it will be with reflection on its quarter century as a solid building block for the twenty–first century of test and experimentation.

The year 2000 may be off the screen for most, but it is just around the corner for the business of TEXCOM because the command lives and works in the future. That future today is the twenty–first century. Operational testing is geared to the future; it works off a five–year test plan. The equipment, training, tactics and doctrine tested today must fit the concept of Battle Force XXI and the "digitized battlefield" as outlined by the Chief of Staff, U.S. Army. The Aviation Test Directorate is conducting the Longbow Apache (AH–64C/D) initial operational test and evaluation (IOTE) at Fort Hunter Liggett, Calif. Longbow is the heart of the Apache modernization program that will be an intregal part of the digitized battlefield for at least the next decade. But, at the same time, the Aviation Test Directorate is planning to conduct operational tests of the RAH–66 Comanche, the centerpiece of the digitized battlefield, within the next several years.

Recently, the Close Combat Test Directorate completed operational tests of the M–1A2 tank, is about to begin tests of a new Armored Gun System, and is planning for operational tests of a new Air–Ground Engagement System for training and a first–generation virtual reality training device for tankers that each contribute to the equipping and training of Force XXI land warriors.

The Airborne Special Operations Test Directorate at Fort Bragg, N.C., is about to begin operational testing of the Air Force C–17 that is planned to be the Army's airlifter in the twenty–first century; the Fire Support Test Directorate is involved in testing digitization of fire support systems; and the C^3 [command, control, and communications], Information Mission Area, and Intelligence and Electronic Warfare Test Directorates are heavily involved in operational testing of digital battlefield technologies of the twenty–first century.

"Preparing for the Future" is TEXCOM's guiding principle for coping with the Army's goal of Force XXI. TEXCOM participated in the recent Advanced Warfighting Experiment (AWE) at the National Training Center, Fort Irwin, Calif., collecting and reducing data about the various systems used. It is envisioned that TEXCOM will continue to be involved during future AWEs.



TEXCOM will be conducting operational tests of the RAH–66 Comanche—the centerpiece of the digitized battlefield—within the next several years.

As TEXCOM forges its way into the next century, changes in organization become necessary to better serve its customers. One such change is the planned activation of an Advanced Concepts Test Directorate—staffed from existing resources—to interface with Force XXI initiatives and scheduled AWEs. This directorate will have the Army–designated Advanced Concepts unit as its primary customer. Other organizational changes and processes are in the concept stage to streamline the independent operational testing mission.

In the arena of test data collected during realistic operational tests, TEXCOM is pioneering and pushing the edge of technology. In 1969, the data collectors used clipboards, calculators, and stopwatches.

Today, it is computer programs, automatic reporting and position location devices, and realistic simulation devices. Tomorrow, it will be virtual reality for training and satellite–dependent data collection. Today's operational testing is in direct support of the force for the future and the twenty–first century land warrior.

U.S. Army Test and Experimentation Command

Readers may address matters concerning test and experimentation to—
Headquarters
TEXCOM
ATTN: CSTE–TCS–PAO
Fort Hood, TX 76544–5065.

The Aviation Maintenance Integrated Diagnostics System

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and
Mr. Gene A. Isaak
Directorate of Combat Developments
U.S. Army Aviation Logistics School
Fort Eustis, Virginia

The aviation maintainance integrated diagnostics system (AMIDS) is the maintainer's answer to the impending automation revolution sweeping the Army. As a standard computer platform, the AMIDS (Figure 1) will serve as host for many independent maintenance applications, interface with electrically bused aircraft, and transfer data from a flight data/maintenance recorder (FD/MR). The goal is to provide aviation mechanics with state–of–the–art ground–support equipment to fix our advanced technology aircraft. Automation can radically improve current maintenance capabilities and become a critical element in maintaining readiness during the defense downsizing.

By automating maintenance functions, the Army can save time, increase availability, and conserve resources. For example, a single portable computer can be the host for several automatic test program sets that, in the past, required separate items of test equipment. Instead of procuring test equipment for each aircraft subsystem, the user can interchange software/electronic circuit boards on one computer platform. Also, many diagnostic and maintenance management applications currently being fielded could be accessed on the same computer. By providing one computer platform, the Army can standardize automation hardware for future software development and avoid a proliferation of computers used on Army aircraft.

Automation is the gateway to many unrealized benefits. Troubleshooting procedures have often been described as cumbersome and confusing. As a result, many initiatives have been sought to improve troubleshooting accuracy and speed by automating aircraft technical manuals (TMs). Interactive electronic technical manuals (IETMs) provide all troubleshooting steps, pictures, and procedures needed by the soldier for diagnostic maintenance. Gone will be the days when the aircraft mechanic has to page through three or four TMs to isolate and replace a defective component. The AMIDS will be able to serve as host for IETMs and walk the user through the entire procedure without the use of a library of bulky paper TMs.

Intrusive diagnostic software and an interconnect device will enable the AMIDS to interface with the 1553 data bus found on many modern aircraft. A bus allows maintenance personnel to tie into many aircraft subsystems without having to wire into each one individually. The interface will allow the AMIDS to read built–in test/built–in test equipment (BIT/BITE) information, which is then converted into a fault code to accurately isolate and identify unserviceable line replaceable units (LRUs). This could significantly reduce the high rate of "false" (unnecessary) removals reported by many aircraft program managers in recent years.[1]

Nonbused aircraft could use the AMIDS to host commercially available intrusive diagnostic software to assist the maintainer in fault isolation. Some of the software applications available include a multimeter, an oscilloscope, a time–domain reflectometer (TDR), and an eddy–current C–scan. A TDR, for example, could isolate the location of most wire faults; in contrast, current procedures require maintainers to physically check individual sections between connectors.

Interfacing with an onboard FD/MR will enable technicians to predict when parts/components fail. One of the many benefits of a health–usage monitoring system is that it monitors the aircraft's flight regime, which can extend the time between overhauls (TBOs) and the life of some parts on certain components. Past Army experiments have determined that actual usage of parts could far exceed the design–usage spectrum and result in substantial savings.[2] As a value–added benefit, a crash–survivable FD/MR can enhance accident investigations by determining what actually happened during many catastrophic aircraft mishaps.

In the area of maintenance management, the AMIDS can be the host for the Unit–Level Logistics

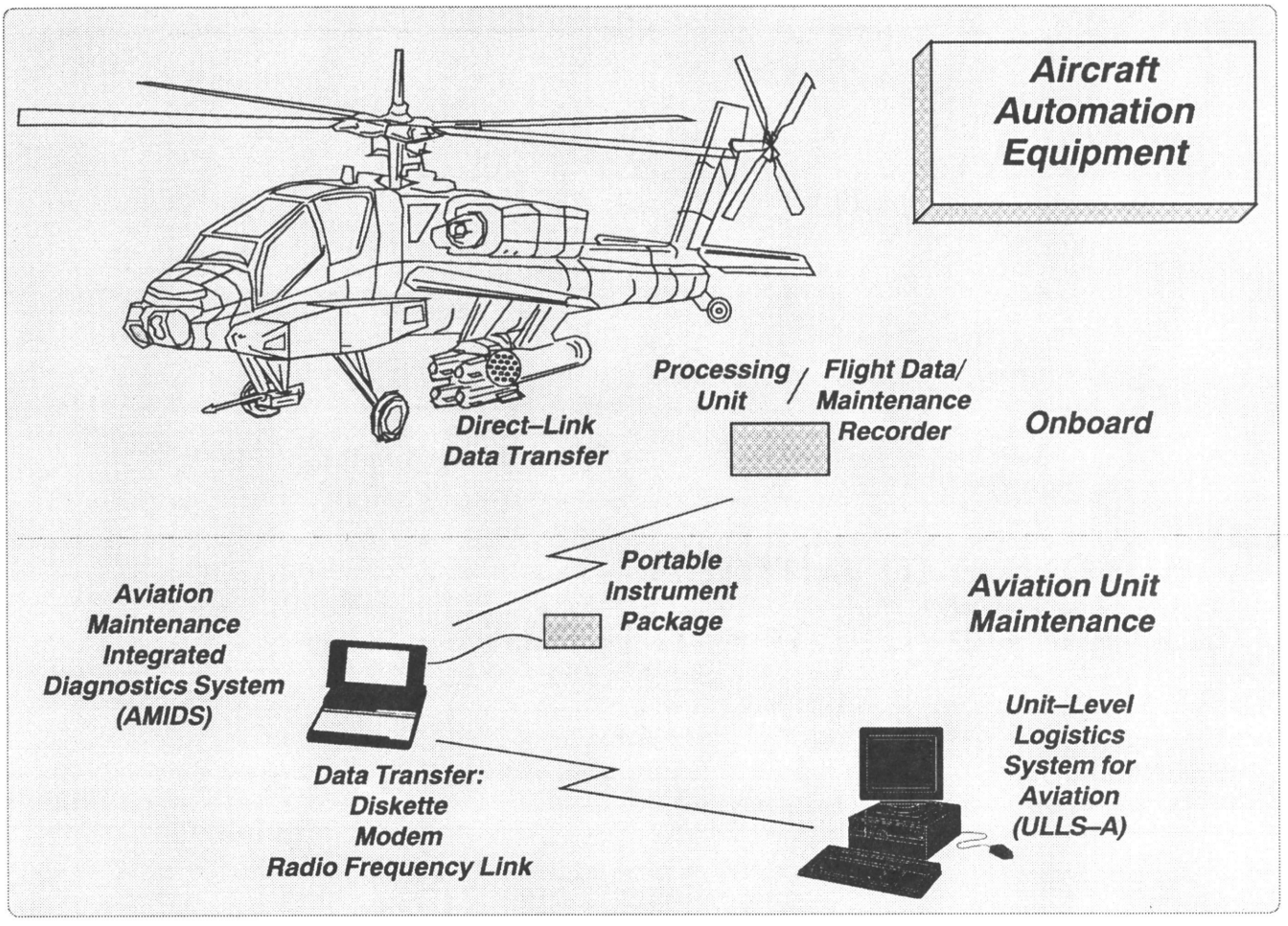


Figure 1. AMIDS will serve as the host for numerous independent maintenance applications, interface with electrically bused aircraft, and transfer data from a flight data/maintenance recorder.

System for Aviation (ULLS–A) and replace the paper aircraft logbook. Future diagnostic software applications should interlink with the ULLS–A to transfer files and automatically update maintenance records or hours on components/parts. Additional maintenance data could also be transferred through the ULLS–A network—Standard Army Maintenance System (SAMS) and Standard Army Retail Supply System (SARSS)—for trend analysis at the national level. Such a system would streamline data acquisition, provide instantaneous records updating, and minimize record keeping.

Today's technologically complex aircraft demand that we provide our maintainers with state–of–the–art ground–support equipment. Automation can enhance the abilities of all maintenance personnel to perform diagnosis and prognosis and management of maintenance actions. As maintenance automation matures, other benefits will emerge; to improve aircraft readiness, increase efficiency, and conserve resources in the future, we must invest in automation today.

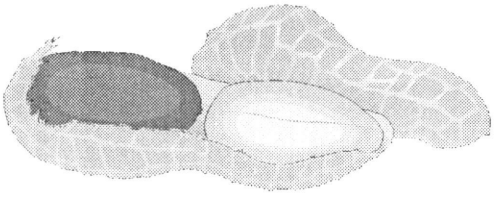
Notes

1. Douglas Barclay, Chyde Butler, and John Sloan, ***Skill Level Enchancement Aid (SLEA)***, (Vienna: JAYCOR report prepared for the Aviation Applied Technology Directorate, United States Army Aviation Systems Command [USAAVSCOM], 1993), 20, USAAVSCOM TR 91–D–15.

2. Dave Sullivan, ***Aviation Maintainability Strategy Study Group Flight Data and Maintenance Recorder Feasibility Study, Draft Report***, (St. Louis: DCS Corporation, technical report published for the U.S. Army Aviation and Troop Command, 1994), 3.

U.S. Army Aviation Logistics School

Readers may address matters concerning aviation logistics to—
Commander
U.S. Army Aviation Center
ATTN: ATZQ–CDM
Fort Rucker, AL 36362–5000.



The Notice to Airmen (NOTAM) System—in a Nut Shell

MSG Gregory Lunn
U.S. Army Representative
U.S. NOTAM Office
Headquarters, Federal Aviation Administration
Washington, D.C.

The Department of Defense (DOD)/Federal Aviation Administration (FAA) integrated Notice to Airmen (NOTAM) system was established in 1989 to integrate the military and civil NOTAM systems into what is now officially called the United States NOTAM System (USNS). The U.S. NOTAM Office is at FAA Headquarters, Washington, D.C. Three military NOTAM coordinators are available or on call 24 hours a day to provide assistance to service personnel in resolving NOTAM issues.

A common misconception of the NOTAM system is that it's a "one–stop" shopping system for NOTAM information. Unfortunately it's not! The U.S. NOTAM system is designed to make the primary customer, the aviator, aware of all hazards along the route of flight and at the destination aerodrome. Different agencies, equipment, and sources of information affect the NOTAM system. A NOTAM contains information pertaining to the establishment of or condition or change in any component of the U.S. National Airspace System (NAS) or host–nation airspace that is not known soon enough to be printed in DOD flight information publications (FLIP). The aviator is primarily responsible for requesting NOTAM data from base/airfield operations using the automated weather distribution system (AWDS) when available, the automated weather network (AWN) system, or through an FAA flight service station (FSS). Four types of NOTAMs are available:

- L (local) NOTAMs.
- D (distant).
- International Civil Aviation Organization (ICAO).
- The FAA Flight Data Center (FDC) Class II Notice to Airmen biweekly publication.

So what does this mean to you, the aviator? It means that you must be *aggressive* in your pursuit of NOTAM information. Some of the things you should do include—

√ Check AWDS terminals or posted summary printouts in base operations for the NOTAMs affecting your route of flight and destination.

√ Read the special notices located at the top of the latest summary.

√ Read the hourly updates posted on the NOTAM display board.

√ Review the FAA (FDC) Class II NOTAMs.

√ Call the FSS serving the destination airport for local (L) NOTAMs.

If your destination is not a NOTAM reporting station (no diamond listed in en route supplement), be sure to ask the FAA for all distant (D) NOTAM material. All of these things are required to ensure that you have the whole picture. If you

were not able to get NOTAMs by any of the above methods, call 1–800–WX–BRIEF and request D, L, FDC, and military summary NOTAM products for the destination airfield. You will need the four–letter ICAO location identifier for your destination, plus any en route stops.

The AWDS was acquired to improve NOTAM distribution. The AWDS replaced the older CONUS [continental United States] Meteorological Data System (COMEDS) equipment at most CONUS locations, and is also being installed at some outside continental United States (OCONUS) locations. With the AWDS, the aviator can obtain NOTAM information for 10 locations without any assistance from flight operations personnel. Using AWDS, you can request Airman Advisories (AIRADs) and local NOTAMs for the departure airfield. Flight operations personnel use AWDS to request and receive current summaries and hourly updates, to post Airmen Advisories, and to maintain the NOTAM control log. Even though AWDS is a newer system, it is slow in retrieving data. An engineering change has been introduced to shorten the response time of the system and should be available soon.

Some of the things that you, the operator, can do to help improve the DOD/FAA NOTAM system include—

√ Ensure that the appropriate NOTAM display board is in use with current and up–to–date information.

√ Post hourly updates in a timely manner.

√ Post instructions on the use of the AWDS aircrew terminal in the flight planning room to assist aviators in obtaining NOTAM data.

√ Train your operators to enter, cancel, or replace NOTAMs, according to Army Regulation 95–10, *The U.S. Military Notice to Airmen (NOTAM) System.*

√ Ensure that you cancel or replace NOTAMs that have been in the system longer than 90 days. Conditions that are expected to last for longer than 90 days need to be published in FLIP.

Awareness of the overall NOTAM system will prevent disruption of this information flow. Specific problems that affect this system now include—

■ Submitting NOTAMs for publication and then forgetting to cancel them when the condition no longer exists or is published in FLIP.

■ Operators creating duplicate NOTAMs because they fail to wait the required 50 minutes before retransmitting.

■ Originators of NOTAMs not understanding the criteria or what type of information to include in a NOTAM.

These problems are routinely detected and corrected by the military NOTAM coordinators at FAA. However, quality control must begin at the dispatch supervisor/noncommissioned–officer level to ensure that the NOTAM system remains viable and responsive to your needs.

U.S. Army Aeronautical Services Agency

USAASA may be contacted at DSN 656–4871 or commercial 703–806–4871; or write to—
Commander
U.S. Army Aeronautical Services Agency
ATTN: MOAS–AI (Bldg 1466)
9325 Gunston Road, Suite N319
Fort Belvoir, VA 22060–5582.

The King and the Wing

SFC John H. Remson, Jr.
Field Artillery Instructor, OH–58D Kiowa Warrior Program
C Company, 1st Battalion, 14th Aviation Regiment
Aviation Training Brigade
Fort Rucker, Alabama

Field Artillery, the King of Battle, advances into the twenty–first century combined arms battlefield with lethality and effectiveness aided by the armed OH–58D Kiowa Warrior. With the increased presence of advanced technology in battle and the digitizing of communications on the combined arms battlefield, aviation and field artillery are, and continue to be, at the forefront of advanced operational integration. The OH–58D has been operating effectively with the Field Artillery since 1987 in digital communications and highly complex target–acquisition technology. This valuable combined arms team continues to train together at the core of the Kiowa Warrior program at Fort Rucker, Ala.

The fire direction center (FDC) of C Company, 1–14th, at Fort Rucker, provides this training. Students learn to use the airborne target hand–over system (ATHS), an integrated digital communications system, to conduct the five basic artillery missions: adjust fire, fire for effect, suppression, immediate suppression, and the Copperhead laser–guided munition. After four days of ground training, students fly to the Molinelli Aerial Gunnery Range Complex, at Fort Rucker, where they detect, identify, and locate targets using the mast–mounted sight (MMS) then engage with indirect fire through the FDC. They also learn how to adjust rounds, store and repeat missions, and send artillery target intelligence (ATI) and spot reports. As the only tactical digital net control station (NCS) on Fort Rucker, the FDC of C Company, 1–14th, provides a continuous voice and digital link for more than 30 OH–58D aircraft during various stages of training, ranging from tactical employment to gunnery, working a 4,000–square–kilometer training area.

The FDC equipment of C Company, 1–14th, consists of two battery computer systems (BCSs), one lightweight computer unit (LCU), two single channel ground and air radio system (SINCGARS) (AN/VRC–92) long–range radio sets, and three antennas (OE–254) mounted on a 60–foot pole. A 28–volt alternating current–to–direct current (AC–DC) power supply provides power to the center. The LCU can operate using C–cell batteries or AC or DC power.

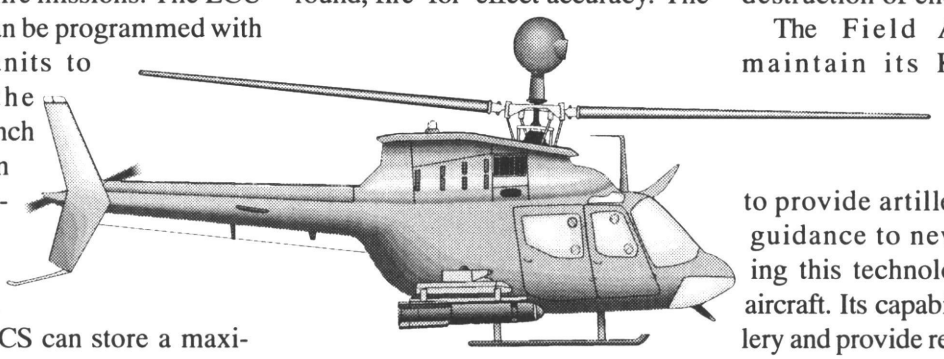
The LCU with the initial fire support automated system (IFAS) is replacing the heavy tactical fire direction system (TACFIRE). The LCU gives field artillery Army National Guard (NG) and United States Army Reserve (USAR) units complete digital capability. The fielding of the LCU to active Army, NG, and USAR field artillery units is scheduled for completion by the end of fiscal year (FY) 95.

The LCU is an off–the–shelf 486 microprocessor with 32 megabytes of random access memory (RAM). The heart of the system is essentially a laptop computer with many capabilities—depending primarily on the external device it operates and the hard disk drive installed. Though the artillery uses it for fire support functions, it is also used by other branches to form a command and control network. One LCU can operate a field artillery battery FDC or fire support element (FSE), and two LCUs can be linked together to operate a field artillery battalion FDC.

The FDC software setup for C Company, 1–14th, emulates two field artillery firing batteries. However, with simple software upgrades, the system could emulate battalion, brigade, or corps field artillery systems. The old BCS has a data base for one firing unit with a maximum of 12 guns and can process only three active fire missions. The LCU with IFAS can be programmed with 60 firing units to include the multiple launch rocket system (MLRS), processing 30 active fire missions at once. The BCS can store a maximum of 80 targets; the LCU with IFAS can store up to 2,000 targets.

The 260th Field Artillery Detachment, at Fort Rucker, provides four personnel, military occupational specialty 13E (Cannon Fire Direction Specialist), on a 90–day rotational basis to support the Kiowa Warrior training program. This training hones the 260th Field Artillery's fire direction and radio communication skills, incorporating the new technology of the LCU. During 1993, FDC, C Company, 1–14th, conducted 6,769 fire missions in support of OH–58D field artillery training.

The OH–58D helicopter communicates with the field artillery digital network through the ATHS. The ATHS and MMS on the OH–58D allows a pilot to detect targets with the television sensor or thermal imaging sensor, locate the target with the laser (eight–digit grid) and digitally call for fire with a first–round, fire–for–effect accuracy. The copilot–gunner (CPG) adjusts rounds as necessary, using the same system. The MMS and ATHS are fully integrated. Target location automatically transfers from the MMS laser to the ATHS. Therefore, the crew can rapidly transmit target locations with each fire mission on the secure, digital, frequency–hopping radio net.



The Army's OH–58D Kiowa Warrior plays a vital role in support of the field artillery mission. The capabilities of the OH–58D as an armed reconnaissance/attack aircraft enhance both air cavalry squadron and attack battalion effectiveness. This helicopter will also provide precise, accurate battlefield information to the maneuver commander through the field artillery digital network. The armed OH–58D Kiowa Warrior and the Field Artillery must continue to work closely as a lethal combined arms team in the acquisition and destruction of enemy targets

The Field Artillery must maintain its Kiowa Warrior training representation and continue to provide artillery instruction and guidance to new aviators operating this technologically advanced aircraft. Its capability to adjust artillery and provide real–time battlefield intelligence is unmatched. Its use as an aerial platform for artillery interface in the combined arms team has been validated in training and on the battlefield.

The future of this effective combined arms team will be determined by continued emphasis on quality training and education of aviation officers during basic and advanced aircraft qualification courses. This awesome task falls squarely on the shoulders of seasoned noncommissioned officers in the school house and the C Company FDC and the instructor pilots on the flight line.

A New AR 95-1, Flight Regulations

Mr. Stephen Harris
Literature Review Branch
Directorate of Evaluation and Standardization
U.S. Army Aviation Center
Fort Rucker, Alabama

If all goes as planned, a new AR 95–1, Flight Regulations, should be in the field by October 1994. This article gives a brief overview of some of the major changes. Major work for the new regulation started in September 1993 with a visit to the Pentagon, Washington, D.C., to discuss the time schedule to have the revised regulation in the field by October 1994. It also was decided to combine AR 95–1, Flight Regulations, with AR 95–3, Aviation: General Provisions, Training, Standardization and Resource Management; apply the current changes on file; and staff the draft regulation with the field by December 1993. Comments and recommended changes were requested to be sent to the Director of Evaluation and Standardization (DES), Fort Rucker, Ala., by 28 February 1994.

Changes started arriving by middle January 1994 and finally finished coming in about the second week in March. These changes were then sorted, reviewed, and discussed by members of DES; Aviation Training Brigade; Directorate of Plans, Training, Mobilization, and Security; Aviation Branch Safety Office; and the U.S. Army Safety Center. Approved changes then were applied to the draft AR 95–1 during March–April. Additional conferences were held to review the regulation and make final corrections. The revised regulation then was prepared and sent to the Deputy Chief of Staff for Operations and Plans, Headquarters, Department of the Army (HQDA), by 15 May 1994. This should have allowed the necessary time for required staffing at HQDA to meet the time schedule of having the new AR 95–1 to the field by October 1994.

On 23 May 1994 a draft version of the AR 95–1 sent to HQDA for review and printing was also sent back to the field to units that had submitted comments and recommendations. No further comments were solicited, but some changes were received and, if possible, will be implemented in the new regulation.

For those who have been unable to see the proposed draft regulation or submit changes, you can expect the following changes. The new regulation—

—Provides guidance on implementing Internal Management Controls according to AR 11–2. Applicable aviation Control Review Checklists were added in appendix B.

—Revises chapter 3, section I, on the use of Army aircraft under Operational Support Airlift missions to reflect new management procedures.

—Changes the unit waiver authority for primary aircraft aircrew training program requirements to commanders of major Army commands (MACOMs); Commander, U.S. Army Reserve Command; and Chief, National Guard Bureau. Individual waiver authority also was changed to the first commander, 06 or above, in the individual's chain-of-command. (Chapter 4, Training)

—Changes the approval authority authorizing individuals not qualified to fly in an aircraft requiring two pilots from the MACOM (four-star level) to any MACOM commander with authority further delegated to the two-star level. (Chapter 4, Training)

—Lists the mandatory prerequisites for instructor pilots candidates before being sent to the U.S. Army Aviation Center. These include hour requirements and a letter from their unit commander. (Chapter 4, Training)

—Adds nonrated crewmember, nonrated crewmember instructor (flight engineer instructor), and nonrated crewmember standardization instructor requirements. (Chapter 4, Training)

—Adds a fixed-wing multiengine performance criteria/approval authority matrix for takeoff mission requirements. (Chapter 5, Flight Procedures and Rules)

—Updates verbiage to reflect the new Federal Aviation Regulation airspace reclassification. (Chapter 5, Flight Procedures and Rules)

—Updates the required equipment list for mission requirements and adds a night vision devices column. (Chapter 5, Flight Procedures and Rules)

—Revised the Safety of Flight message procedures and added a new section on Aviation Safety Action Messages. (Chapter 6)

—Adds a new chapter called the Army Flying Hour Program that sets forth the responsibilities, policies, and procedures for MACOM flying hour managers to follow. (Chapter 10)

—Revises the DA Form 5484-R, Mission Briefing Form, and adds instructions for filling out the new form. The form will be called the "Mission Schedule/Brief." (Appendix C)

As stated, if all goes well, the new AR 95–1 should be shipped to the field sometime in October of the new fiscal year. The DES, Fort Rucker, Ala., would like to thank everyone who made a contribution to the regulation. This article should give you some idea of the major changes that are to come.

If there are any questions on the new regulation before or after it is distributed, call DES at DSN 558–9761 or commercial 205–255–9761.

The Aviation Support Battalion—Fully Supporting Aviation Maneuver

Captain Michael C. McCurry
Combined Logistics Officer Advanced Course, 1994–002
Fort Lee, Virginia

The combination of world events, technological advancements, and doctrinal changes has greatly increased the need for a dedicated combat service support (CSS) unit for the division aviation brigade. The Army has begun correcting this shortcoming in the force structure by fielding the division aviation support battalion (DASB) in the heavy divisions. However, we must still address three drastic deficiencies. These include a support organization for aviation brigades assigned to light divisions, an ammunition transfer point (ATP), and medical support for all aviation brigades.

Various occurrences have contributed to increasing the need for dedicated logistical support. The end of the Cold War and resulting loss of a perceived threat, along with constrained budgets, have allowed Congress to call for defense cuts. These cuts, in both personnel and dollars, have led to doctrinal shifts for the Army. We have diminished our forward presence, and have become a force projection military arm. At the same time, as the primary land force of the world's only remaining superpower, our missions are expanding. Now, we must win our nation's wars, professionally execute peacekeeping/peacemaking operations, and provide disaster relief. Once again the nation is asking the military to do more with less.

As the Army searches for new ways to perform these widely varied missions, aviation will be more important than ever before. The mobility, flexibility, and firepower of our modern day aviation force make it ideally suited to perform many of these missions. It becomes increasingly difficult to conduct these activities with the unclear and fragmented aviation support structure existing today.

Currently, the aviation brigade in the light, airborne, and air assault divisions must obtain CSS from the main support battalion (MSB), the nearest forward support battalion (FSB), the aviation intermediate maintenance (AVIM) company/battalion, and various corps units. The aviation brigade commander can hold no single unit or person responsible for logistics support. In the force projection Army, the first divisions to arrive in a theater will be the light forces. Remembering that light, airborne, and air assault forces rely more heavily on aviation assets for mobility, and that most light aviation brigades have a comparable number of aircraft to heavy aviation brigades, the justification for more integrated support is evident. We must give the light aviation brigade a single logistics support unit with a professional aviation logistician in command. A support unit with a habitual relationship would provide the most continuous and responsive support. It is ironic that the most mobile maneuver force on the battlefield is the one without a dedicated support unit.

Recently, the answer from force structure writers has been the aviation support battalion (ASB). This concept purports to give the aviation brigade its own dedicated support battalion in the Division Support Command (DISCOM). The ASB is a very positive step, but falls short of releasing the aviation brigade from its ties to the division support area (DSA). It provides a single point of contact for logistics support, establishes the desired habitual relationship, and handles all maintenance and supplies for the aviation brigade. Unfortunately, it does not address two very important elements. First, there is no dedicated ATP to support the high levels of aviation class V consumption (estimated at 135 short tons per day). Second, the ASB has no medical support capability. These two glaring deficiencies keep the aviation brigade helplessly tied to the division rear for support.

The aviation brigade must still obtain class V (ground and air) from the division rear ATP, or from an ATP set up by one of the forward support battalions. This is not a good alternative, because the rear ATP frequently supports corps assets located in the division area, such as the corps artillery. This stems from the fact that the rear ATP is organic to the corps direct support ammunition company in the forward corps support battalion (CSB). The original ASB concept contained its own organic ATP. At that time, the maneuver oriented ammunition delivery system (MOADS) was in the midst of fielding, and the fourth divisional ATP moved to corps. Force structure updates need to place a fourth ATP back in the division and earmark it for the ASB.

The aviation brigade must still request medical support, including class VIII supply, from the MSB or an FSB. Chapter 9 of FM 63–20, Forward Support Battalion, states, "early medical intervention and sorting, and continuous evacuation of patients are necessary to minimize mortality and mobility. Forward medical support is critical to meet this need."

Medical support could be as simple as providing a medical platoon of approximately 40 combat medics. These soldiers would constitute an ambulance section, with two two–man teams with evacuation assets, positioned forward, and a treatment section located in the brigade rear. Aviation forces operate across the entire width and depth of the battlefield, illuminating the advantage of having these far forward medical teams, possibly located at forward arming and refueling points (FARPs). These teams would expedite handling of aircrew casualties. Although the aviation brigade does not always have its own sector, it is precisely this reason that justifies the ASB having at least a medical platoon.

Now is the time for aviators and logisticians to work together to correct these problems within the aviation support structure. With Aviation Branch implementing the aviation restructuring initiative (ARI), and the U.S. Army Combined Arms Support Command (CASCOM), Fort Lee, Va., consolidating logistics forces, it is a time of great change. As a part of this change, we must add an aviation support battalion to the light, airborne, and air assault divisions. In addition, we must augment all ASBs with an organic ATP and a medical unit. Only then will aviation commanders be able to operate within the intent of FM 100–5 and "thoroughly integrate the concept of logistical support with their concept of operations."

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Automatic Fishhook/Snare

Mr. Frank Heyl

Universal Training Systems
15200 S.W. Twin Fir Road
Lake Oswego, Oregon

Students and instructors at the Western Region Survival School, Lake Oswego, Oregon, have used this efficient device for 2 years. The findings are that it will perform according to the manufacturer's instructions and claims.

The automatic fishbook/snare is a passive but effective fish and game getter. It performs well on fish in open water and under the ice. It is also effective for the taking of small rodents and birds. Indicators are the device will be a useful tool for the survival arsenal.

One unit weighs about 1 ounce, takes the space of a standard business envelope, and is ideal for packing in one's survival vest and kits. Each reusable fishhook/snare comes with simple graphic setting instructions, fish bait, and retrieving line (see figure, page 53).

When properly set, the fishhook/snare is practically undetectable. This would be desirable for the evader in a survival situation.

My understanding is the device will be available through normal aviation life support equipment (ALSE) supply channels. The National Stock Number is 4220–01–379–5598.

BAIT HOOK FIRST

To set speedhook, bring spring arms together until you can put latch hook into BOTTOM of SPLIT RING. Latch hook. (See diagram A)

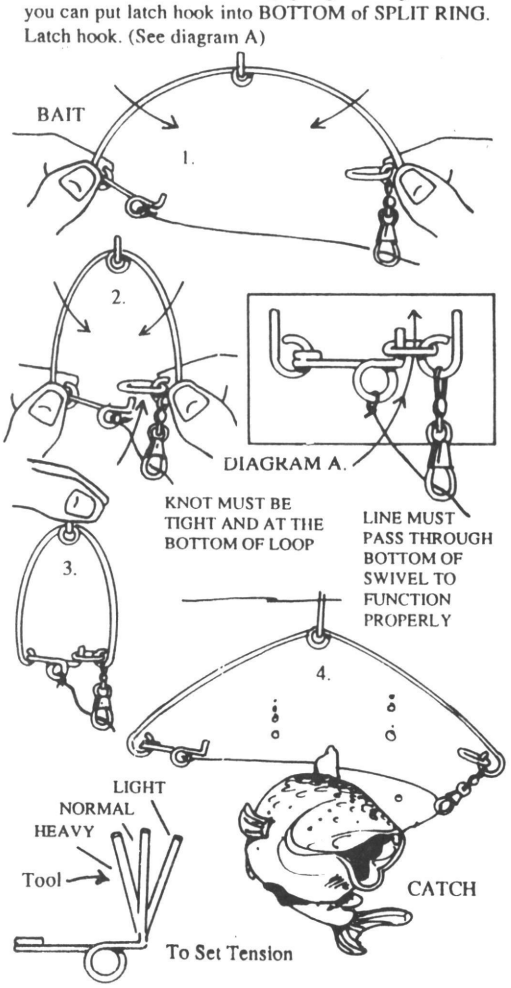
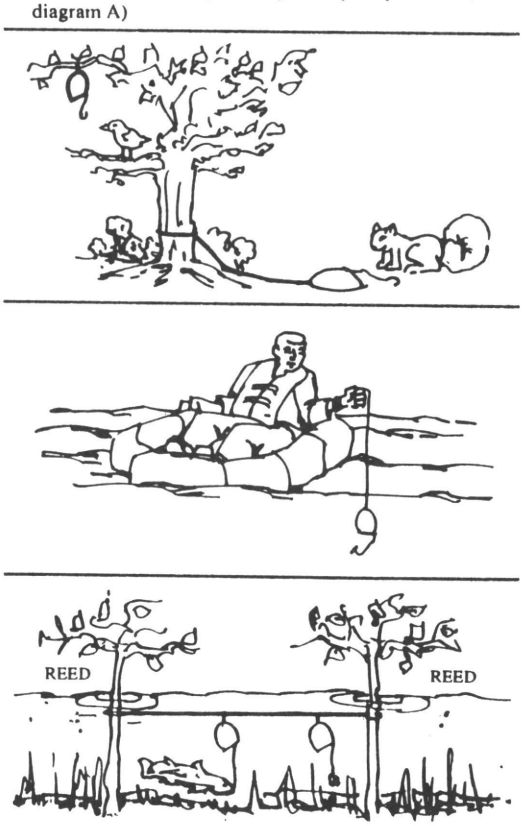
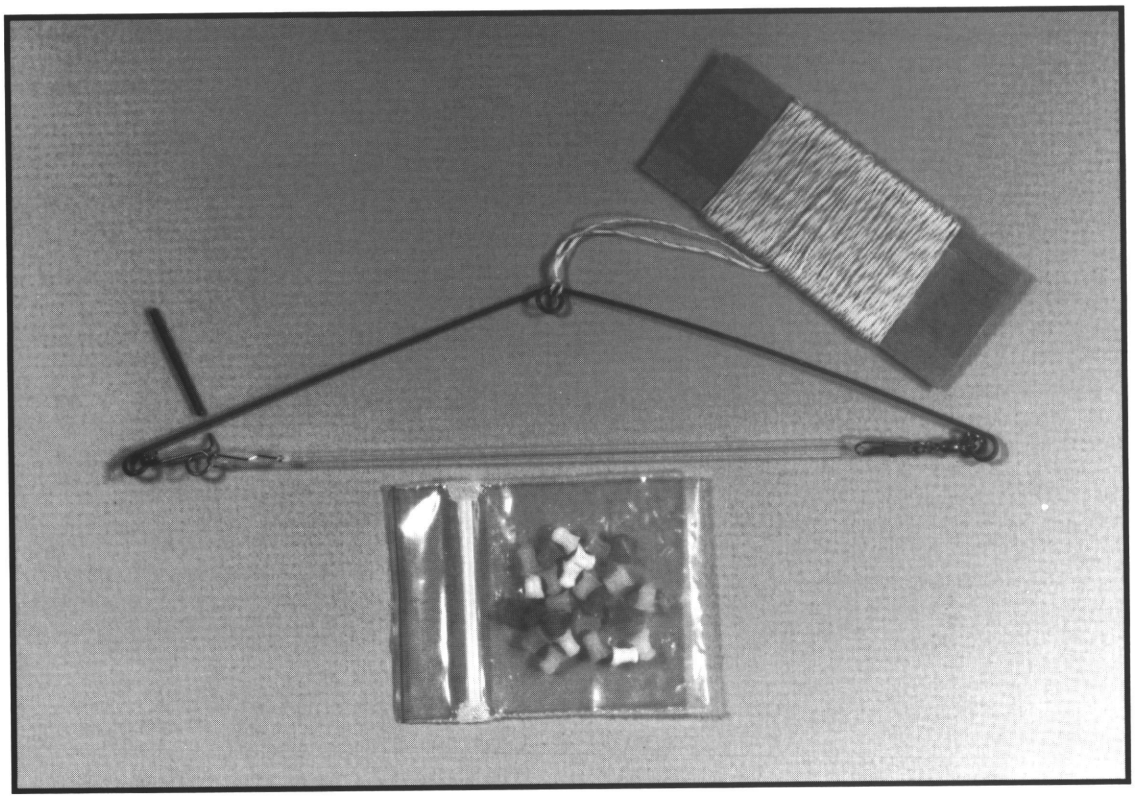


DIAGRAM B

To set tension you must bend latch hook inward to tighten, or outward to loosen. (see diagram B) Inward would be used in rushing water or when speedhook trips prematurely. Outward would be used for ice fishing or catching very small fish: (Outward requires less force to trip.) To replace line on latch, knot must be tied against latch loop and must go through safety snap swivel. (see diagram A)





1. When bait is not available, wrap a small piece of aluminum foil around the line, ahead of the hook. This rig has been used as an effective lure.

2. When a fish is caught, use the entrails, fin, pieces of skin and eyes of the fish for bait.

3. Look for aquatic life along the shore line. Frogs, crayfish and hellgrammites may be found under rocks in shallow water. All are known fish getters.

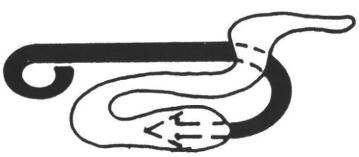
4. In dry grass areas look for grasshoppers. Hoppers are especially good fished close to the shore line.

5. Check along the waters edge for natural bait. Grasshoppers, worms or grubs are known fish getters. Minnows inhabit small pools. Block off their escape route with any material at hand. Capture can be made in shallow water by striking the surface of the water with a stout stick, stunning the minnows.

6. Fish close to the banks in the early morning and late afternoon, when fish are moving about looking for food. You can't fish too close to the shore.

7. When the weather warms, fish station themselves in deeper water. The fish might not be as keen to take food as in the morning or evening, however, they will respond if properly approached.

8. To keep an earthworm on, hook worm as shown, so that the hook won't catch on grass or branches. This hook up works well with the Speedhook system.



9. Night can be a productive time to fish. Some fish are nocturnal and do much of their feeding after dark.

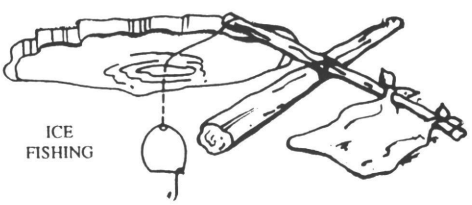
10. When conditions permit, a fire built close to the waters edge, after dark, has been known to attract some species of fish to a baited hook.

11. Although the lee side of the lake is more pleasant during the day, you will usually find more fish feeding on the windward side, where wave action stirs up morsels of food.

12. Fishing usually improves after a good rain. Rain washes food into streams and lakes causing the fish to feed.

13. When fish refuse to bite, wack the water once or twice with a stick. Sometimes this really works.

14. The Speedhook is especially adaptable to ice fishing. Tip-ups can be made from light-weight dead wood. The crosspiece on a tip-up that goes over the hole (the ice hole should be about 10 to 12 inches in diameter) should be long enough so that it can't be pulled into water by the fish. Lash a second stick at right angles to the hole stick and extending 4 to 5 inches beyond the lashing. To the long end of the stick fasten a small piece of cloth. Tie the line to the short end of the flag stick. Find the depth of the water with the line by letting it go to the bottom with the Speedhook or a weight. Fish about 6 to 12 inches from the bottom. When a fish is caught, the pull will raise the flag into the air signaling a fish is on the hook.



Aviation Digest Author Guide

Manuscripts

Aviation–related articles are restricted in length and should be original, unpublished manuscripts. We do not use articles that have been or will be published in other periodicals. A lead article should be no more than 8 to 12 doublespaced, typed pages; a feature article should be no more than 4 to 8 doublespaced pages; and departments should be about 2 to 5 pages—and no more than 6 doublespaced pages.

Manuscripts should be typed doublespaced or keyboarded in WordPerfect 5.2 (or earlier version) on a 3–1/2– or 5–1/4–inch diskette compatible with IBM personal computers (PCs); files in other standard word–processing/desktop publishing programs—such as MultiMate, Ami Pro, XYWrite, Microsoft Word for Windows, Ventura, or WordStar—are also acceptable. The ***Digest*** is produced using PageMaker 5.0.

Please send two original paper copies (black type on white paper preferred). Manuscripts should contain no classified material and should include an operations security review (according to Army Regulation (AR) 530–1, ***Operations Security (OPSEC))***, and clearance through the author's local chain of command and Public Affairs Office before submission.

If unable to provide a diskette, send the original printed output copy of all keyboard characters (letters, numbers, punctuations, and symbols), both upper and lower cases. These characters will be used for scanning purposes.

We reserve the right to edit your article to ensure that it conforms to our style and does not exceed a high–school graduate (twelfth–grade) reading level. If acronyms are used, please identify each as well as titles of regulations, books, and other publications.

Graphics

Graphics—photos, figures, or illustrations—enhance the reader's understanding and are important in clarifying most manuscripts. Accompanying captions should be typed on a separate sheet of paper, with captions to explain all graphics.

Submitted photographs should be sharp and in focus. Preferred photographs are 5–by–7–inch glossy black–and–white prints.

Figures and illustrations should be included as original paper copies, rather than as photocopies, with each graphic on a separate piece of paper. If graphics are computer generated, the relevant graphics files—on a 3–1/2– or 5–1/4–inch diskette, compatible with IBM PCs—should also accompany the original paper copies. The ***Digest*** can accept files in most standard graphics and spreadsheet program formats such as .pcx, .eps, TIFF, WordPerfect graphics, and MacPaint.

Subjects

Potential subjects for the near future are force structure—for example, problems/challenges associated with conversion of units from Army of Excellence (AOE) to the Army Restructure Initiative (ARI); doctrine and training, such as the impact of the drawdown of personnel and cuts in funding on the effectiveness of training of aviators and their careers; safety, such as the impact of fewer Directorate of Evaluation and Standardization (DES) visits to the field on safety/training; development of quality soldiers; aviation–related history; aircraft accident prevention; equipment and rescue/survival gear; air traffic control; maintenance; research and development; tactics; communications; aviation medicine; operations; military aviation personnel information; human factors engineering; and any other issues pertinent to the U.S. Army Aviation Branch.

Although we play up a central idea in each issue, we are not theme–restricted. We publish timely, thought–provoking, factual information on Army aviation plans and policies, regardless of their relevance to the central idea (theme).

Authors

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