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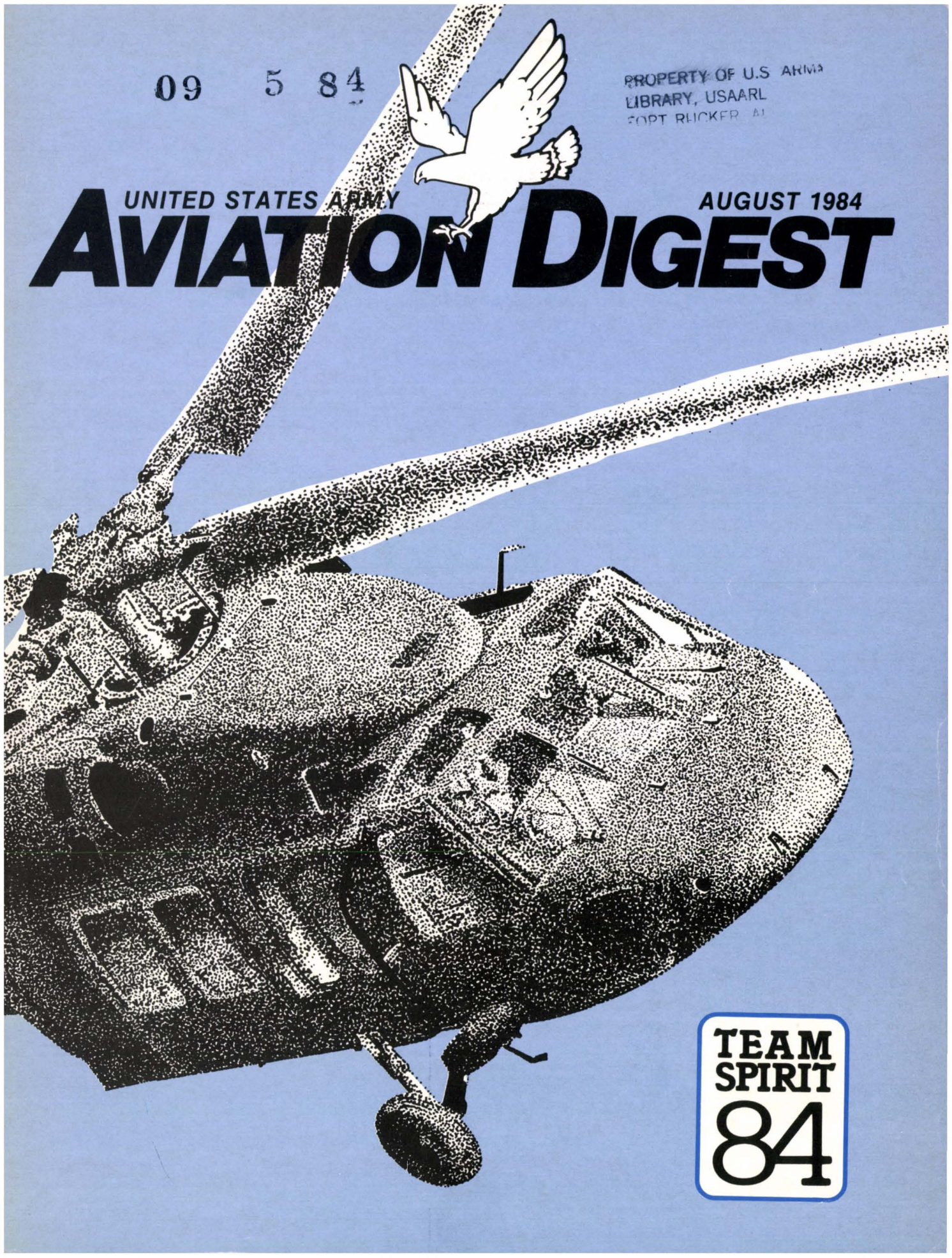

AUGUST 1984 • VOLUME 30 • NUMBER 8

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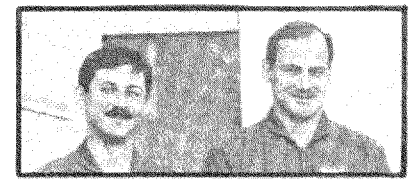
Cover: **The cover represents the Republic of Korea Team Spirit 84 exercises that were highlighted by merging U.S. Army and Republic of Korea Army Aviation assets into a single combined Aviation force. Learn how Army Aviation lived up to its finest role as a team player. Story on page 2. Cover illustration by Paul Fretts.**



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Command

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Richard K. Tierney
Editor

Honorable John O. Marsh Jr.
Secretary of the Army

The mission of the *U.S. Army Aviation Digest* (USPS 415-350) is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

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THIS MONTH it is my pleasure to welcome Brigadier General (P) Ellis D. Parker to the Army Aviation Center as the assistant commandant. BG (P) Parker comes from the 101st Airborne Division (Air Assault) where he was assistant division commander (operations). His Army Aviation experience includes an assignment at HQDA, ODCSOPS as the Army Aviation Officer. His experience will be invaluable as we go about the business of developing Aviation training and doctrine.

The August lead article begins a series that examines the Team Spirit 84 exercises conducted in the Republic of Korea. "Team Spirit 84: An Army Aviation Overview" by Major General Kenneth C. Leuer gives an interesting account of the efforts of the Republic of Korea/United States Combined Forces Command, and of the successful role Army Aviation played in these exercises.

"Profiles of Army Aviation in Korea" identifies the key Army Aviation personnel and organizations active in the Republic of Korea. Moreover, it discusses the tremendous weather and geographic challenges posed to aviators flying in Korea.

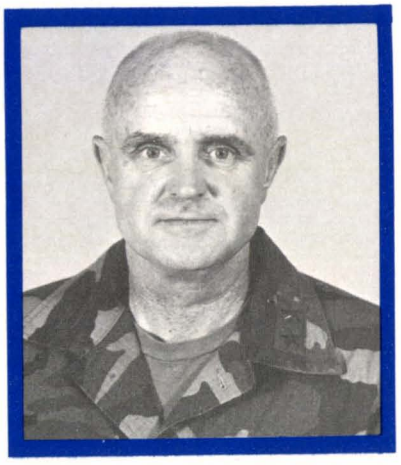
Also in this issue's Team Spirit 84 series is "View From the Eagle's Nest." Colonel William C. Page Jr. discusses the problems encountered and successes realized by the combined Aviation forces in the Republic of Korea exercise scenario.

The Directorate of Evaluation and Standardization Report To The Field looks at the importance of an effective crewrest standing operating procedure (SOP). This topic is so important that an example of how one Aviation unit gives more than just "lip service" to its crewrest program is given.

Another informative article is "Maintenance Test Flight Evaluators." The author, Captain Steven L. Ochsner, describes the critical role played by locally designated maintenance test flight evaluators in the Maintenance Test Flight Standardization Program. He further explains how the program is incorporated into the overall Aviation Standardization Program.

Major Dale Radtke, in "Threat: Big Sky—Little Helicopter?" presents a seemingly real-life, but fictitious scenario that places us in a possible situation in which Soviet artillery is present. The underlying theme is that pre-mission planning should take into consideration the possibility of encountering enemy artillery.

The brigade airspace management series concludes in this issue by examining several ways airspace management training can be accomplished for brigades and battalions. It also provides a checklist to assist in developing the airspace management section of the unit's SOP. Views such as these expressed in this series are strongly encouraged. It is from innovative ideas that workable policy and procedure can be derived.



Major General Bobby J. Maddox
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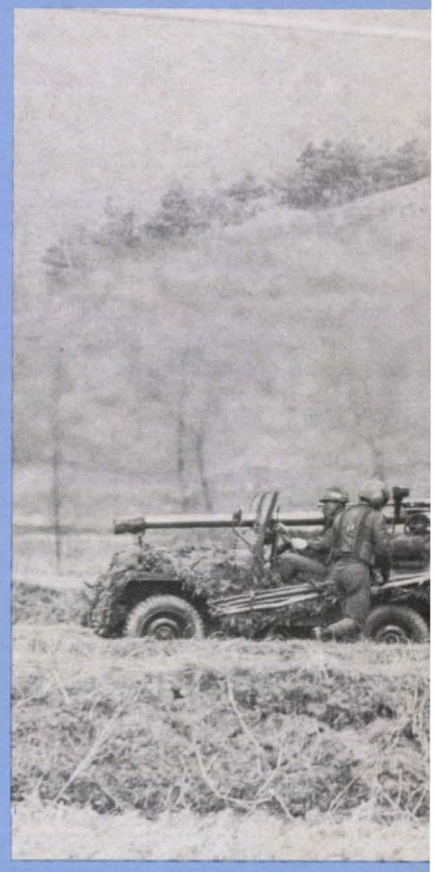
TEAM SPIRIT 84



AN ARMY AVIATION OVERVIEW

Major General Kenneth C. Leuer

ARMY AVIATION lived up to its finest role as a team player in this year's major field training exercise in the Republic of Korea (ROK). Its performance again demonstrated that Aviation is far beyond just a means of transportation. It is an essential combat multiplier, a role that in joint, combined exercise Team Spirit 84 was highlighted by merging U.S. Army and ROK Army Aviation assets into a single organization, the Combined Aviation Force (CAF). It was the second time that the ROK/U.S. Combined Forces Command (CFC), the headquarters responsible for planning the ROK's defense and for command and control of operational forces, had employed the CAF in an extended exercise scenario similar to the way it would operate in combat. The successful accomplishment of exercise missions proved the viability of this new organization. That is very significant because the CAF,

A jeep mounted 106 mm recoilless rifle rolls off a CH-47 during the regimental airlift on D + 6. The Combined Aviation Force that day carried out its largest airmobile* operation of Team Spirit 84, moving nearly 2,000 Blue Force soldiers and artillery in a cross-FLOT operation north of Wonju.

***Although the term "airmobile" is used in the Team Spirit 84 articles, the Army Aviation Branch has moved toward full use of the term "air assault." Because of the uniqueness of joint operations with Republic of Korea Army Aviation units this year, the term airmobile is retained.**

perhaps more than any other element in the CFC, represents the ideal of interoperability: the key to ROK/U.S. combat readiness.

The CAF, both in wartime and for exercises, amalgamates the majority of the assets of Eighth U.S. Army's 17th Aviation Group (Combat) and the ROK Army 1st Aviation Brigade. The concept was refined and probated in a series of short-term air assault exercises during a 6-month period preceding this year's Team Spirit field training exercise (FTX). The CAF was then fully employed in the FTX, which was undoubtedly the most rigorous trial possible, short of actual combat. It brought the forces together in field operations over an extended time and the CAF was employed as a key element of the AirLand Battle in Korea. This year's Team Spirit, held from 1 February to mid-April, was the largest joint, combined exercise in the free world. It also was designed as the most

realistic and sophisticated FTX ever staged by the CFC. There is good reason for this: a very real military threat from Communist North Korea.

The ROK has lived on the edge of tension for more than three decades. It went from hot war to today's hanging sword. The 1953 Armistice Agreement suspended the shooting, but there is still no final condition of peace. Nearly one million highly armed forces guard either side of a 151-mile long demilitarized zone (DMZ) that cuts the Korean peninsula at its waist. The DMZ has a history of violent acts perpetrated by North Korea. Tension there remains high, the fuse uncomfortably short. In 1983, North Korea escalated its infiltration efforts. Several members of its 100,000-strong commando forces—the largest in the world—tried to assassinate the ROK president.

The ROK fields strong forces to counter North Korean infiltration, but there is a weapons imbalance between the two sides. For more than a decade North Korea has spent an amount estimated to exceed 25 percent of its gross national product on its military. The United States remains the ROK's major ally. Their combined military strength has deterred the north from renewing all-out war, but has not ended its random and deliberate acts of violence that keep the situation on the peninsula highly volatile.

The American involvement in ROK security derives from moral as well as legal bases. Since 1954, the commitment has been institutionalized in a binational security treaty. Its foremost manifestation is the in-country presence of nearly 40,000 U.S. forces: about 28,000 ground, with nearly one-half in the fit-to-fight 2d Infantry Division; more than 10,000 Air Force, including two tactical fighter wings; and several hundred Navy and Marine personnel.

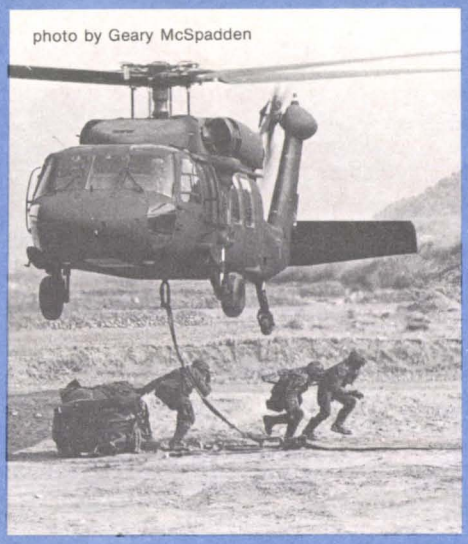
The shadow of potential violence that continues to lie across the Republic's otherwise bright horizon has propelled the relatively small American military presence increasingly into combined operations with the 600,000 strong ROK armed forces. This structure provides both greater overall strength and, from the United States standpoint, an economy of force that is important to American-ROK treaty responsibilities and to global peace and security.

Combined operations of a complexity far beyond those of the 1950 to 1953 war have become possible because of the tremendous development of the ROK military forces. They have become a highly professional and efficient force that is today sustained and supported almost entirely by the ROK's own means. Much credit is due to the vast economic growth that has made the ROK one of the world's great success stories. In turn, the ROK forces, with their American ally, have forged the protective shield that has made peaceful attainment of these national objectives possible.

Concepts for a combined force were studied more than a decade; however, it was not until 1978 that the two governments established a binational headquarters to "...deter hostile acts of external aggression against the Republic of Korea by a combined military effort of the United States of America and the Republic of Korea and, in the event deterrence fails, to defeat an external armed attack against the Republic." The CFC is the only combined American/allied command outside of NATO (North Atlantic Treaty Organization) and it is truly a combined organization.

To create an effective binational force is not a simple task. Almost by definition, it bespeaks a long-term relationship between the merging partners. That, of course, exists. It requires a lot of give-and-take and hard work by both sides, to make two into one. Additional time is needed just to look at the issues in two languages and through the prism of differing cultures. That means early identification of requirements and skillful followup planning, coordination and negotiations are needed. Perhaps the greatest lesson learned in the combined force is not to play trifling irritations with the same intensity as major crises. That ensures the probability that disagreements, when inevitably they do arise, will be on matters of substance and not result from misunderstandings or faulty assumptions.

photo by Geary McSpadden



Soldiers from 2d Infantry Division's A Company, 2d Supply and Transport Battalion evacuate the area under a 2d Aviation Battalion UH-60A Black Hawk after rigging it with supplies for a sling load movement.

Republic of Korea soldiers (inset) scurry from one of 18 UH-1 Hueys used during the training exercise. photo by SSG Cindi Small

Wave after wave of helicopters bring in a regiment of ROK soldiers north of Wonju. This was a primary LZ for the D + 6 regimental airmobile operation conducted by the Combined Aviation Force in support of Blue Force. The UH-1H played a key role in Team Spirit 84 and will remain a reliable workhorse in ROK Army Aviation long after Eighth Army Aviation has completed its swapout for the UH-60.

Language differences are overcome by cross-learning as well as by adoption of commonly understood terminology. Concept words such as "interoperability" and "force complementarity" become bridges. They help the CFC to avoid a "we-they" situation that would only highlight differences in structure and procedures which our mutual experience has proven not to be terminal obstacles.

American and Korean planners, who 6 years ago crossed the threshold into the combined arena, must have had tremendous faith in the dynamics of the structure they had built to preserve peace or to win at war. The negotiated concept was extensively tested during a major command post exercise (CPX) in the summer of 1978. With the lessons learned there and the gathering momentum and enthusiasm that the experience generated, both nations pushed ahead. They christened the CFC on 7 November 1978 and turned over to it the responsibility to pull together an effective ROK/U.S. team.

Both fighting forces were demonstrably good at that time. The real question was whether they could be really effective as a combined team. The best combat doctrine, the finest weapons systems, the most professional leadership still required proof on the training field where the forces would be brought together.

Team Spirit was already established as the major annual FTX for ROK and U.S. forces. Up to that time, the exercise had been fairly modest in size and scope. It was event oriented and lacked the realistic give and take of combat. Under the CFC's guidance, the exercise changed considerably. It became more challenging and thus a better barometer of how well the combined forces would do in reacting to a North Korean attack.

The exercise's increasing value in promoting combat readiness since 1978 is corroborating evidence that the ROK/U.S. alliance has greatly matured. The performance of all forces in Team Spirit 84 was, in the words of General Robert E. Sennewald, the former commander in chief, CFC, "...the culmination of ROK/U.S. cooperation over the nearly 6 years that the CFC has been in existence....We are really coming of age in a very rapid manner."

Team Spirit 84 was a major training plus, not so much for its impressive size—although more than 200,000 ROK and U.S. forces took part—but for the effective integration of the air and land battle. That is the combat doctrine on which the CFC rests its defense. Team Spirit 84 was really the first time that planners were able to integrate all major combat elements available in the ROK and U.S. camps and pull them together in large-scale field maneuvers. That had a synergistic effect in the terms of combat power.

From the tactical standpoint, it was by far the most sophisticated and realistic exercise in this annual series. Like its predecessors, the purpose of Team Spirit 84 was to train forces in how they might have to fight, should North Korea attack. It helped measure the attainment of essential goals, such as the ability to deploy and redeploy augmentation forces; how to validate doctrine, including air/ground operations; and how to exercise our capabilities in electronic warfare, unconventional warfare, tactical deception, basic tactical formations and interoperability of the U.S. and ROK forces.

The American security commitment in Northeast Asia is not limited to the forward deployed forces in Korea. In a contingency, many others could become involved, some very quickly. That aspect is played up in Team Spirit and should become even more important as the U.S. Army progresses with its readily deployable "light" divisions. One of our yearly exercise participants, the 7th Infantry Division from Ft. Ord, CA, is identified for reorganization as a "light" division. Hopefully, in some future Team Spirit, it will play the exercise in that mode.

Team Spirit 84 brought pieces and parts together from around the world. It involved major national agencies, such as the Military Transportation Management Command, and all services to carry out the types of activities that likely would be associated with

renewed conflict on the peninsula and with the U.S. response to honor its security commitment. Team Spirit was conducted under all conditions of weather, in daylight and darkness. The initial judgment is that we fully or substantially accomplished the major exercise goals. That enhances our deterrent against North Korea.

The tactical highlights of the exercise were varied: force interoperability, the combined Aviation operations across the forward line of own troops (FLOT), and the major headway in ground troop employment of our AirLand Battle doctrine, which previously had been practiced just in the CPX mode. There were a number of "firsts": Three Army corps fought the war. Two, including for the first time as an FTX participant, the U.S. I Corps from Ft. Lewis, WA, were on the Blue side; the other commanded the Orange forces. There were a total of nine ground divisions, including two from the ROK Ready Reserves that were activated for the exercise, and elements of the U.S. 2d, 7th and 25th Infantry Divisions. In addition, four division headquarters operated in the corps rear to set up second and third echelon images.

Team Spirit 84 also witnessed the greatest U.S. Marine Corps involvement ever. The numbers were greater, but even more significant was the linking of U.S. Marines under Army operational control. In the latter half of the exercise, a Marine light battalion was deployed under the CFC, further chopped to Blue Force and inserted into the battle by the CAF. The ground fighting elements demonstrated classic examples of interoperability because with two corps on the Blue side, the divisions were constantly being changed from one corps to the other as the tactical situation dictated. The divisions themselves were made up of a mix of ROK Army, U.S. Army, ROK Marines and U.S. Marines. The same was true for close air support, which was provided by the U.S. Air Force, ROK Air Force, U.S. Navy and U.S. Marine Corps.

We put considerable effort into planning how to transfer from the CFC level to the rifleman, the seaman, the Marine and the Air Force pilot, a valid

Field headquarters of ROK Army Aviation unit.

understanding and feeling for what was going on in the exercise. The participants were stimulated by the challenges, tactical and terrain, and the realism. The exercise was hinged to the ground war, and we injected realistic tactical maneuvers, including closing the distance between the opposing troops. The air support and everything else also were more realistically applied. Commanders at all levels did not just wait to be force fed. They looked for opportunities within their opertions to do things.

I believe that, in Team Spirit 84, we had everybody's head in the ballgame: They were thinking ahead and working with what they had. The result was a much different atmosphere, an enthusiasm far beyond any previous exercise experience. Even as the concluding battle rolled up route Orange with the Blue armor and infantry pressing the attack, troops on both sides continued to respond to the tactical situation with confidence, discipline and pride.

Team Spirit is a training event. There is never a victor between the Blue and Orange forces, which alternate in the offensive and defensive roles. But there are indeed winners: the participants, the CFC planners and, in the long run, the people of the Republic of Korea who see this annual exercise as a reality of the American commitment to meaningful peace and

A UH-60A Black Hawk (right) from the 2d Infantry Division's 2d Aviation Battalion lifts supplies for transport to a forward area during an aerial resupply training exercise.

A CH-47 (below) brings in fuel bladders to Task Force 52's base support "Goose Egg."

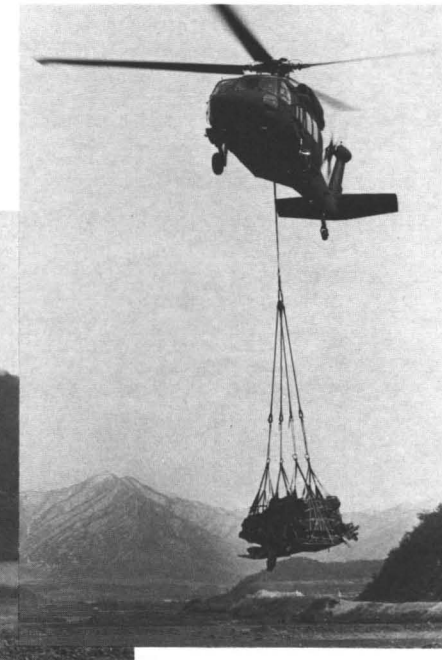


photo by Geary McSpadden

security on the peninsula and in Northeast Asia. In my opinion our forces were given the warmest welcome experienced by U.S. service people anywhere.

Team Spirit serves the interests of both nations. It is highly essential training that, in the long run, is far less expensive than the all-too-potential alternative: the possibility that North Korea could again unleash its powerful, offensively armed and forward positioned military forces for another attempt at unification of the peninsula by force. So we see Team Spirit as an essential element of the war deterrent. The exercise is a lesson also in how allies can grow beyond their different languages and cultures, their separate military structural and technological capabilities, and truly learn to interoperate toward achievement of common goals.

In that vein, nowhere among the Team Spirit 84 exercise forces were both the spirit and practical results of Korean/American teamwork better evidenced than in the Combined Aviation Force. One of the most important lessons demonstrated this year was that U.S./ROK Aviation under a single headquarters can support everyone's combat requirements much more efficiently and effectively than if they remain apart to support only their own national forces. There are strengths and weaknesses on both sides. With assets held separately, we'd be even further away from the ideal doctrinal situation of having a large lift capability at the army or corps level. Every military commander knows that a strategy whose objectives far exceed resources available to implement them is a recipe for defeat. In consideration of our respective strengths and limitations, we had to look for a way to maximize Aviation capabilities. The CAF, as a solution, is a good marriage. It is a formidable combat multiplier with the synergistic effect of providing a greater combined strength than just the sum of its American and Korean parts. In our present situation it is the perfect mix. Certainly, down the road, we should continue to increase our capabilities as the ROK Army adds more aircraft to its inventory and the U.S. Army completes the change to the UH-60 Black Hawk and improves attack assets.

The CAF means a lot to successful employment of AirLand Battle doctrine. It provides access to the four key parts of that doctrine: *initiative, depth, agility* and *synchronization.* Initially, the CAF gives us the agility to go somewhere very fast, as we saw in the many cross-FLOT air assaults in Team Spirit. Being agile and able to go deep very quickly gives us the capability to secure battle initiative. By doing this and synchronizing Aviation with ongoing ground and air operations, we can turn from the defense to capitalize on our initiative and go on the offense—which is where wars are won. We were able, in Team Spirit 84, to exercise exactly as we would have to fight—which is to maximize the key elements of the AirLand Battle along with the ground force effort and the air effort. Aviation's planning for this, the coordination, the skilled execution...all measured very high up the scale of professionalism.

American and Korean FTX units assigned to the CAF flew more hours in a shorter period of time than any Aviation unit of a similar size since the Vietnam War. The CAF alone flew more than 25 separate air assault missions to move more than 5,300 troops along with howitzers and other weapons and cargo. These flights were made in a crowded sky—over a cluttered battlefield, but the commitment to a meaningful exercise did not escape unscathed. The tragic crash of a U.S. Marine Corps CH-53 helicopter which occurred in foul weather during nighttime operations claimed the lives of 29 ROK and U.S. Marines. Except for this Team Spirit 84 was as safe as its eight predecessors.

The CAF as well as the U.S. 2d and 25th Infantry Division Aviation units came through the exercise without major incident. That is clear evidence of what the aviators of both the ROK and U.S. forces can do when provided with professional, safety-conscious,

A CH-47 brings in fuel bladders along the upper Han River near Chunchon.

quality leadership at all levels of the chain of command—from the individual aviator in charge of the aircraft he is flying all the way up to the CAF commander. In the training mode, of course, we do not take all of the risks that would be unavoidable in the heat of battle. But we do fly the same type of challenging missions. Realism is essential if the training is to have real value to our mission. It enforces the disciplines and procedures that ensure that the combined forces, including the ROK/U.S. CAF, will never have to enter the combat arena as an *ad hoc* fighting team.

ABOUT THE AUTHOR

Major General Kenneth C. Leuer, U.S. Army, is the assistant chief of staff C3, United Nations Command/ROK/U.S. Combined Forces Command; ACofS J3, U.S. Forces Korea; and ACofS G3, Eighth U.S. Army. A veteran Infantry officer, he has served a number of airborne and combat assignments in his nearly 28 years of active service. MG Leuer was assigned to Korea in August 1983.

Profile of Army Aviation in KOREA

U.S. ARMY Aviation in the Republic of Korea (ROK) includes both nondivisional and divisional assets: combat support, helicopter medical evacuation, intelligence collection, air traffic control and intermediate maintenance support.

The Man Upstairs

Colonel William C. Page Jr., is the senior U.S. Army Aviation officer in Korea. Which of several "hats" he wears depends not on Korea's highly variable weather or the many sports activities that the command offers, but on which function of Aviation business he is into at a particular moment. Page is the Eighth U.S. Army Aviation officer on the G3 staff, under the assistant chief of staff for operations and training, J3, U.S. Forces Korea. He is concurrently the Aviation officer on the staff of the ACofS C3, HQ, ROK/U.S. Combined Forces Command. This really is his "fighting cap," since nondivisional Aviation assets of both Eighth Army and the ROK Army are wedded under a single combined headquarters for the purpose of contingency operations or major field training exercises. The Combined Aviation Force is designed to provide enhanced command and control and optimum battlefield responsiveness.

Finally, Page also commands the 17th Aviation Group (Combat), which was activated on 1 December 1965 for the war in Vietnam. During that conflict, the "Freedom's Eagles," as the group was known, conducted operations in Military Region II—some 85,000 square kilometers, or about 45 percent of South Vietnam's total land area. Deactivated in March 1973, the group was reactivated on 1 June 1975. Freedom's Eagles were flying once again, this time in defense of the Republic of Korea.

The 17th Aviation Group (Combat) currently has two battalions assigned—the 19th Aviation Battalion, commanded by Lieutenant Colonel John M. Riggs and the 52d Aviation Battalion, commanded by LTC

Joshua L. Kiser. The 19th, a medium helicopter (CH-47) battalion, consists of two assault support companies and a headquarters detachment. The 52d is an assault helicopter battalion. It consists of two combat support Aviation companies, a large Army-level VIP (very important persons) support Aviation company (which has both fixed and rotary wing aircraft), and a headquarters detachment. The 17th Group headquarters is tactically deployable and includes an organic Pathfinder platoon of both U.S. and KATUSA (Korean Augmentation to the U.S. Army) soldiers.

Those Up North

To the north of Seoul, sitting astride both of the traditional invasion routes that lead to the ROK capital of Seoul is the U.S. 2d Infantry Division. Most of the division's forces are in reserve, blocking these corridors; however, a reinforced battalion provides year-around security and surveillance in the U.S. sector of the demilitarized zone (DMZ) between North and South Korea. This zone includes Main Supply Route #1 which crosses the Imjin River and, for all practical purposes, ends at the Joint Security Area, Panmunjom. The terrain in the American sector is primarily rolling hills and paddyland that opens up into a broad corridor, with few natural obstacles, well suited to high-speed armor or mechanized infantry approaches to Seoul. It is only 26 miles from the DMZ to Seoul by way of this approach—alternately called the Kaesong-Munsan or Western Corridor. To the east lies the division headquarters at Camp Casey, Tongduchon, along the Chorwon-Uijongbu Corridor, another wide approach that was in fact the major route of invasion by North Korea on 25 June 1950.

The division's Aviation assets consist of the 2d Aviation Battalion, commanded by LTC Floyd E. Edwards, who also is the division Aviation officer, and the 4th Squadron, 7th Cavalry—an air/ground cav unit—commanded by LTC Bruce P. Mauldin. The division, which received the S-model AH-1 Cobras last year, this year completed its UH-1/UH-60 swapout, just in time for Team Spirit 84. Its Aviation component is ready to live up to the Indianhead motto: "Fit to Fight."

More in the Family

There are other important members of the Aviation family. The 125th Air Traffic Control Battalion (Corps), commanded by LTC William F. Dismukes, is an element of the 1st Signal Brigade. The 377th Medical Company (Air Ambulance), commanded by Major Stanley C. Marcieski, is organic to the 18th Medical Command and relies on Eighth Army for Aviation standardization guidance. The 45th Transportation Company (AVIM), an Aviation intermediate maintenance unit, is commanded by MAJ Michael A. Carothers.

Army Aviation also plays an important role in intelligence collection in Korea. The 3d Military Intelligence (MI) Battalion of the 501st MI Group is an aerial exploitation battalion, commanded by LTC Lindon D. Jones. Its mission is to conduct signal and imagery intelligence, limited initial analysis, and processing and reporting in support of theater and national level consumers. Flying assets include OV-1D, RV-1D and RU-21H aircraft. The battalion's dove-tailed lineage reaches back to the Korean War when the 704th MI Detachment (Aerial Surveillance) was activated in 1950 and to the Vietnam War when the 146th ASA Company was activated in 1966. The two units, after a circuitous route that brought both to Korea, were combined on 15 December 1979 as a provisional aerial exploitation battalion. It was redesignated as the 3d MI Battalion on 16 June 1982, with the appropriate motto: "Winged Vigilance."

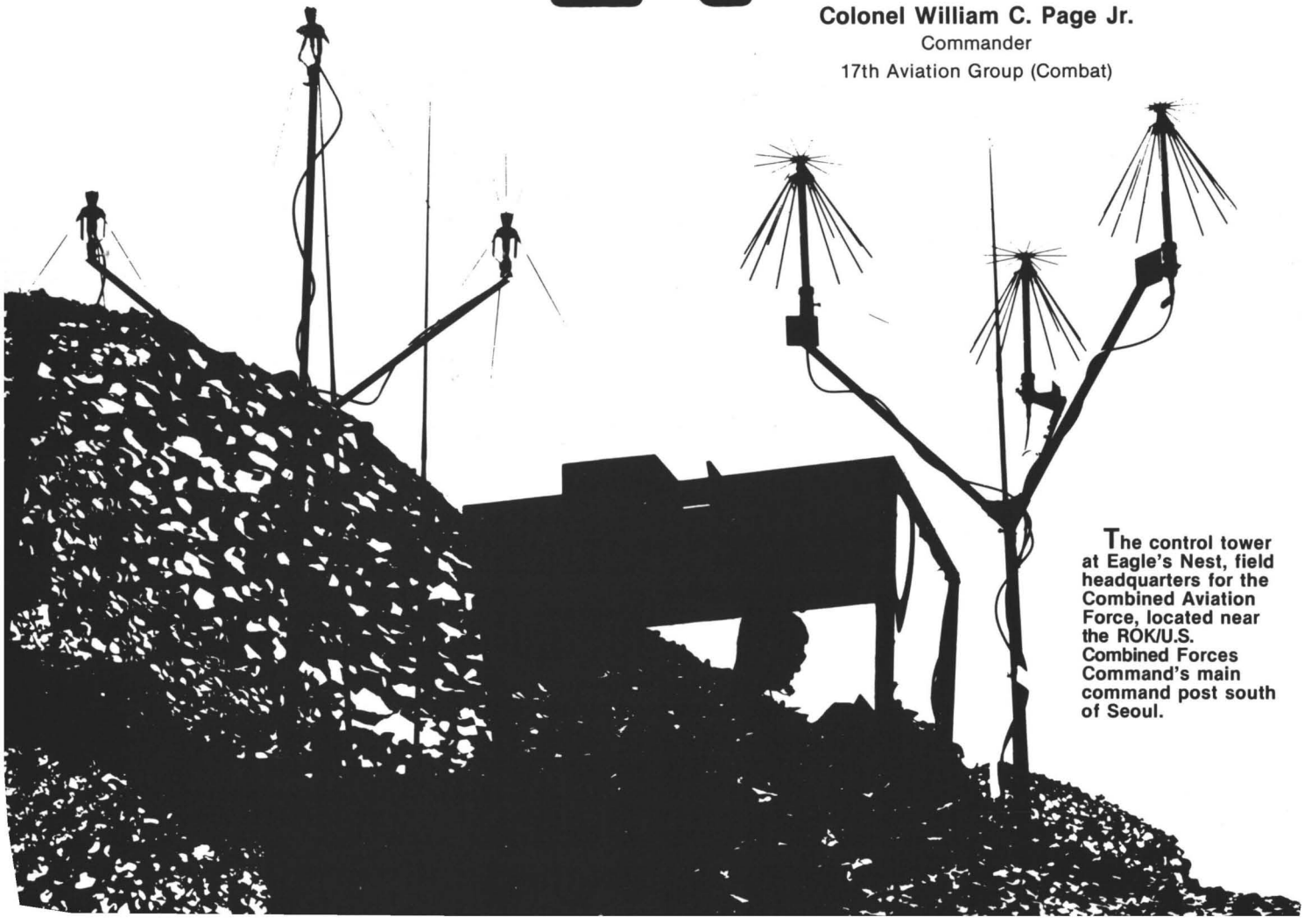
A Tremendous Challenge

Flying in Korea is a tremendous challenge. The peninsula's sharply defined four seasons nevertheless offer many weather variations, such as the winds and wet of the monsoon; the dust, including frequent contributions carried by the yellow winds from the Gobi Desert across the West Sea; cold, snow and ice in the winter; and extremes of heat in the summer. The northern areas of the Republic of Korea are cluttered with wind-swept mountain peaks and crowded with training ranges to be avoided by the "dirt-to-600" flyers when in use. There are other no-fly areas around the heart of the nation's cities, particularly the capital of Seoul. But, above all, there is the DMZ—some 151 miles of no-man's land across the peninsula and a trap for the unwary. The rules are tight for every flight near or into this restricted zone, for the result of a mistake at the DMZ can be highly hazardous to aircrew health. Hidden North Korean gunners, inside and outside the zone, are prone to shoot first and never even bother to ask questions of straying aircraft.

TEAM SPIRIT 84

View from the Eagle's Nest

Colonel William C. Page Jr.
Commander
17th Aviation Group (Combat)



The control tower at Eagle's Nest, field headquarters for the Combined Aviation Force, located near the ROK/U.S. Combined Forces Command's main command post south of Seoul.

FOR YEARS, the shortage of Aviation resources has severely limited the magnitude and scope of tactical Aviation planning and operations in Korea. In the past, the Republic of Korea Army (ROKA) possessed a very limited Aviation capability of its own and the U.S. Army was not much better off. However, over the past decade things progressively changed. Even though U.S. resources remained essentially stable, the ROKA developed considerable Aviation combat power through increased numbers of UH-1H equipped lift units and 500MD Hughes helicopter scout/attack units. But still, until recently, something was missing. Even with the increases in the number of tactical helicopters, each of the armies consistently found themselves short of the necessary resources required for major Aviation-related operations. Beginning as early as 1979, attempts to muster sufficient resources through combined operations had been tried but with varying degrees of success. The problems always seemed to be the same: Unity of command, responsiveness, logistics and training; *good, consistent, combined training!*

In 1983, Eighth U.S. Army's 17th Aviation Group (Combat), "FREEDOM'S EAGLES," in conjunction with the 1st ROKA Aviation Brigade, began an extensive refinement of combined air assault and airmobile exercises to overcome this problem. Though combined operations had been conducted in the past, no set procedures for consistent training events had been established. In September 1983, a systematic procedure for ensuring that virtually all nondivisional airmobile training was conducted in a combined mode was introduced. At first, one, and sometimes two, such missions were conducted each month. But by December 1983, all of the scheduled nondivisional airmobile training exercises were a combination of ROK and U.S. Aviation elements. Some missions went very well; others reflected the difficulties involved in combining operations of helicopter units with different assets and crews with different languages. The overall improvement, however, held great promise for the future.

This exercise had one goal in mind and that was to refine procedures for full development of a Combined Aviation Force (CAF); a Combined Aviation Force of sufficient size to provide the commander in chief, ROK/U.S. Combined Forces Command (CFC), with enough resources to conduct meaningful airmobile tactical operations under the AirLand Battle doctrine. It was recognized that a renewal of war by North Korea would force the CFC to fight on a come-as-you-are basis. Assigned units would have to fight the critical early battles.

CFC required an Aviation force that would support normal peacetime operations yet could be easily transitioned, when necessary, to a war footing. Past practice was not a useful guide in this case, except to emphasize that the urgency of the situation required a solution more suited to the times. The existing system spread the nondivisional resources too thin by attempting to parcel a piece of the Aviation pie to each friendly unit guarding the demilitarized zone. That was not effective force management and, in a future war arena, probably would mean a very short life for such scattered Aviation assets. What was needed was a pile big enough to be both effective and survivable. With the limited assets, the only feasible solution was to bring together a considerable slice of nondivisional Aviation from both the ROK and U.S. Armies to form a combined unit with the capability to support CFC missions.

The Combined Aviation Force Concept

The 17th Aviation Group (Combat) is organized with a medium transport helicopter battalion, consisting of two CH-47 Chinook companies, an assault helicopter battalion, with two UH-60 Black Hawk companies, and an Army support Aviation company. Neither battalion has organic attack helicopters, and no scout or observation aircraft.

On the other hand, ROKA Aviation has a considerable number of attack helicopters—mostly the Hughes 500MD. As previously mentioned, they also have a strong assault helicopter lift capability. These assets are at least equal to the 17th Aviation Group's and will increase as ROKA's lift units are "rounded out" through purchase of some of the UH-1s made excess to U.S. Army requirements by the change to UH-60s. As can be seen, ROKA Aviation has some real strengths, but also shortfalls. They have nothing like the Chinook or Black Hawk that will haul any kind of heavy load. Also, logistics at the organizational level is limited, as are staffing, communications, and command and control assets. The 17th Aviation Group on the other hand, has a fair amount of organic logistics and command and control (C^2) staffing, plus the means to communicate effectively. An eventual "marriage" was inevitable.

To form this marriage, we took the 17th Aviation Group and elements of the 1st ROK Army Aviation Brigade, laid them one on top of the other, and came up with a total that is greater than just the sum of its Korean and American parts. Per agreement with the ROK Army—at a predesignated, responsive time during contingency operations and for all field training exercises—a ROKA Aviation group headquarters is linked with the 17th

Aviation Group headquarters to form Headquarters, Combined Aviation Force. It is a cameo, a miniature of HQ, CFC, with alternate ROK and U.S. staffing. Preidentified Aviation elements of both the U.S. and ROK Armies automatically go into an asset bag for mission employment by the CAF (see figure below). At all other times—when there is no combined training, or a serious contingency situation—the helicopter assets remain with their respective U.S. and ROK Army organizations. In peacetime, the CAF then is an ark divested of animals, although command and control personnel who constitute the CAF headquarters, myself included, seldom go through a day without thought, and often action, on combined force activities.

Team Spirit 84

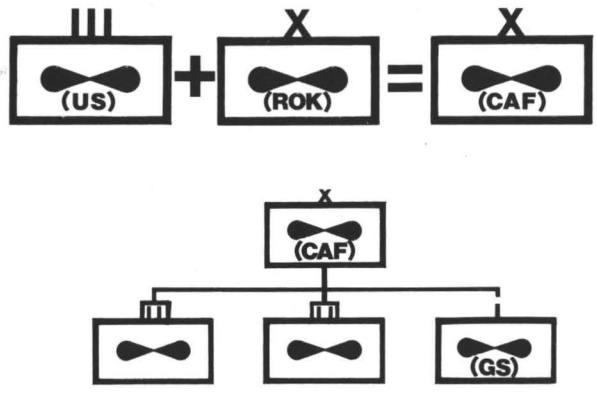
The essential key that makes Aviation in its combined mode operative is the organization of battalion-size task forces to which the U.S. and ROK Aviation units that come under the CAF's operational control are further task-organized. For Team Spirit 84, the 17th Group's 19th Aviation Battalion (Combat) was reorganized as Task Force (TF) 19 and the 52d Aviation Battalion (Combat) became Task Force 52. Both were base task organized, with TF 52 having a slightly larger organization. TF 52 was given a Black Hawk company (which actually flew UH-1 Hueys, as the transition to UH-60s was ongoing during the field training exercise (FTX)); a ROKA 500MD attack/scout unit; a CH-47 company; and a ROKA UH-1H lift unit. TF 19 got a Black Hawk company, a Chinook company that has some special operations CH-47s and a ROKA 500MD unit. A UH-1H platoon from the 55th Aviation Company (Army) remained under the CAF headquarters control to support its C^2 requirements and those of the commander in chief, CFC. (These were not the total assets of the now established CAF, but were a strong representative slice.)

On 15 March 1984, that's the way the CAF went to the field for the maneuver phase of Team Spirit 84. In the combined mode, we had put together an attack capability as well as the assault helicopter assets to pick up about 300 plus soldiers in one airlift, plus move artillery, cargo, etc., by CH-47 helicopters. In all, for the exercise, we brought together a flying force of 15 UH-60 Black Hawks, 33 UH-1H Hueys, 31 CH-47 Chinooks and 24 500MDs.

Admittedly, the CAF was largely still experimental, because ROK Army Aviation and the 17th Aviation Group had never before worked together over an extended period of time in this degree of detail. Not one of the many interoperability exercises we had flown since Team Spirit 83 had lasted longer than a day or two. On 15 March, the factor most at stake for the U.S./ROK CAF was confidence: Confidence in each other and confidence in the carefully planned and negotiated, yet basically untested, combined command and control structure that we had cobbled together. As with any training exercise, Team Spirit 84 was a learning experience. However, in the case of the CAF, it was also a proving experience.

We are all very pleased that observers at every level all concurred that the activities and training of the Combined Aviation Force were a tremendous success. The ROKA

Combined Aviation Force Assets



For flexibility, camouflaged 5,000-gallon tankers and FARE systems were established at two locations inside the maneuver area during Team Spirit 84.

Gun jeeps (left) for the Blue Force regimental size airmobile on D+6 are brought in by a CH-47.

and U.S. Aviation units operated as a single unit, without accident or incident, for more than 2 weeks to support this major training exercise—the largest in the free world—and they did so quite impressively: The CAF was indeed a formidable combat multiplier.

In the exercise, the CAF supported both the Blue and Orange Forces, the opposing forces for the maneuver, based on missions assigned by the ROK/U.S. CFC. In effect, CFC was both the notional Army headquarters for each force as well as the senior command and control headquarters. The respective ground commanders forwarded Aviation mission requests to the CFC to be approved and tasked to the CAF. This was not unrealistic since, in Team Spirit, there are neither friendly forces nor enemy. As a CFC asset, the CAF could be prioritized to support either of the two forces—just as it would support CFC's multiple corps on line in wartime.

In order to have the flexibility to support both forces, the CAF's two base task organizations were tactically located in two, widely separated, 4x7 kilometer "Goose Eggs" just outside the maneuver area. Since the CAF was taking missions from both Orange and Blue Forces, these "neutral" resources were kept out of the maneuver box to avoid causing confusion in the FTX area. The organizational support activities, in general, remained in place in the Goose Eggs and every unit that was "base task-organized" to the two task forces remained with its respective organization for such activities as maintenance, messing, and administration.

Typical of the support problems that had to be solved was petroleum, oils and lubricants (POL) supply. The ROK Army functions on an area support basis while the U.S. Army distributes POL down to the unit level. Thus, none of the ROKA Aviation units had very much mobile organic POL capability whereas the U.S. units all had their own. To overcome this problem, virtually all of the POL assets of the task forces were consolidated under the control of the Task Force S4 for employment: Minimum POL resources were left with the individual units. This accomplished two objectives: First, it overcame the shortage of organic resources in the ROKA units, and second, it placed the tremendous logistic responsibility of POL supply on the shoulders of the task force commander, thereby leaving the unit commanders free to worry primarily about the tactical execution of our missions. Each task force established a major POL supply point in its base support area consisting of 3,000 gallon bladders, 5,000 gallon tankers and a supply of 500 gallon "blivets." From this consolidated pool, the task force commanders were able to rapidly relocate large quantities of POL (usually via CH-47) to support the major airmobile activities.

However, the execution of the tactical missions was handled differently. "Mission task organized" fighting resources, basically aircraft and crews, were retask-organized as necessary to accomplish missions in the areas called for by the maneuver commander. As an example, after the maneuver phase of the Team Spirit 84 kicked off on 20 March (D-Day) with Orange Force moving in mass onto the Blue's turf, the first cross-forward line of own troops (FLOT) air assault was scheduled for D+1 in support of the invaders. The CAF assigned this mission to TF 52 which, in addition to its base organization, gained operational control (OPCON) of a ROKA lift unit and the fighting elements of the U.S. air assault company from TF 19.

As the TF 52 commander relocated his "Jump tactical operations center (TOC)" forward to the supported unit's location, the Task Force S4 began relocating the

necessary POL resources to support the mission. In the meantime, the Aviation unit commanders repositioned their flying assets into predetermined laager areas in the vicinity of the infantry units to be used in the air assault, and bedded them down for the evening. The decision to move to the laager the evening before was a good one, for the many flying hazards in Korea include rapid changes in the weather; heavy snow fell the night of 20 March. However, by 0600, on the morning of D+1, the weather had improved to VFR (visual flight rules) and the first of many cross-FLOT air assaults was underway.

Even as TF 52 was carrying out its morning lift on 21 March, TF 19 was completing the planning for a second cross-FLOT air assault that afternoon. The TF 19 commander used his remaining CH-47s from the U.S. assault support helicopter company in his base organization to move the necessary support requirements for the afternoon mission. As soon as the morning lift was completed by TF 52, the majority of the CAF Aviation assets were shifted to OPCON of TF 19. The ROKA and U.S. units that were released by TF 52, including most of its assigned lift capability, reported to a secure laager site for briefings and final planning for TF 19's afternoon air assault. Meanwhile, TF 52 began to plan for yet another air assault for the morning of D+2.

At the same time, the attack units of the task forces were normally placed OPCON to a ground commander for a given period of time to conduct combat operations. As with the air assault missions, the task force commanders were charged with supporting their attack units by establishing forward arming and refueling points well forward in the battle area.

That's the way the first 4 days of Team Spirit 84 flew by. First one, then the other, task force headquarters planned and conducted battalion-level air assaults. The assault and heavylift units were moved back and forth from one task force to the other, with their crews living in the field, sleeping near or in their aircraft and eating MREs (meals, ready to eat), and the 500MD units were doing the same. Additionally, at night, specially selected and trained elements from TF 19 supported the Combined Unconventional Warfare Task Force.

This type of mission task-organizing enabled us to maximize flying resources, and the flying elements were going all of the time. At the conclusion of one mission, a new task organization went into effect which would take in virtually all of the assets used on the other task force's lift. The released units went to predesignated laager sites that the "hot" task force commander had established, got the mission brief, ate, pulled the necessary aircraft maintenance, got in some sleep...and flew the next mission. The planning bounced back and forth between the two task forces for command and control of the flying resources, and the fighting elements followed on cue. As far as I know, this is unique. I don't know of anyone else in Army Aviation who plays it this way. As you can imagine, it stresses the flight crews to the maximum and to monitor fatigue levels was the constant concern and responsibility of the commanders and aviators alike.

Regardless of the task organization, should major maintenance be required, the helicopter would go back to its base organization. Maintenance contact teams were, of course, used but the vast majority of the Aviation unit level maintenance support was accomplished right in the Task Force Goose Egg. In the combined mode, U.S. maintenance personnel often assist the ROKA soldiers in working on their aircraft, mainly from a technical inspector (TI) standpoint. Like us, ROKA Aviation requires a TI after they fix an aircraft and, through mutual agreement, an American TI can sign off work for ROKA maintenance personnel and vice versa. During Team Spirit 84, the cooperation and coordination between the ROK and U.S. Aviation units were super. As a matter of fact, it was the best I have ever observed.

For more flexibility, we put a 5,000-gallon tanker and a forward area refueling equipment (FARE) system at two strategic areas within the maneuver zone. These "service stations" gave us a tremendous increase in flexibility. If an aviator ran short of fuel, he could hot refuel 100 gallons or so, in order to get safely back to his main POL source. It was a single ship operation, not support for major employments, although we did use them on occasion to refuel the independently operating ROKA 500MDs because of their relatively small fuel requirement.

So that was how we set up, outside as well as inside, the maneuver box. The CAF task organization was practical and mission responsive. With the exception of a couple of weather cancellations, we flew every mission that was deemed flyable by our tasking headquarters, CFC. The determination of priorities on who would be supported was CFC's prerogative, just as it would be in a real contingency. That will never be an easy decision and the combined structure undoubtedly makes it even tougher. Every unit online has a legitimate call for Aviation support. Making the decision during the exercise, however, was facilitated by the structure of Team Spirit 84. Because the CAF supported both Blue and Orange Forces, we established priorities that maximized Army Aviation in its finest roles to get the maximum training benefit. Attack assets were prioritized to the defending force, because that is where attack aircraft are most efficient and best employed. We gave most of the assault helicopters (airmobility) to the force on the offense. Thus, when the Orange Force kicked off the FTX in an offensive role, it had top priority for air assault units, while Blue had priority on most attack assets. The priorities were switched as the battle changed around and Blue became the attacker, Orange the defender.

That came on D + 4 which proved a welcome day of rest for the CAF's fighting elements. The Blue Corps had stalled the Orange attack, but had not yet mounted its own offensive and no major air assaults were conducted. It was, however, only another busy day of planning for the command and control elements. On D + 5, Blue Force, which included I Corps (U.S.), counterattacked. Plans had already been made by both TFs to conduct battalion-level cross-FLOT missions in support of the Blue Force on D + 5 and D + 6. The majority of the attack units (less a few scouts to support air assaults) were placed OPCON to Orange Force as it fell back, and the air assault units began operating with the advancing Blue Force.

The morning mission on D + 5 was a TF 52-supported air assault by the U.S. Marine Corps' Air Contingency Force—a "light" (readily deployable) battalion that is based with the III Marine Amphibious Force on Okinawa. Nearly 700 Marines were deployed by a U.S. Air National Guard unit into K-16, near Seoul, receipted for and certified combat ready by the CFC, placed OPCON to I Corps and, further, chopped to the U.S. 2d Infantry Division. After insertion by a pre-dawn air assault through the mountains into Orange Force's rear area, the Marines took up blocking positions to protect the Blue's ground forces as they pushed across the Namhan-Gang (South Han River) to open the counteroffensive.

High winds, and the resulting turbulence in the mountains, cancelled TF 19's afternoon mission; however, the CAF was already putting together the largest air assault of the exercise, a regimental cross-FLOT mission scheduled for D + 6.

Operation Big Lift

On D + 4, the CAF had received a warning order from CFC directing us to be prepared to support Blue Force with every available asset on Monday, 26 March (D + 6). If possi-

Wire is an always present hazard to pilots during Team Spirit and other exercises for the Combined Aviation Force. The Black Hawks (above) dropped off Blue Force troops during the D + 6 regimental airmobile as Orange defenders move up to try to block the cross-FLOT operation.

photo by Mark LaMarche

A UH-60A Black Hawk helicopter (right) slings two 3,500 pound fuel bladders en route to a forward area refueling site. The Black Hawk is capable of lifting an external load of 8,000 pounds.

Black Hawks at rest. The UH-1/UH-60 swapout in Korea will be completed this year when the 377th Medical Company (Air Ambulance) receives its new birds. All elements of the 17th Aviation Group (Combat) and the 2d Infantry Division's Aviation battalion and air cavalry have completed the transition—most in time for the Black Hawk to participate in Team Spirit 84.

ble, Blue Force desired to conduct a major air assault, deep into the Orange Force rear, to seal off the major avenue of retreat through the center of the exercise area. In brief, the mission was to insert a ROKA regimental headquarters and its three infantry battalions, including mortars and jeep-mounted 106 mm recoilless rifles, plus a battalion of 105 mm field artillery, into multiple landing zones in the mountains northwest of Wonju. In all, nearly 2,000 ROK soldiers would be lifted by the Combined Aviation Force. The CAF commander was designated the air mission commander for this Blue Force lift because it was obviously going to take everything the CAF had to pull it off. The TF 52 commander was given responsibility for the assault itself, while TF 19 provided the logistical and pickup zone support.

The CAF used three Jump TOCs during Team Spirit 84, one for the CAF headquarters and one for each TF headquarters. Throughout Team Spirit 84, the Jump TOCs were normally displaced to the supported unit's headquarters to ensure close coordination and mission planning. Accordingly, just as soon as the regimental mission was received, one of the task force "jumps" was immediately moved to Headquarters, I Corps (U.S.), the requesting unit. By the late evening hours of D + 5, both task force Jump TOCs had been shifted to I Corps to assist with the planning, and all of the mission helicopters and logistic support had been located in laager sites in preparation for the lift.

The I Corps lift was very logistic intensive and required distribution of some 60,000 gallons of JP-4 to three refueling sites. Some of the fuel was delivered by U.S. Air Force C-130s to a nearby assault airstrip on a sandy expanse along the Namhan-Gang that had been constructed for Team Spirit 84 by U.S. Army engineers. This fuel was pumped directly into 500-gallon blivets and moved to FARE sites by CH-47.

On this particular mission, all of the bases were touched and planning accomplished. Fire support for SEAD (suppression of enemy air defense) was planned by the ground commander in great detail. Also, CFC's Air Component Command approved sufficient close air support by A-10 Thunderbolt II aircraft and ROK Air Force F-5s to support the operation from beginning to end. ROKA 500MD helicopters were employed by the CAF for both scout and attack purposes,

screening the area around the LZS (landing zones) against enemy movement. Even EW (electronic warfare) was planned and allocated to support the mission.

The Air Movement Table was organized to take maximum advantage of the UH-60's greater speed and maneuverability compared to the UH-1H. Also, since the operation would be crossing into Orange Force's territory, six different entry and exit routes were selected through the mountains to ensure that the FLOT was never crossed twice in the same place. All in all, the operation went off without a hitch. This success can primarily be attributed to the close coordination that existed between the supported ground force and the Aviation elements. Time and time again, the value of the Aviation commander jumping to the ground commander's location was verified. To the astonishment of everyone, tactical surprise was attained despite having an entire bus load of Korean and international news media representatives—radio, television, newspaper and magazines—cover the lift at touchdown. The media were transported well in advance in an unmarked civilian bus and voluntarily stayed out of sight under trees until the first wave of UH-60s snaked in through a narrow valley at the initial LZ.

The regimental lift in support of I Corps (U.S.) proved to be the last major tactical mission of the CAF during Team Spirit 84. Of course, much work remained to recover all of the people and equipment that were scattered all over the 150 by 80 km Team Spirit maneuver area. But, in comparison to the previous 7 days of activity, this was a piece of cake.

Summary

That was our Team Spirit 84 and, on every count, the Aviation role was credited a huge success. The first success is the confidence factor that I mentioned. It was important that ground commanders see that U.S./ROK Aviation not only could operate as a team but, in the combined mode, could better support everyone than was possible when they flew piecemeal in their own separate ways.

The bottom line is that the CAF enables the CINC, CFC, to use Army Aviation in sufficient numbers to influence the entire battle area as needed. That is what Army Aviation today must be all about—to influence the battle as a combat multiplier. Team Spirit 84 demonstrated that in Korea we can do that best in a combined mode. However, we are still looking at the problems, and we will continue to find the solutions until we can be as successful in combat as we know we are in training.

Take maintenance, for example. The ROKA has its own logistic system, and its maintenance system for Aviation differs from ours. Its rations and supply systems also differ from the U.S. Army's approach. That's understandable because it is their country and that is where they plan to fight their war. We, of course, use the U.S. Army doctrinal approach which is designed to give us the capability to fight anywhere, anytime. It's more economical for the ROKA to go the way it has—area support—but it is almost impossible for us to do that because of the way we are structured.

What we're doing in the CAF is to work very hard to learn both systems, so that we will have a true Combined Aviation Force that can use whichever system is at hand to get us the day's bullets, beans and gas. Hopefully, by the time we finish wrestling with it, we'll have the best of both worlds.

There is no question in anyone's mind here in Korea that Army Aviation support would be highly effective in actual combat. We could, of course, do it even better with more assets: Attack units to put more heat on the major armor threat, and more air assault assets...Black Hawks that could support a full regimental size lift without having to cross the enemy's territory two or three times.

Those feasibilites remain to be seen as U.S. Army doctrine develops and the new force structures are approved. Certainly, the emphasis on the AirLand Battle bodes well for Aviation, which under that doctrine carries a tremendous share of responsibility for the success or failure of the ground commander's tactical plans.

One last point that was proven, again and again, during Team Spirit 84: Our new Army Aviation Branch must remain an integral part of the ground maneuver element. No one questions the fact that the branch gives us more centralized control over Aviation officer personnel. Also, the centralization of doctrine formation will be a tremendous help. These changes obviously will help with the complicated systems currently coming onboard. Flying the helicopter is the easiest part, but it is not a simple business to learn the extensive resource management, doctrine and everything else that goes with Army Aviation. From that standpoint, the branch will be good for Army Aviation. But, on the other hand, we in Army Aviation have a tremendous challenge right now. We must ensure that these very good young leaders and aviators we currently have, obtain the experience and appreciation for ground combat operations that came almost automatically in the pre-branch days.

Living in your helicopter in some laager site next to an Infantry assembly area is a good start to that education. Also, operating out of Jump TOCs colocated well forward with the ground element brings additional lessons home. However we accomplish it, one thing is certain: Army aviators, more than ever before, have got to be wearing "muddy boots." During Team Spirit 84, the aviator boots were muddy.

PEARL'S

Personal Equipment And Rescue/survival Lowdown

Cathy Fancher photo by Reflections Studio

Address Listing for QDRs and ROIDs

Here is a chance for you ALSE (Aviation life support equipment) users to give us a helping hand. The large quantity of repeats of Quality Deficiency Reports and Report of Item Deficiencies on long resolved ALSE problems has been inundating our engineering resources and is creating a heavy workload for this office. It would be a big help to us if you would please consult your technical bulletins, technical manuals, messages, PEARL articles, etc., prior to submitting a suspected discrepancy. If, after reasonable research, however, you are still in doubt, by all means, report the problem using the appropriate form. The following is a list of reporting addresses for the major assemblies:

- ☐ **Chemical Clothing and Accessories**
- ☐ **M-24 Protective Mask**

Commander
AMCCOM (A)
ATTN: DRSAR-ASN
Aberdeen Proving Ground, MD 21010

- ☐ **Restraint Equipment**
- ☐ **Survival Kits/Vests and Components**
- ☐ **Ejection Seats**
- ☐ **SPH-4 Helmet, AH-64 Helmet**
- ☐ **Oxygen Equipment**
- ☐ **Emergency Parachutes and Accessories**
- ☐ **Flotation Equipment**
- ☐ **Flight Clothing, Aircrew Boots**

Commander
HQ AVSCOM
ATTN: DRSAV-MPSD
4300 Goodfellow Blvd
St. Louis, MO 63120

- ☐ **AN/PRC Survival Radio**
- ☐ **RT-10 Survival Radio**
- ☐ **TS-24 Radio Tester and Other Testers**
- ☐ **Radio Inspection Equipment**

Commander
Communications Electronics Command
ATTN: DRSEL-ME-MQ
Ft. Monmouth, NJ 07703

- ☐ **Pyrotechnics**
- ☐ **Forest Penetrating Flares**
- ☐ **Smoke Flares**
- ☐ **Survival Weapons Ammunition**

Commander
AMMCOM (R)
ATTN: DRSMC-QAS
Rock Island, IL 61299

☐ **Night Vision Goggles/Equipment**

Commander
Night Vision Laboratories
ATTN: DELNV-SE
Ft. Belvoir, VA 22060

Information copies of QDRs, ROIDs and Equipment Improvement Reports (EIRs) should be furnished to the following addresses:

DARCOM Project Officer for ALSE
ATTN: DRCPO-ALSE
4300 Goodfellow Blvd.
St. Louis, MO 63120
AUTOVON 693-1218

Commander
U.S. Army Aviation Center
ATTN: ATZQ-D-MS
(Mr. Birringer)
Ft. Rucker, AL 36362
AUTOVON 558-5272
FTS 539-5272

Commandant
U.S. Army Aviation Logistics School
ATTN: ATSQ-TDS-M (ALSE-CW3 Miskimon)
Ft. Eustis, VA 23604
AUTOVON 927-4462/2476

Commander
U.S. Army Aviation Center
ATTN: PESC-TE (CW4 Kilborn)
Ft. Rucker, AL 36362
AUTOVON 558-2091
FTS 539-2091

DARCOM/Fifth Army ALSE School

DARCOM, in conjunction with HQ Fifth Army, recently completed its second annual ALSE Training School. More than 100 people attended from 26 states. They represented the U.S. Army Reserves, the U.S. Army National Guard, U.S. Army Materiel Development and Readiness Command, U.S. Army Forces Command, U.S. Army Training and Doctrine Command and the U.S. Army Aeromedical Research Laboratory. The U.S. Army Aviation Logistics School's ALSE chief, CW3 Arthur Miskimon observed all courses of instruction to ensure standardization of the training program. New classes were also added this year and included oxygen systems, the NBC ensemble, night vision goggles, supply support requirements, and mission oriented protective posture (MOPP). The school was considered a complete success. Colonel Michael J. Pepe, deputy commander for readiness, United States Army Aviation Systems Command, opened the school with the importance of ALSE; LTC (P) Don Merritt, director of systems management observed several of the sessions; Colonel W. Bruce Wilder, DARCOM Aviation officer, gave a thought provoking closing address covering areas of ALSE which enabled aircrew personnel to return for follow-on missions. Honorary Associate Membership Certificates in the Aviation Life Support Equipment System Association were presented to all participants and the instructors. We consider the school a complete success and would like to express our sincere thanks to those who assisted in this tremendous effort. Special appreciation goes to Captain Greta L. Weaver, for all the coordination effort and preparation of training data and handouts.

Helmet, Flying, Protective, SPH-4

The following is a reprint from USAAVSCOM Materiel Readiness Information Bulletin, 2d quarter, fiscal year 1984:

To increase the materiel readiness posture for the helmet, flying, protective, SPH-4, NSN 8415-00-144-4981, Regular; and NSN 8415-00-144-4985, Extra Large; the time between inspections is changed from 90 days to 120 days. TM 10-8465-206-13 is being revised to reflect this change.

If you have a question about personal equipment or rescue/survival gear, write PEARL, AMC Project Officer, ATTN: DRCPO-ALSE; 4300 Goodfellow Blvd., St. Louis, MO 63120 or call AUTOVON 693-1218/9 or Commercial 314-263-1218/9.

Crewrest?

That is just something for the standing operating procedure (SOP) which we use for inspections.

- We have one on paper but never use it.
- We do away with it when we go to the field.
- No way we can accomplish our mission within the requirements.

Sound familiar?

A crewrest SOP can be only as effective as the commander desires it to be. AR 95-1, "Army Aviation: General Provisions and Flight Regulations," requires that a commander design a crewrest program tailored to the unit mission and that it be included in the unit SOP. It also states that the commander should consider the advice of the flight surgeon and Aviation safety officer in setting limits for specific operations or time periods. As the Directorate of Evaluation and Standardization mission takes the DES team around the world we see many types of crewrest SOPs which are tailored to different type units. We have also heard many comments like those listed above in this article.

However, on a visit last fall the SOP of A Company, 25th Combat Aviation Battalion (CAB) was looked at and found to be well written, practical and apparently was being adhered to. The following crewrest SOP is published as an example of how one unit gives something other than "lip service" to the crewrest program.

Tab L (Crewrest) to Appendix 1 to Annex H

1. Reference: AR 95-1

2. General
   a. Purpose:
      (1) To establish the maximum allowable flying duty hours and the maximum allowable flight time.
      (2) To establish the maximum allowable duty periods for Aviation-related personnel.
      (3) To provide minimum rest periods.
      (4) The primary purpose of this SOP is to prevent aircraft mishaps by the judicious scheduling of duties so that fatigue does not cause errors in judgment or deterioration of motor skills while operating, maintaining or servicing aircraft.
   b. Scope:
      (1) This appendix applies to all aircrewmembers, aircraft maintenance personnel, aircraft refuelers, staff aviators and any other individuals associated with the safe operation of unit aircraft.
      (2) If at any time an individual feels that he has exceeded his capabilities to perform safely, due to fatigue or other adverse factors, he will inform his platoon leader who will in turn inform the commander or his designated representative. An alternate individual will be alerted.

3. Responsibilities:
   a. Commander: Has the overall responsibility for the implementation of this SOP.
   b. Operations officer: Will monitor the program, ensure that the limitations are not exceeded, and ensure that the training/experience level of all crewmembers is commensurate with the mission. Will track duty and flight hours.
   c. Platoon leaders: Will assign one officer within the platoon to track duty and flight hours and relay this data to operations personnel.
   d. Safety officer: Will monitor the program and report violations and problem areas to the commander.
   e. All personnel: Are responsible for reporting for duty in a healthy, rested state. It is the moral and military responsibility of each individual not to engage in off-duty activities which prevent him from reporting for duty fully rested.

4. Standards: These standards are based on the guidelines outlined in AR 95-1. It is emphasized that the figures indicated are maximums allowable in the interest of safe and efficient operations. It is further emphasized that these limits cannot be safely exceeded. As these limits are approached, time available for ground duties should be curtailed to allow for rest. Such situations must be anticipated and accepted during periods of heavy training. Where circumstances dictate, low priority missions may have to be refused or deferred.

5. Scheduling Standards: Garrison/Tactical.

1 Time Period Days	2 Maximum Duty Period	3 Maximum Flight Time	4 Environment Relative Factor (ERF)
1	14 (14)	8 (8)	Day 1.0
2	11 (25)	7 (15)	Day Terrain Contour 1.3
3	10 (35)	7 (22)	Day Rappel 1.3
4	10 (45)	5 (27)	Day Sling Load 1.3
5	10 (55)	4 (31)	Night 1.4
6	9 (64)	3 (34)	Instrument 1.4
7	8 (72)	3 (37)	Day NOE 1.6
8	14 (86)	2 (39)	Night Rappel 1.6
9	11 (97)	1 (40)	Night Sling Load 1.6
10	10 (107)	1 (41)	Day EPT 2.1
11	10 (117)	1 (42)	Night Terrain 2.1
12	10 (127)	1 (43)	Night EPT 2.3
13	9 (136)	1 (44)	Night Vision Devices 2.3
14	8 (144)	1 (45)	Chemical MOPP-4 3.1
15	0 (144)	0 (45)	
16	14 (158)	8 (53)	
17	11 (169)	7 (60)	
18	10 (179)	7 (67)	
19	10 (189)	5 (72)	
20	10 (199)	4 (76)	
21	9 (208)	3 (79)	
22	8 (216)	3 (82)	
23	14 (230)	2 (84)	
24	11 (241)	1 (85)	
25	10 (251)	1 (86)	
26	10 (261)	1 (87)	
27	10 (271)	1 (88)	
28	9 (280)	1 (89)	
29	8 (288)	1 (90)	
30	0 (288)	0 (90)	
(Peace) 31	0 (288)	0 (90)	
(Mobilization) 31	(360)	(140)	

a. Numbers in parenthesis are cumulative hours.
b. Duty days will be planned so that maximum duty period hours will not be exceeded.
c. Aircrewmembers participating in EPT, night or NVG flights will report for duty not more than 8 hours before estimated release from duty.
d. Rest period will be a minimum of 10 hours between duty days.
e. Rest period will be a minimum of 12 hours if duty day extends past normal duty hours.
f. Personnel exceeding 7 day limits will be released from duty for a minimum of 24 hours.
g. Personnel exceeding 30 day limits will be released from duty for a minimum of 72 hours.
h. Rest period will be a minimum of 3 hours following PT or PT test prior to being released for flight.

6. Waiver Authority: Commander, Co A, 25th CAB, is the waiver authority for extension of flight time and duty period limits outlined in this SOP.

Crewrest Tracking Form

NAME _____ RANK _____ SSN _____

CREW REST MONITOR _____ RANK _____ MONTH _____

DATE	20	21	22	23	24	25	26	27	28
DUTY DAY	1	2	3	4	5	6	7	8	9
MAX DUTY	14/14	11/9	10/7	10/7	10/8	9/7	8/1	14/3	11/
MAX FLIGHT	8/8	7/6	7/7	5/	4/	3/	3/	8/	7/
START DUTY	0600	0600	0600	0600	0600	0600	0600		
TIME MAX END	2000	1500	1300	1300	1400	1300	0700		
END DUTY	2200	1800	1600	1500	1600	2000	1800		
TOTAL DUTY HRS	16.0	12.0/28.0	10.0/38.0	9.0/47.0	10.0/57.0	14.0/71.0	12.0/83.0		
FLT #1	3.0 ×1.6 = 4.8	2.0 ×1.3 = 2.6							
FLT #2	2.0 ×2.1 = 4.2	1.0 ×2.3 = 2.3							
TOTAL	9.0/9.0	4.9/13.9							

Crewrest Tracking Form

NAME _____ RANK _____ SSN _____

CREW REST MONITOR _____ RANK _____ MONTH _____

DATE	29	30	1	2	3	4	5	6	7
DUTY DAY	10	11	12	13	14	15	16	17	18
MAX DUTY	10/	10/	10/	9/	8/	14/	11/	10/	12/
MAX FLIGHT	7/	5/	4/	3/	3/	8/	7/	7/	5/
START DUTY									
TIME MAX END									
END DUTY									
TOTAL DUTY HRS									
FLT #1									
FLT #2									
TOTAL									

Examples of a locally developed tracking form

- **Duty days are numbered.**
- **Top half of max duty day line is what limit would normally be.**
- **Bottom half of max duty day is adjusted times (if you are over the cumulative limit, time left is computed).**
- **Flight time computed the same way—normal limits on top half and adjusted flight limits on bottom half.**
- **Time max end is adjusted max duty time added to start duty time.**
- **Total duty hours are daily and cumulative.**
- **Flights are time multiplied by ERF.**
- **Flight time totals are also daily and cumulative.**

While the tracking sheet may be used in both the field and garrison, it normally is only needed while operating away from garrison. With today's improved reliability of aircraft and systems, together with the high dollar cost of manpower, training and equipment, commanders are going to have to properly manage their people and equipment so as to be most capable, flexible and responsive on the AirLand Battlefield of the future.

(A special thanks to CW3 Brian R. Mohr, Aviation safety officer, Co A, 25th CAB, Schofield Barracks, HI.)

DES welcomes your inquiries and requests to focus attention on an area of major importance. Write to us at: Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Ft. Rucker, AL 36362; or call us at AUTOVON 558-3504, FTS 539-3504 or Commercial 205-255-3504. After duty hours call Ft. Rucker Hotline, AUTOVON 558-6487 or 205-255-6487 and leave a message.

"Hangar Talk" is a quiz containing questions based on publications applicable to Army Aviation. The answers are at the bottom of the page. If you did not do well, perhaps you should get out the publication and look it over.

FM 1-204

Night Flight Techniques and Procedures

CW3 Gary R. Weiland
Department of Combined Arms Tactics
U.S. Army Aviation Center
Fort Rucker, AL

1. The smoker effectively loses ____ percent of his night vision at sea level.

a. 5 c. 15
b. 10 d. 20

2. During the moon's third quarter phase, illumination is best_____.

a. just after dark c. just after midnight
b. just before midnight d. just before dawn

3. The approach angle for a night approach to either a fixed or tactical landing site should be _____ a day approach.

a. slightly shallower than
b. the same as
c. slightly steeper than

4. A flashlight with a red lens should be used when conducting an aircraft preflight inspection at night.

a. True b. False

5. When making a night approach to a lighted T, where should you plan to terminate the approach?

```
*   *   *
a   b   c
    *
    *
    d
```

6. Aviators planning night terrain flights should avoid selecting night vision goggles route segments that require heading changes of more than ____ degrees.

a. 30 c. 60
b. 45 d. 90

7. The ____scale map is the primary map for planning and flying en route portions of night terrain flight missions.

a. 1:25,000 c. 1:250,000
b. 1:50,000 d. 1:500,000

8. For effective viewing with night vision goggles, a ____ minute dark-adaptation period is necessary.

a. 15 c. 45
b. 30 d. dark-adaptation is not required.

9. Firing the ____ while wearing night vision goggles causes no vision impairment.

a. 2.75 inch folding fin aerial rocket
b. TOW missile
c. 20 mm cannon
d. 7.62 mm machinegun

10. The Mk 45 drop flare is capable of producing 2 million candlepower of illumination for a period of ____ minutes.

a. 2 c. 3½
b. 2½ d. 5

ANSWERS

1. d: page 1-9
2. d: page 2-2
3. c: page 4-11
4. b: page 4-5
5. a: page 4-14
6. c: page 5-9
7. c: page 5-8
8. d: page 7-4
9. c: page 7-7
10. c: page 8-1

U.S. ARMY SAFETY CENTER

What the ear hears

IF "BEAUTY IS IN the eye of the beholder," then what constitutes noise can also be in the ear of the person who hears the sound. *Webster's Third New International Dictionary* defines noise as "Sound that lacks agreeable musical quality or is noticeably loud, harsh or discordant...." The same helicopter mechanic who finds the whine of a finely-tuned engine music to his hearing may clap both hands over his ears when a chamber music quartet plays a Bartok composition. A flight instructor whose job depends on the flap-flap-flap of the helicopter overhead and the chicken farmer who hears the same aircraft and visualizes hundreds of his birds suffocating each other as they huddle together in fright, aren't really hearing the same sound at all.

Effects of noise on the environment

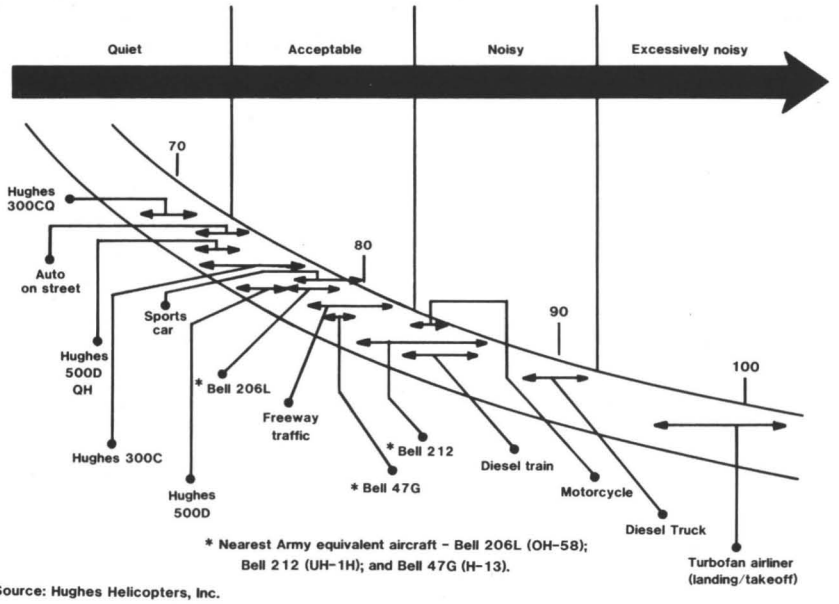
In a modern, technological world we are besieged by sounds. Some we can control but there are many that we can't. Small claims courts in California found themselves swamped by residents near airports as homeowners sought relief from the whine of jet transports and expansion of the huge airports such aircraft require. The increased case load led the state legislature to pass a bill which will require such noise actions to go into municipal or superior courts. The importance of relief from such levels of noise was demonstrated recently when FAA provided some $880,000 to soundproof 100 homes and 2 schools near San Francisco's International Airport. Is this kind of noise simply an annoyance or is there something far more serious involved?

William Meecham, an engineering professor at UCLA has been studying the effects of aircraft noise at Los Angeles International Airport on nearby residents for years. He believes that airplane noise is responsible for heart attacks, strokes and suicides. Professor Meecham reported to the Acoustical Society of America that deaths due to cardiovascular disease among people over 75 were 18 percent higher for those who live in the LAX landing pattern than for a comparable group in an adjacent area outside the noise footprint. Meecham attributes the deaths directly to the high level of jet noise which is in excess of 90 decibels. He also found the suicide rate among middle-aged people in the noise-impacted area was twice the rate of those living further away.

In a study conducted using monkeys, University of Miami researchers led by E.A. Peterson found that noise raises blood pressure. Animals exposed to a 9-month daily diet of recorded noise including television, bulldozers and motorcycles, developed blood pressure 27 percent higher than a group not exposed to the noise. The level of noise the monkeys endured was not even high enough to cause impaired hearing—but a month after the sound exposure ceased, the blood pressure remained the same.

Peterson's findings that there is a correlation between noise and blood pressure will come as no great surprise to the parents of teenagers whose amplified rock music can make walls appear to distend. But it does appear that the effects on the middle-aged parents may be as bad as the hearing loss they fear for their progeny.

While the intensity of noise from rotorcraft is not as high as that from jet aircraft (figure 1), their increasing numbers and low level of operations do impact on surrounding communities. A dramatic increase in use of helicopters in the private sector as well as military use means noise from these aircraft will become a greater concern in the future. FAA is attempting to set realistic noise standards, however, Jerold M. Chavkin, Director of Rotorcraft Program Office, FAA, admits the efforts have been thwarted by a lack of noise-reduction technology that will permit such aircraft to operate without unacceptable performance and productivity penalties. A cooperative effort has been launched by FAA, NASA, and industry to develop the needed technology.



Source: Hughes Helicopters, Inc.

Figure 1: Comparative Decibel Ratings

The NASA Rotorcraft Noise Reduction program began in earnest in 1983 and the four major U.S. helicopter manufacturers are now under contract with NASA to begin noise reduction documentation and research. This is really the first time there has been a joint effort by the U.S. helicopter industry to join a government agency and pool their resources to address a major technical challenge. The accomplishments and plans addressed in the first review of the program indicate that it is well on track and will play a major role in solving this problem.

That doesn't mean the problem will be solved soon. Even when such technology becomes available it will probably not present rapid improvement because helicopters in use now will be around for a long time. Chavkin urges operators and pilots of the helicopter community to do their part in supporting the "Fly Neighborly" program by flying more quietly and considerately. Meantime FAA will be working with NASA and the rotorcraft industry to make the helicopter itself a less noisy and more acceptable neighbor and toward adoption of meaningful noise guidelines.

In the past some military aviators have had a laissez-faire attitude toward civil complaints about military air operations. "If they don't want to hear my helicopter, then they can listen to Russian tanks," may be a catchy line for the macho, tough commander in a Hollywood production, but that kind of attitude can only further alienate a public which is increasingly questioning the rights of government and industry over the rights of the individual. That does not mean that military training and defense missions must be sacrificed to accommodate every special interest group. The public good over the individual's rights was established long ago in the concept of imminent domain; without it such things as a system of nationwide highways would have been impossible. But that does not relieve government, at all levels, as well as industry, of the responsibility to conduct air operations in such a manner to minimize as much as possible the danger and discomfort to surrounding communities. There is a concomitant responsibility to the populace to reduce noise intrusion into their private lives to the extent possible in keeping with mission and safety requirements.

While a slogan like the one quoted above can do great damage, the "Fly Neighborly" initiative borrowed by the Helicopter Association International from Bell Helicopter can be used in the education of the public. That effort, however, must also include a people-to-people approach. An active speakers' bureau is a valuable avenue whereby aviators cooperate with civic organizations, schools and other community activities to increase understanding of the reasons for terrain and nap-of-the-earth (NOE) flying. The citizen who witnesses increasing numbers of low-flying helicopters can accept an explanation that in order to survive in a high threat environment helicopters must fly close to the ground. But if no explanation is forthcoming, such operations may be perceived as unnecessarily harassing and dangerous.

The efforts of government and industry to achieve sound control through technology, public relations emphasizing the benefits from helicopter operations and explanation of reasons for certain types of air operations, together with personal responsibility exercised by all aviators can avert confrontations which result in bad publicity and put the Army and the public into adversary roles. Mission planners in noise

sensitive areas should select the most compatible route, altitude and operating technique possible in keeping with mission demands.

If such efforts are not given the importance they deserve, legislation further limiting helicopter operations could result. That came close to happening in 1981 when FAA published a Notice of Proposed Rule Making (NPRM) to reduce noise from helicopters. Industry response and extensive lobbying resulted in FAA withdrawing the NPRM in favor of industry self-regulation. The Aeronautical Services Office (DA POC for Fly Neighborly) is drafting guidance for inclusion in Change 2 to AR 95-1. It is incumbent upon all users of airspace to support the spirit as well as the letter of such regulations.

Effects of noise on the individual

As helicopters are adopted as a means of transportation for more businessmen, more attention is being given to decreasing the noise which must be endured by crew and passengers. Anything in a helicopter (and there is a lot) that undergoes constant or sporadic movements contributes to the high noise level in cockpits and cabins. Edwin E. Cohen, manager of light helicopter engineering for Hughes Helicopters Inc., likens the situation of helicopter cabin occupants to "sitting inside a loudspeaker." The transmission provides the driving force for the airframe and the airframe radiates noise into the cabin. While work is already being done to reduce noise at the transmission, it's still at the early research and development stage.

Efforts are being made to soundproof cabins of existing aircraft by various means, but while they may be applicable to corporate-owned helicopters they do not at this point have practical application to operational military aircraft. Soundproofing is not only expensive, it adds weight. Until changes in design can reduce vibration and noise at the source without affecting performance, efforts to make life in the cockpit and cabin of military aircraft more endurable will have to concentrate on protective equipment.

In a paper presented at a Psychology in the Department of Defense Symposium at the Air Force Academy researchers said that helicopter pilots under 36 years old had the highest number of hospitalizations for hearing loss and ear problems of all military aviators.

In addition to the cost to the individual who suffers a noise-induced hearing loss, there is a hefty amount of taxpayer money involved in compensation claims. In fact, the most significant portion of the goverment's annual disability compensation costs can be attributed to claims for noise-induced hearing loss.

In federal agencies during FY 1983 $24,472,260 were paid in hearing loss compensation to civilians alone. Department of Defense accounted for 83 percent of the cost, Army 15 percent, Navy 45 percent, Air Force 23 percent; with Justice, NASA, Treasury, Transportation, Postal Service and other agencies making up the remaining 17 percent of claim costs. During the last 10 years, hearing disability costs have increased almost 300 percent. In 1982, the Veterans Administration paid out $145,350,856 in such claims.

Aside from the personal suffering to people whose hearing is affected and the cost to the taxpayer in compensation claims, there is another consideration of even greater potential impact—the same potential for disaster which exists whenever safety fails to be a primary consideration—combat readiness. The very people who are in high risk hearing loss categories—gunners, aviators, soldiers who work around electronic equipment—are the same soldiers we can ill afford to lose. Their kind of skills will make the difference in whether the battle is won or lost.

The worst of it is the waste, it needn't happen at all. Unlike some accidents caused by a machine breaking or a materiel failure, hearing loss is almost completely preventable.

AR 40-5 and TB MED 501 provide information on the Army's hearing conservation program. Some of the things commanders and supervisors should do include:

- Make wearing of hearing protective devices mandatory.
- Ensure hearing protectors are well maintained, including plugs, muffs and helmets with built-in protection.
- Ensure that all soldiers and civilians who are exposed to noise hazards receive periodic hearing evaluation. (Figure 2 shows a sharp increase in numbers of hearing conservation forms sent to the U.S. Army Environmental Hygiene Agency (USAEHA). Nearly 200,000 forms were submitted in CY 82 and 83.)
- Require officers and noncommissioned officers to set the example for their units.

Many aviators have discovered that they can hear better when wearing earplugs under their helmets. Aircraft noise and radio static are attenuated and communications are enhanced by wearing the plugs.

The USAEHA has found that the triple-flange earplug, with insertion device, achieves the highest overall noise reduction rating (NRR) (figure 3). Under laboratory conditions this plug achieved an NRR of 31dB.

Without the insertion device the plug achieved 26dB in the laboratory and only 7dB in the workplace. Workers apparently weren't inserting the plug far enough into the ear to be effective. The earplug seating device, which is a part of the lid, grips the stem of the earplug, making it easier to insert. Used properly, the seating device can help close the gap between the NRR achieved in the laboratory and the workplace.

The new earplug has an olive drab carrying case which may help overcome objections of some commanders about the "unsoldierly appearance" caused by wearing the old case on the uniform. The new case costs less than half the cost of the old clear plastic, cylindrical case currently in the supply system. It is non-reflective and insensitive to infrared detection. The case and earplug inserter, olive drab, translucent, can be ordered using NSN 6515-01-100-1674. The cost is $2.34 for a package of 20. Questions on the hearing protective device should be directed to Cdr, U.S. Army Environmental Hygiene Agency, ATTN: HSHB-O (Dr. Ohlin) Aberdeen Proving Ground, MD 21010, AV 584-3797.

The most effective safety efforts in hearing conservation and noise control are the same as for all other types of safety—prevention. Military training and missions must go on but effects on the public and personnel engaged in flying activities can be diminished. The means to ensure that it is done already exist—the key is with the individual. in almost any group of "old soldiers" you will quickly spot two or three with hearing problems—maybe they weren't as fortunate as you are in the equipment available to protect your hearing. Whether you will find yourself one of them several years hence is really up to you.

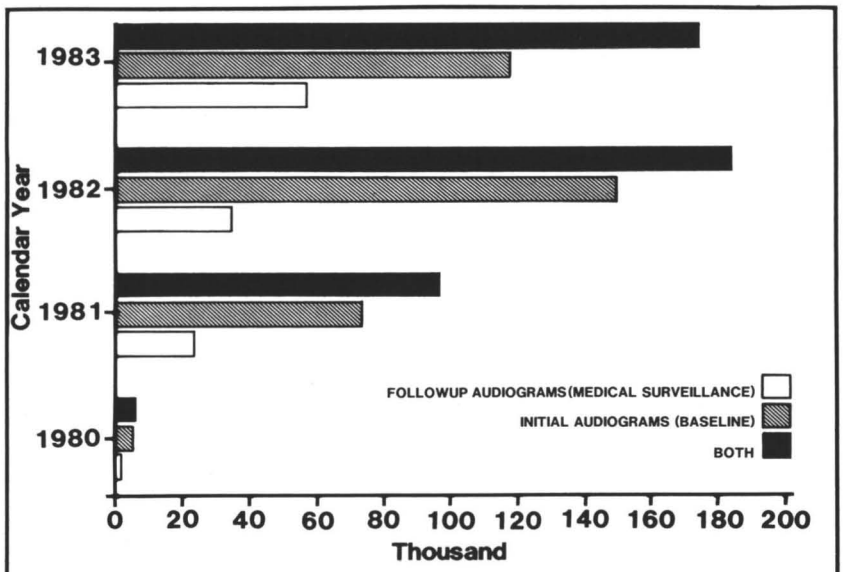


Figure 2: Hearing Conservation Forms Received at U.S. Army Environmental Hygiene Agency

Protective Device	Noise Reduction Rating (NRR)	
	Laboratory Conditions	As Used in Workplace
Triple-flange plug with inserter	31dB	
Triple-flange plug without inserter	26dB	7dB
Single-flange (V-51R)	23dB	2dB
Foam plug	29dB	11dB

Figure 3: Comparison of Noise Reduction Ratings Achieved by Hearing Protective Devices

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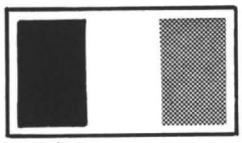
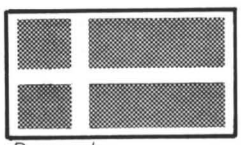
RSI Report

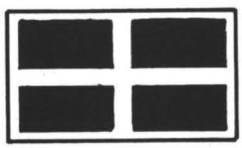

Belgium

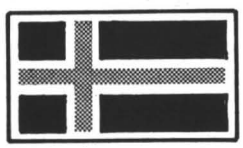
Canada

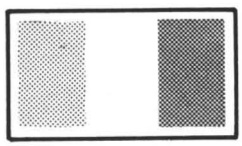

Denmark

France

Federal Republic of Germany


Greece


Iceland


Italy

Aviation units that may be required to operate as a joint national force should be aware that the U.S. Army has ratified a NATO standardization agreement (STANAG 2087, Medical Employment of Air Transport in the Forward Area) that directs the procedures for medical evacuation. As a signatory to this agreement it is incumbent upon Army Aviation units to abide by the terms of the STANAG. Units are encouraged to use this document as a guide for development of their standing operating procedures (SOPs).

Units which are subject to this agreement are encouraged to validate the content of the STANAG. If it is determined that there are terms of the agreement which should be considered for changes, a standard DA Form 2028 should be submitted.

STANAG 2087 - Medical Employment of Air Transport in the Forward Area

Aim

1. The aim of this agreement is to standardize for the NATO forces the general principles governing evacuation by air transport of the sick and the wounded from the battle area.

Agreement

2. Participating nations agree that the NATO forces are to follow the principles outlined herein in planning and organizing the employment of air transport in medical missions, which fall within the purview of the Army regardless of which force operates the air transport.

Details of the Agreement

3. Control of operations is to be in accordance with local directives and the organization of the force concerned.

4. Emergency air evacuation is concerned with the prompt movement of the sick and wounded where rapid, atraumatic evacuation or treatment will reduce mortality. Such sick and wounded should be picked up as soon after the request for air evacuation as possible and evacuated directly to designated treatment facilities.

5. Routine air evacuation is used when surface means are either nonexistent or inadequate or where air evacuation is more effective. In these cases, time is not of the same essence as in the emergency category. If properly prepared prior to evacuation, routine air evacuees will require only minimal in-flight care.

6. Air evacuation is to be used as far forward as the tactical situation will permit. If necessary this may apply to evacuation from enemy territory.

7. Request for air evacuation

a. The unit initiates medical missions by direct contact with the command echelon concerned, e.g. the battle group/regiment, the division, the corps or the army. Requests for these missions may be processed through medical technical channels or command channels according to local directives, and the organization of the force concerned.

b. In order that the unit and the controlling agency may be able to evaluate properly and establish priorities for air evacuation, the request should contain the following information:

(1) Number, diagnosis and priority of sick and wounded.

(a) *PRIORITY 1/URGENT*—Emergency cases which should be evacuated as soon as possible and in any event not later than 2 hours in order to save life.

(b) *PRIORITY 2/PRIORITY*—The sick and wounded requiring prompt medical care. This precedence is used when the sick and wounded should be evacuated within 4 hours or their medical condition could deteriorate to such a degree that they will become priority 1 patients.

(c) *PRIORITY 3/ROUTINE*—The sick and wounded requiring evacuation but whose condition is not expected to deteriorate significantly. The sick and wounded in this category should be evacuated within 24 hours.

Note: (1) Priority assessments are to be initiated and readjusted on medical grounds only. Inability to respond to requests for air evacuation of the sick and wounded within the advisory time quoted above does not, in itself, constitute a reason for alteration of priorities.

(2) Identification should specify whether the sick and wounded are fit for external stretcher, internal stretcher or sitting evacuation.

(3) Exact location by grid coordinates or other method as directed by the tactical field SOP.

(4) Specific identification of landing site.

(5) Time the sick and wounded will be ready for evacuation.

(6) Special requirements/arrangements and their availability from local resources for:

(a) Special items of medical supplies.

(b) Whole blood.

(c) Medical personnel to act as escort.

(7) Radio frequency and call sign of the coordinating unit at the landing site or in contact with personnel at the landing site.

(8) Tactical considerations at the landing site, to include friendly and enemy artillery or other weapons firing, recommended approach paths (e.g. direction, altitude), and friendly and enemy aircraft activity.

(9) Patient nationality and personnel status (military, POW, civilian).

8. Primary medical mission. The primary mission of medical ambulance units and/or air transport made available for medical purposes is to provide air evacuation for selected sick and wounded.

9. Selection of the sick and wounded. Based upon the decision of the medical officer or officer in charge, suitable type of sick and wounded for air evacuation are to be:

a. Those for whom air evacuation is necessary as a life-saving measure.

b. Those who, by prognosis, would definitely benefit by air evacuation.

c. Those who urgently require specialized treatment.

d. Those who are liable to suffer unnecessary pain or discomfort or whose condition is likely to deteriorate unless evacuated by air.

e. Those likely to go into shock as a result of prolonged or rough surface evacuation.

10. Secondary missions. Secondary missions of air transport made available for medical purposes should include:

a. Airlift of critical medical supplies.

b. Air movement of medical specialist personnel.

c. Movement of sick and wounded to medical facilities capable of providing specialized treatment.

d. Other medical evacuation missions as required.

11. Loading, securing and off-loading

a. The pilot of the aircraft is to ensure that the sick and wounded and equipment are loaded in the aircraft in accordance with the prescribed methods outlined in the applicable flight handbook; the final decision as to how many sick and wounded may be safely loaded, and their location, lies with the pilot in command of the aircraft. If aircraft are permanently allotted for medical evacuation missions, the pilot is to ensure that all relevant documentation procedures are completed. He is also to ensure that medical property exchange is accomplished as required.

b. Commanders of medical treatment facilities should provide personnel in the landing area to assist in loading and off-loading of the sick and wounded and equipment. The pilot and crew of the aircraft are responsible for the securing of the sick and wounded and equipment onboard the aircraft. Training of all medical personnel includes:

(1) Familiarization with all types of aircraft capable of performing medical evacuation missions.

(2) Familiarization with the medical care likely to be required during the flight and with special medical equipment necessary for this purpose.

(3) Demonstration of the various types of safety devices used for the transportation of the sick and wounded by air.

c. In the absence of medical personnel in the loading area, the commander of the requesting unit is to provide personnel for loading the sick and wounded on the aircraft.

12. Miscellaneous

a. Medical agencies when available are responsible for:

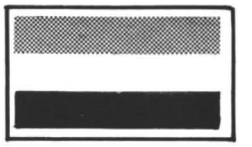
(1) The movement of the sick and wounded to and from loading sites.

(2) Loading and unloading of the sick and wounded.

(3) Inflight medical care.

b. A communication capability, which provides for direct or minimal relay of transmissions, between the authority controlling medical missions, the aircraft, and the requesting unit is to be provided wherever possible. Communications are to be minimized by relaying accurate information in the original request for air evacuation. An air-to-ground communications capability at the landing site is desirable.

If there are any questions or requirements, please contact Mr. Rush Wicker by writing: Commander, U.S. Army Aviation Center, ATTN: ATZQ-D-CC, Ft. Rucker, AL 36362.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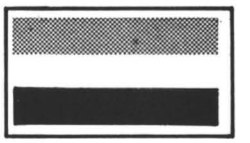
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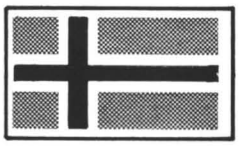
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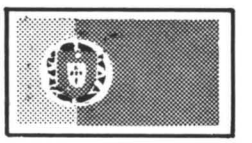
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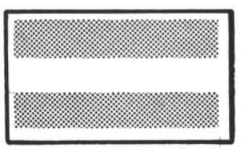
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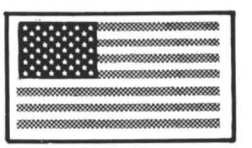

United States

AVIATION PERSONNEL NOTES

Average Flying Hours Calculated

Have you ever asked yourself where you stood in relation to your fellow aviators with regard to flight time? Well, recent activities here at the U.S. Army Military Personnel Center (MILPERCEN) required an estimation of the average number of flight hours by grade. This average is called a descriptive statistic and in order to arrive at such a statistic for the population, the records of the almost 14,000 pilot status code 1 aviators would have had to have been examined. Since the data from our DA Form 759s is not yet fed into any sort of computerized data bank, the average for the population cannot be easily determined. However, using what we call inferential statistics, we can take a random sample of records and arrive at a pretty good estimate of the actual population average.

Using standard random sampling techniques, the records of 340 aviators possessing reasonable current DA Form 759s forwarded to MILPERCEN in accordance with AR 95-1 were analyzed. The following were the results of this sample:

Grade	Average Flying Hours
Warrant Officer (W01)	415
Chief Warrant Officer (CW2)	1,169
Chief Warrant Office (CW3)	3,128
Chief Warrant Officer (CW4)	4,802
Second Lieutenant	196
First Lieutenant	501
Captain	1,053
Major	1,966
Lieutenant Colonel	2,235
Colonel	2,959

WHERE DO YOU STAND?

Aviation Career Incentive Pay (ACIP)

Have you recently been called or recalled to Active Duty or had a change in officer status, warrant officer to commissioned (or vice versa), and cannot get your continuous ACIP started?

Before you can be entitled to receive ACIP on a continuous basis, you must request requalification for Aviation service, which is an order published by MILPERCEN and is the legal authority for you to perform Aviation service and to begin entitlement to ACIP.

Paragraph 3-12e, AR 600-105, outlines the necessary procedures to follow in requesting requalification for Aviation service.

Congratulations to the Army's New Astronaut Candidate

The National Aeronautics and Space Administration (NASA) recently announced 17 new astronauts for the Space Shuttle Program. Seven are pilot astronaut candidates and 10 are mission specialist astronaut candidates.

Major James C. Adamson was selected as a mission specialist from 96 Army applicants and more than 4,800 other applications to report to NASA's Johnson Space Center, Houston, TX, to begin a year-long program of training and evaluation. Successful completion of this training program will lead to assignments leading to selection for space shuttle flight crews.

Major Adamson is a West Point graduate and has a master's degree in aerospace engineering from Princeton Univesity. He is a standardization instructor pilot, an instrument flight examiner and an experimental test pilot.

For those interested in applying, NASA has recently met with Department of Defense officials and it appears that there will not be any selections made this year. However, keep your eyes and ears open because procedures for next year's selection process should be announced shortly.

Again, congratulations Major Adamson from Army aviators everywhere!

HOTLINE

The following HOTLINE numbers can be called on official business after duty hours. They will be updated and reprinted here periodically for your convenience. If your agency has a Hotline it would like included, please send it to *Aviation Digest,* P.O. Drawer P, Ft. Rucker, AL 36362.

	FTS	AUTOVON	Commercial
Armor Ft. Knox, KY	354-8265	464-8265	502-624-8265
Aviation Ft. Rucker, AL	539-6487	558-6487	205-255-6487
Camouflage Ft. Belvoir, VA	None	354-2654	703-664-2654
Engineer Ft. Belvoir, VA	None	534-3646	703-664-3646
Field Artillery, ARTEP Ft. Sill, OK	None	639-2064	405-351-5004
Field Artillery, Redleg Ft. Sill, OK	None	639-4020	405-351-4020
Fuels and Lubricants R&D Center Ft. Belvoir, VA	None	354-3576	703-664-3576
Health Science, Training Ft. Sam Houston, TX	None	471-4785	512-221-4785
Infantry, ARTEP Ft. Benning, GA	784-4759	835-4759	404-545-4759
Intelligence Ft. Huachuca, AZ	None	879-3609	602-253-3609
Maintenance and Supply Tobyhanna Army Depot, PA	None	795-7900	717-894-7900
Missiles and Munitions Redstone Arsenal, AL	None	746-6627	205-876-6627
Ordnance (Help Line) Aberdeen Proving Gnd, MD	None	283-4357	301-278-4357
Quartermaster Ft. Lee, VA	927-3767	687-3767	802-734-3767
Signal Ft. Gordon, GA	240-6703	780-6703	404-791-6703
Transportation Ft. Eustis, VA	None	727-3571	804-878-3571
Turbine Engines Corpus Christi Army Depot, TX	None	861-2651	512-939-2651

Maintenance Test Flight Evaluators

This article describes the critical role the locally designated maintenance test flight evaluators play in the Maintenance Test Flight Standardization Program. It also helps explain the test flight standardization program's incorporation into the overall Aviation Standardization Program.

Captain Steven L. Ochsner
U.S. Army Aviation Logistics School
Fort Eustis, VA

THE NEWEST ARM of the Army Aviation Standardization Program is the Maintenance Test Flight Standardization Program. The proponent for this program, the Directorate of Evaluation and Standardization (DOES), U.S. Army Aviation Logistics School (USAALS), Ft. Eustis, VA, has traveled worldwide in the past year evaluating test pilots on the performance of their duties. Readily apparent from this year of travel is the unmistakable correlation between the performance of the locally designated maintenance test flight evaluator (MTFE) and the success of the implementation of the test flight program.

In designating an MTFE, a local standardization board formally recognizes the Aviation maintenance expertise of a qualified maintenance test pilot. This recognition is based upon completion of a formal maintenance test flight procedure course at USAALS and demonstrated proficiency as a test pilot. While the formal, school training of a test pilot qualifies an aviator in all aspects of maintenance test flight, it does not incorporate instruction on how to train and evaluate other test pilots. This article discusses the role of the MTFEs, the scope of their duties, and points out common weak areas in test flight standardization programs as observed by the MTFEs of DOES.

Newly appointed MTFEs should begin their duties by ensuring that their personal qualifications are commensurate with their duty assignments. To this end they should conduct a complete review of all publications applicable to their duty positions.

This review should include chapter 3 of TM 55-1500-328-25, "Aeronautical Equipment Maintenance Management Policies and Procedures," chapter 10 of TM 38-750, "The Army Maintenance Management Systems," applicable paragraphs of AR 95-1, "Army Aviation; General Provisions and Flight Regulations" and chapters 2 and 3 of FM 55-44, "Standardized Maintenance Test Flight Procedures," to ensure that their knowledge of test flight administrative procedures is adequate. Additionally, they should review their aircraft maintenance manuals, Maintenance Test Flight Manual, and the appropriate chapter of FM 55-44 in an

MAINTENANCE TEST FLIGHT STANDARDIZATION DIVISION Kneeling from left: CW3 Leonard Taylor OH-58 MTFE, CW3 Jim Jegel UH-1 MTFE, CW3 Fred Taylor OH-58 MTFE, CW3 John Larkin CH-47 MTFE; Standing: CW3 George Hrichak UH-1 MTFE, LTC Harry McGinness, director DOES and UH-1 MTFE, CW3 Ralph Windrey AH-1 MTFE, CPT Steve Ochsner, chief MTFSD and CH-47 MTFE, CW4 John Benham UH-60 MTFE, CW3 John Thompson UH-1 MTFE. CW4 Kurt Porter UH-1 MTFE TDY date of photo.

photo by J.V. Schultz

effort to ensure that their systems knowledge and grasp of test flight maneuvers are what they should be. The emphasis of this review should be to enhance their expertise as maintenance test pilots (MTPs) with the realization that they became "resident experts" as soon as they were designated as MTFEs. Their credibility will suffer greatly if their knowledge in the aforementioned areas is not up to par.

With the MTFEs assured that their credibility can withstand their own close scrutiny, they should begin to incorporate their test flight standardization program into the overall Aviation Standardization Program of their units and installations. Unit MTFEs should establish a liaison between themselves, the unit standardization instructor pilot (SIP), the installation standardization board and the MTFE representative to the local standardization committee. In doing so they can learn the essentials of maintaining

Maintenance Test Flight Evaluators

continued

iteration tracking sheets and filling out gradeslips while providing the SIPs with essential elements of the test flight standardization program. Close cooperation between unit MTFEs and the MTFE representative to the standardization committee should ensure that all test flight concerns can readily be addressed, solutions found and information disseminated. DOES has found that in commands where the MTFEs have kept lines of communication open between units and the standardization committee, the test flight standardization program is more fully implemented and is more fully integrated into the overall Aviation Standardization Program than in commands where this communication does not exist.

MTFEs as Trainers

If the test flight standardization program is to succeed in a given command, the MTFEs assigned must realize that it is their function to train the test pilots, not to merely administer annual evaluations. In their training efforts they should emphasize aircraft systems. Training seminars involving all test pilots for a given type aircraft could be conducted to provide systems background. They should insist that their test pilots know not only how to perform test flight maneuvers but also realize why they are performing them and how to analyze the results. During the training process they should emphasize turbine engine analysis check (TEAC)and insist that the trainee use the test flight manual for all checks.

MTFEs as Evaluators

The MTFEs' role as evaluators is quite different than their role as trainers. Most MTFEs will find that separating the two roles is the most difficult part of their duty position. They must ensure that the MTPs can demonstrate that they can safely and efficiently perform MTP duties during the evaluation sequence. Essential in making the determination of whether or not the test pilots' knowledge is commensurate with their positions is asking questions they should know. Many MTFEs try to ask questions that they don't really expect the examinee to know in an effort to teach the examinee or to promote thought or discussion. This approach belongs in the training phase. The evaluation process should follow the sequence in chapter 3 of FM 55-44 with the MTFEs avoiding the temptation to train the examinee through it.

Areas to Emphasize

In the past year of worldwide travel DOES evaluators have noted a number of weak areas common to MTPs of all rotary wing aircraft as well as weak areas particular to specific aircraft. Weak areas common to all aircraft include test flight weather requirements, TEAC analysis and preflight. Areas which generally required additional emphasis in the MTP training for specific aircraft are as listed:

- UH-1: Electrical system, engine system, hydraulics off check, inflight hydraulics checks and cyclic rigging check.
- AH-1: Aircraft electrical systems, power cylinder checks, emergency governor hover checks, droop cam checks and out-of-ground effect hover checks.
- OH-58: Electrical system, engine performance check analysis.
- CH-47: Electrical system operation, stability augmentation system, the pitch stabilization augmentation system operation, flight boost hydraulics, underfrequency check, fuel crossfeed system check and speed sweep check.
- UH-60: Maximum power check, SAS/FPS (flight path stabilization) checks, stabulator audio warning check, engine start and autorotation.

DOES Update

Throughout fiscal year 1983 (FY 83) and FY 84 DOES has sought to expand its participation in the Aviation Resource Management Survey visits of all major commands. Included in this effort is increased involvement in Army Reserve and National Guard Bureau visits. During FY 85 DOES will attempt to support all major command taskings for evaluation and assistance visits. As alluded to above, DOES will be not only checking the individual proficiency of test pilots and evaluators but also seeking to determine how well the test flight standardization program is integrated into the overall Aviation Standardization Program at a given command. MTFE representation on and active participation in standardization committee activities with open lines of communication regarding test flight standardization seems to be the key to assuring this integration.

DOES encourages Aviation maintenance officers with questions or comments concerning maintenance test flight standardization to contact our office at AUTOVON 927-3266/4164 or write:

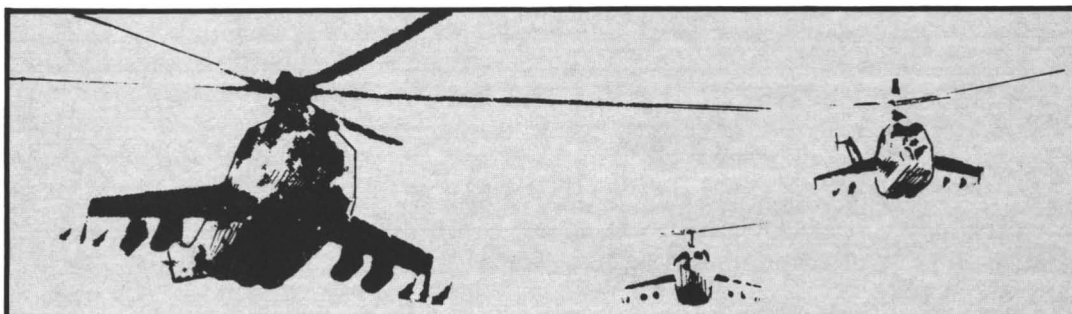
Commandant
U.S. Army Aviation Logistics School
ATTN: ATSQ-ESM
Ft. Eustis, VA 23604

Input from field units is strongly encouraged as we strive to expand the Army Aviation commitment to excellence in maintenance test flight.

THREAT BRANCH

MONTHLY WRITING AWARD

Major Dale L. Radtke
Threat Branch
Directorate of Combat Developments
U.S. Army Aviation Center
Fort Rucker, AL



BIG SKY— LITTLE HELICOPTER?

The following article presents a fictitious scenario that is intended to place the reader in one possible situation in which the threat of Soviet artillery is present. Although to most aviators the sky appears limitless, pre-mission planning should take into consideration the possiblity of encountering enemy artillery and address what actions will be taken when enemy artillery is encountered.

BIG SKY—LITTLE HELICOPTER?

DATE: 19 June 1986
TIME: 0815 Zulu

I can't believe they have really done it! This can't be real!" thought MAJ Frank Williams as he glanced out the window of his helicopter at the pine trees rushing by.

"Charlie 6 Romeo 31, this is Charlie 6 Romeo 14. Over."

Turning the console switch to one and pressing his mike button, Frank replied, "14 this is 31. Over."

"This is 14, going secure."

"Roger." Frank flipped the switch and, assuming the battalion commander was calling for a situation report, formulated his response mentally.

"What's the situation up there, Frank?"

"We are approaching the location I selected for the jump TOC now. Romeo 33 has his section in holding position A. Romeo 42 is about 3 minutes out of holding position C; one of his 64s had to turn back with SCAS problems. Quebec 1 Lima reports heavy incoming artillery and that the cav is passing through them already, so it won't be long now. The artillery is so intense that our scouts can't get close enough to see anything."

"Get them up as far as you can, Frank."

"Roger. How did things go at brigade?" Frank asked, automatically checking the tree clearance as the pilot slowed the aircraft to a hover in the clearing Frank had selected earlier. He noted with relief that they could maintain communications with the rear area from here.

"We have orders to stop them here. I'll fill you in when I get there; we should be airborne within 10 minutes."

"Roger," replied Frank.

TIME: 0828 Zulu

"Stop at the tree line," ordered MAJ Victor Molonov, the 3d Artillery Battalion commander, as his ACRV slowly wound its way down the forest trail from the hilltop. Molonov checked to ensure Senior Lieutenant Dubov's BMP (Small Fred) was still behind him, then noted the thinning of the trees as the trail cut back to the west. He motioned for Dubov to cut through the sparse vegetation as his own vehicle rounded the corner and abruptly ground to a stop with its nose slightly protruding from the tree line.

The field of view was even better than he had hoped. He could see the entire 4-kilometer distance to the tree covered ridge line on the opposite side of the valley stretching before him. As an American infantry vehicle dashed toward that tree line, Molonov motioned his assistant to check the distance with his laser rangefinder and mentally noted the location where the vehicle was about to disappear into the trees. Patches of haze and a few columns of black smoke from destroyed vehicles were all that evidenced the intense barrage that had halted a few moments earlier for a brief respite.

Twenty meters to Molonov's right, Dubov was now in position, and about 700 meters further, Molonov could see a regimental reconnaissance company BMP-R in the trees. Beyond was the draw where the 1st Tank Battalion elements should appear in a few moments. To the left was the regiment commander's tank and the forward air controller's BTR.

Molonov checked his location on the land navigation computer, then checked his watch. Even as he lifted his arm, he could hear the artillery shells from division impacting in the distance, right on time. Looking to the west end of the valley, he could see the smoke and white phosphorous rounds landing in a long sheaf near the far tree line. The wind was ideal, about 6 knots from the northwest and would spread the smoke quickly.

To his right, Dubov signaled that his radar was up and operational. Molonov relaxed somewhat now that his COP was set up, and the battalion

GLOSSARY

ACR	armored cavalry regiment
ACRV	artillery command reconnaissance vehicle
ATGM	antitank guided missile
BMP	Russian infantry combat vehicle
BMP-R	reconaissance version of the Russian infantry combat vehicle
BTR	Russian amphibious armored personnel carrier
COP	combat observation post
CS	type of tear gas
MBA	main battle area
MRL	multiple rocket launchers
rpm	revolutions per minute
SCAS	Stability and Control Augmentation System
TOC	tactical operation center

was in its firing positions, ready for oncall missions.

They had done well so far. The American covering force with its AH-1 Cobra helicopters had many kills at first, but then it was learned that the Cobras with the laser warning devices would move whenever they detected laser energy from the rangefinders. After that it was easy to fool the Cobra helicopters and keep them moving. The American helicopters didn't kill as much after that, but the first echelon battalions were already down to about 60 percent strength.

TIME: 0833 ZULU

SSG Waterman nervously watched the smoke building up in front of his M-1 tank. Sweat trickled down his forehead, and he involuntarily reached up to wipe it away before he realized that he couldn't with his gas mask on.

"Can you still see, Andy?" said Waterman to his gunner.

"Yeah, just barely!" replied SP4 Jackson. "It's building fast, though. Even the thermal is getting hazy."

It was difficult to understand Jackson because his ears were still ringing, and Jackson's voice crackled from the stress of the hour long barrage. Wishing he had a sweatband for his forehead, Waterman briefly considered taking off his mask to wipe the sweat out of his eyes. Recalling that the S2 had cautioned them about the Soviets always using CS gas with artillery, he decided against taking a chance, and went back to the waiting...for that one round!

"I can't see farther than 200 meters now," said Jackson. "It's too thick."

TIME: 0835 ZULU

"Charlie 6 Romeo 31, this is Charlie 6 Romeo 33. Over," said CPT Ray Hughes.

"33 this is 31. Go ahead."

"This is 33. The artillery has started again. We have smoke in front of our positions. We're moving to alternate positions. No contact yet, but we'll keep you advised. Lima 14 reports all 11th ACR elements back now."

"Roger 33."

Hughes turned his OH-58D Kiowa to the south and began picking his way to the alternate position he had selected. Romeo 47, in the other scout aircraft, was already moving to his new position. The 64s would be all right on the back side of the ridge line.

TIME: 0840 ZULU

"Lieutenant Dubov, I have two more radar targets behind those armored vehicles I just reported," stated Praporshchik (Warrant) Bolnikov. "These are moving to the south and may be small helicopters."

"I have already made the call for artillery. There are some rocket launcher fires planned there in a few moments. Keep contact with the targets."

"Da, Tovarish Lieutenant. They fade in and out, but stay on this side of the ridge line."

"Be ready to adjust," ordered Dubov. "The artillery has been fired."

TIME: 0843 ZULU

CW3 Robert Mendez arrived at his alternate position and hovered up to the trees lining the east side of the small clearing. Hovering up to expose the mast-mounted sight, he was surprised to see so many tanks had already entered the east end of the valley.

"Romeo 33, this is 47. I've got about 25 tanks entering the kill zone."

Hughes depressed the mike switch to respond, but the small hill out his left door erupted in flame and flying debris. Amid the thunderous

blast noise, Hughes could hear a shrill warning as his aircraft lost rpm and settled into the trees.

TIME: 0848 ZULU

"Da, Tovarish Lieutenant. It was right on target," said Bolnikov. "It might have hit one of the helicopters."

"All is good," said Dubov. "Are you ready? We have two preplanned multiple rocket launcher battalion fires at the same area any moment."

"Da, there are two other targets near the ridge line. They also appear to be in the target zone."

The preceding fictitious scenario was written not to display the literary skills of the author nor entertain the reader, but with the intention of placing the reader in one possible situation from which he or she might gain insight into the threat posed by Soviet artillery.

Typically, aviators look at the threat posed by Soviet artillery in the same manner as a tornado—if it hits you, it is an act of God; there is nothing you can do about it. No pre-mission planning is accomplished to address what actions will be undertaken when enemy artillery is encountered. No thought is put into minimizing the possibility of encountering impacting enemy artillery. To understand when you are most likely to encounter enemy artillery, you have to understand how the Soviets operate.

Everyone knows that the Soviets have a 10 to 1 advantage in total artillery tubes, and everyone knows that Soviet multiple rocket launchers cover a grid square when a battalion fires. But, no one wants to memorize what seems like hundreds of towed and self-propelled howitzers, gun-howitzers, guns and MRLs. So they stop there and artillery becomes an act of God. Soviet artillery won't fire at fleeting targets like helicopters anyway, right? Well, you can believe that if you want to, but then you don't understand how Soviet artillery operates.

To understand Soviet artillery, you really do not have to memorize all (or any) of the Soviet artillery systems, but it helps to know the organization. Each Soviet Army has an artillery brigade, each motorized rifle division or tank division has an artillery regiment, and each motorized rifle regiment or tank regiment has an artillery battalion (figure 1). The artillery systems differ from battalion to battalion, but the organization is basically the same—three firing batteries and a headquarters element with target acquisition and artillery adjustment equipment (ACRV and BMP Small Fred radar) which compose COPs for that battalion (figures 2 and 3).

The artillery battalion commander is usually located in the COP and is intimately involved in the process of acquiring targets, of ensuring preplanned missions are fired on schedule and of adjusting artillery to the target. Because his COP is usually colocated with the commander of the supported unit, he is close at hand when something goes wrong, or the mission changes. He is also more likely to make the decision to fire at a fleeting target of opportunity, such as a team of helicopters that are destroying tanks.

To facilitate control of unit movement, resupply and security, artillery battalions are organized together into artillery groups at regiment, division and army levels, but each battalion will be "attached" to or "supporting" a maneuver unit. An artillery group is usually composed of three or more battalions, with some coming from army and *front* level and the divisional artillery regiment belonging to the following second echelon division. When Soviet forces are advancing at a normal pace against light to moderate resistance, such as a covering force, an artillery group will leapfrog its units forward in bounds of 3 to 4 kilometers, while firing preplanned and oncall missions.

As soon as the longer range artillery systems get within range of suspected or confirmed enemy main battle area positions, they will begin the preparation phase. This marks the beginning of a preplanned artillery barrage that will last an hour or longer, and will cover all probable enemy positions in the area of the intended breakthrough attempt. As other artillery units get within range of the MBA positions, their fire is added to the barrage. To avoid counterbattery fire, Soviet artillery batteries normally move to alternate prepared firing positions after each 4

FIGURE 1: Characteristics of artillery weapons and organization.

The 122 mm self-propelled howitzer M-1974 will probably replace the D-30 as assets become available.

	Maximum range (km)	Maximum rate of fire (rounds per minute)	Number assigned in units*						
			Army	Artillery Division	Motorized Rifle Division	Tank Division	Motorized Rifle Regiment (BMP)	Motorized Rifle Regiment (BTR)	Tank Regiment
100 mm antitank gun T-12	15.4	10			18				
120 mm mortar M-38, M-43	5.7	15			54	18	18	18	
122 mm howitzer D-30	15-24	8			72	36		18	18
122 mm self-propelled howitzer M-1974	15.3	8			18	18	18		18
130 mm gun M-46	27	6	36	72					
152 mm gun howitzer D-20	18	5	18	72					
152 mm self-propelled Howitzer M-1973	18	6			18	18			
122 mm multiple rocket launcher BM-21	20.5			36	18	18			
240 mm multiple rocket launcher BM-27				36					

*The reorganization of Soviet forces is ongoing and incomplete throughout the force. These numbers represent anticaptured goals as currently perceived.

FIGURE 2: Artillery command and reconnaissance vehicle.

FIGURE 3: BMP with Small Fred radar.

minutes of firing. MRL battalions fire all vehicles at one time (at a 1,000-meter target area) and then move to alternate positions to reload and fire again.

Before Soviet ground forces close within range of enemy direct fire weapons, the artillery will begin firing obscurants to shield their movement. Self-screening smoke is placed in the path of advancing ground forces and along their flanks; blinding smoke mixed with eye irritants is included with the artillery falling on enemy positions.

There may be short pauses in the artillery barrage while batteries are moving, but the complete barrage does not cease until the assaulting Soviet vehicles are within 1,500 meters. Even then, the barrage does not stop, but shifts to subsequent positions as the assaulting forces advance. This rolling barrage advances at the same rate as the ground forces. Back on the MBA positions, as the barrage ceases, ground attack aircraft and Hind helicopters begin attacking the area and the artillery COPs generate oncall missions. The major emphasis at this time is suppression of enemy ATGM systems.

Tacticians who expect attack helicopters to be effective during this phase of a battle with Soviet forces subscribe to the "act of God" philosophy. This is not to say that attack helicopters cannot be effective in the MBA battle, rather that attack helicopters will not be without adequate pre-mission planning and an understanding of threat artillery planning.

Pre-mission planning for any flights into the MBA *must include* an analysis of possible firing positions in relation to probable threat artillery target areas and probable flanking smoke screens. Pilots must also *be familiar* with Soviet artillery COP vehicles and their placement, with the idea that they can be a greater threat than tanks and BMPs.

There are too many U.S. Army Aviation unit commanders and pilots subscribing to the act of God philosophy who just do not understand how many acts of God there really will be. The intent of this article was only to reduce that number. For more information read DIA Manual DDB-1130-8-32, "Soviet Front Fire Support," and the FM 100-2 series which have provided the information for this article.

PART IV: Training

- ☑ Training without troops
- ☑ Situation board or map
- ☑ ADA and Aviation liaison
- ☑ Command Post Exercise
- ☑ Field Training Exercise
- ☑ Standing Operating Procedure annexes

Brigade Airspace Management

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The views expressed in this article are the author's and do not necessarily reflect those of any Department of Defense agency.

IN THE APRIL issue Part I covered the historical background of brigade airspace management, and in May Part II provided an overview of the AirLand Battle. Part III, last month, discussed the command, control and communication means available to brigade and battalion commanders to manage their airspace (copies are available by writing to Editor, *Aviation Digest,* P.O. Drawer P, Ft. Rucker, AL 36362). Part IV concludes the series on airspace management by presenting several ways airspace management training can be accomplished for the brigades and battalions. It also provides a checklist that can be used to develop the airspace management portion of the standing operating procedure (SOP).

It is important to train the way you plan to fight. To fight successfully as a combined arm, the forces must train together. All combat support and combat service support unit personnel who would normally accompany the force during combat operations must train together.

Tactical Exercise Without Troops (TEWT)

The subordinate commanders and staff must be trained in airspace management. First train in garrison so that scarce field training time won't be lost while the staff and subordinate commanders sort out their control procedures and become more proficient at managing the airspace. Use a situation board to develop the mission. Ensure the Air Defense Artillery (ADA), Aviation and Artillery liaison representatives are able to participate because, without their presence, the AirLand Battle will be only a land battle exercise.

During the TEWT, update the airspace management plan to the SOP as appropriate. Develop a situation where the collective members of the TEWT will have to provide input for a successful mission. For example, change the location of the main command post. As mentioned in Part III, the ADA unit will be within a 2 to 4 km circle, the Aviation unit at least 5 km to the rear of the new location, and the Artillery unit will not be near either the forward arming and refueling point (FARP) nor the command post. The TEWT will also develop leaders at all levels to collectively consider terrain appreciation and analysis, map reading and combined tactics.

Command Post Exercises (CPX)

Command, control and communication is best evaluated during a CPX. Rules and procedures between the commands and staff are rehearsed to train new personnel and improve the coordination within the headquarters. Airspace management procedures must be evaluated during all CPXs. Command decisions to employ airspace users on the battlefield will direct the control measures to be used and the method of communication necessary to integrate the air-land assets into the combined arms battle. As the command and staff sections become proficient in CPXs, the need for a more challenging exercise is warranted. This challenge can be met with a brigade field training exercise complete with all the Aviation, Artillery and ADA units that normally would be in support of the brigade.

Field Training Exercise (FTX)

Deploying a brigade with the associated support units to the field will determine the effectiveness of the airspace management procedures. Other than actual war conditions, the FTXs provide the realistic training needed to be combat effective. Commanders and staffs have the opportunity to evaluate the troops as they demonstrate their knowledge of the rules and procedures of their command. Tank crews, ADA teams and Aviation crews must independently be evaluated on their awareness of the airspace management procedures.

During the field exercise an attack helicopter team could be used as an opposing force to train the task force in rules of engagement and allocations of fire. Options available to engage the attack helicopter team are: small arms fire from the tank crew could be the most effective means to defeat the threat; or an ADA team using its gun and missile systems; or the supporting Aviation team with its guns and onboard air-to-air missiles. If this is not a self-defense condition then the task force assets have a choice to either engage the aircraft or continue their assigned mission.

Tank crews must be trained not to divert their attention to targets of opportunity, especially if it will distract them from completing their primary mission. Likewise, attack helicopter teams that are given a tank killing mission must not chase opposing aircraft that are not directly hindering their mission. ADA teams should be used as the principle weapon systems to destroy the advancing aircraft.

We must use the FTX time to train our brigade assets in airspace management to ensure that all the troops understand their contributions to the mission. Army Training and Evaluation Program (ARTEP) 71-2 Task 3-VII-3-6, Coordinated Air Defense Support, provides the procedures for the S3 section. These procedures are defined as task, conditions and standards for employing the organic and attached air defense weapons assigned to the battalion. The crucial element omitted from the guidance is the need to coordinate with the supporting Aviation unit. The task force commander must supplement the ARTEP requirement with his airspace management procedures.

Airspace Management Checklist

The following information will assist you to develop the airspace management section/appendix of the SOP. It is not intended to provide an all inclusive list of topics for the SOP, but it is designed as a starting point. Your checklist may vary depending on the situation. Re-

member this one is only an example. The following questions can be answered through coordination with the appropriate liaison representative or by the commander.

Air Defense Artillery

What are the priority areas of protection for the organic ADA assets?

What are the priority areas of protection for attached ADA assets?

Where will ADA assets routinely locate in the brigade area?

What control measures will be used to restrict the movement of ADA assets on the battlefield?

How do ADA assets receive coordination instructions (radio, briefings)?

When do ADA assets receive friendly aircraft movement information?

Army Aviation

Where is the brigade heliport located?

Where is the Aviation assembly area routinely located?

How do the Aviation assets receive ADA location information?

When does an attack helicopter engage opposing helicopters, other than self-defense?

What control measures will be used to restrict aircraft movement?

How do Aviation assets receive coordination instructions?

Field Artillery

How are firing batteries' locations disseminated?

When does Artillery support Army Aviation?

This checklist should be used to develop the airspace management plan. After the SOP is finalized with all liaison personnel, then the plan can be put into effect. This will facilitate the training requirements and the coordination procedures prior to the evaluation phase of the field exercise. The plan should become the annex for airspace control in the operations order. Because of the number of helicopters and ADA weapon systems anticipated to be employed in the brigade area, and threat of enemy air activity, it is essential to have well disciplined forces that can effectively control the airspace over the brigade.

The airspace management plan can be the tool to meet this challenge. The annex to the SOP should include only the necessary control information to minimize the risk to friendly aircraft, while maximizing the flexibility of the supporting unit. Below is a theoretical annex that could be used to develop the airspace management portion of the SOP.

The Annex (Airspace Management) to SOP, 3d Brigade

1. This annex will be used for airspace management planning within the 3d Brigade. Exceptions to this annex will be disseminated by the commander or the S3.

2. Air Defense Artillery airspace management procedures.

A. Air Defense Artillery—Priority

1. Organic ADA has the following priorities for protection:

a. First priority—maneuver task force

b. Second priority—brigade trains

c. Third priority—main command post

2. Attached ADA has the following priorities for protection:

a. First priority—maneuver task force

b. Second priority—main command post

c. Third priority—brigade trains

B. Air Defense Artillery—Locations

1. Brigade trains—ADA will be located within 2 km of the center of mass.

2. Brigade main command post—ADA will be within 1 km of the command vehicle.

3. Maneuver task force commander will designate the area for ADA positions for both offensive and defensive operations.

C. Air Defense Artillery—Communications

1. Attached ADA units will maintain a station on the command frequency modulated (FM) net.

2. Aviation activity will be part of the S3's daily briefing. The command net (FM) will not be used except in an emergency to pass Aviation activity information.

3. Situation maps and overlays will be used to coordinate airspace control measures.

3. Army Aviation airspace management procedures

A. Army Aviation— Locations

1. Brigade heliport will be located no closer than 1 km from the main command post.

2. Aviation assembly area/FARP will be at least 17 km from enemy medium artillery range.

3. Air routes will not be located to allow aircraft to fly over the brigade main command post or trains. Critical air supply items will be delivered to the Aviation assembly area.

B. Army Aviation—Communications

1. Aviation unit will maintain a station on the brigade command FM net.

2. Situation maps/overlays will be used to coordinate airspace control measures.

3. ADA unit locations will be part of the daily S3 briefing.

C. Army Aviation—Air Defense

1. Army attack aircraft on a flank security mission will be responsible for defending against armor and intrusions of enemy helicopters. They may engage opposing force helicopters as targets of opportunity if the tactical situation permits.

2. Field Artillery will not be used for localized suppression of enemy air defense (SEAD) during offensive operations. Joint-SEAD will be in accordance with TRADOC TT 100-44-1.

U.S. Army Communications Command
ATC ACTION LINE

Obstacle Clearance During Departure

Mr. Dennis E. Newport
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Cameron Station, Alexandria, VA

PUBLISHED instrument departure procedures and standard instrument departures (SIDs) assist pilots conducting instrument flight rules (IFR) flight to avoid obstacles during climbout to minimum en route altitude (MEA). Airports with takeoff minimums other than standard are described in airport listings on separate pages, titled IFR Takeoff Miminums and Departure Procedures, at the front of each instrument approach procedures book. The approach chart and SID chart for each airport with nonstandard takeoff minimums is annotated with a special Triangle T symbol. The use of this symbol indicates that the separate listing should be consulted. These minimums also apply to SIDs unless the SIDs specify different minimums.

Obstacle clearance is based on the aircraft climbing at 200 feet per nautical mile, crossing the end of the runway at 35 feet above ground level, and climbing to 400 feet above airport elevation before turning unless otherwise specified in the procedure. A slope of 152 feet per mile, starting no higher than 35 feet above the departure end of the runway, is assessed for obstacles. A minimum of 48 feet of obstacle clearance is provided for each mile of flight.

New criteria for instrument departure obstacle clearance for heliports and helipads will be based on helicopters climbing 352 feet per nautical mile and climbing to 400 feet above takeoff area elevation before turning. A slope of 304 feet per mile starting at the end of the departure area will be assessed for obstacles.

If no obstacles penetrate the 152 feet per mile (304 feet for heliports) slope, IFR departure procedures are not published.

If obstacles penetrate the slope, obstacle avoidance procedures are specified. These procedures may be: a ceiling and visibility to allow the obstacles to be seen and avoided; a climb gradient greater than 200 feet per mile (352 feet for heliports); detailed flight maneuvers; or, a combination of the above. In extreme cases, IFR takeoff may not be authorized for some runways.

EXAMPLE: Rwy 17, 300-1 or standard with mimimum climb of 220 feet/NM to 1,100.

Climb gradients are specified when required for obstacle clearance. Crossing restrictions in SIDs may be established for traffic separation or obstacle clearance. When no gradient is specified, the pilot is expected to climb at least 200 feet per mile to MEA unless required to level off by a crossing restriction.

EXAMPLE: "CROSS ALPHA INTERSECTION AT OR BELOW 4,000; MAINTAIN 6,000." The pilot climbs at least 200 feet per mile to 6,000. If 4,000 is reached before ALPHA, the pilot levels off at 4,000 until passing ALPHA; then immediately resumes at least 200 feet per mile climb.

Climb gradients may be specified to an altitude, above which the normal gradient applies.

EXAMPLE: "MINIMUM CLIMB 340 feet/NM to 2,700." The pilot climbs at least 340 feet per mile to 2,700, then at least 200 feet per mile to MEA.

Some procedures require a climb in visual conditions to cross the airport (or an on-airport navigational aid) at or above an altitude.

EXAMPLE: "Climb visually to cross the airport at or above 8,800, then climb via R-293 to ABC VOR."

The specified ceiling and visibility minimums will be enough to allow the pilot to see and avoid obstacles near the airport. Obstacle avoidance is not guaranteed if the pilot maneuvers farther from the airport than the visiblity minimum.

That segment of the procedure which requires the pilot to see and avoid obstacles ends when the aircraft crosses the specified point at the required altitude. Thereafter, standard obstacle protection is provided.

Each pilot, prior to departing an airport on an IFR flight should consider the type of terrain and other obstacles on or in the vicinity of the departure airport and:

Determine whether a departure procedure and/or SID is available for obstacle avoidance.

Determine if obstacle avoidance can be maintained visually or if the departure procedure or SID should be followed.

Determine what action will be necessary and take such action that will assure a safe departure.

Readers are encouraged to address matters concerning air traffic control to:
Director, USAATCA Aeronautical Services Office, Cameron Station, Alexandria, VA 22314

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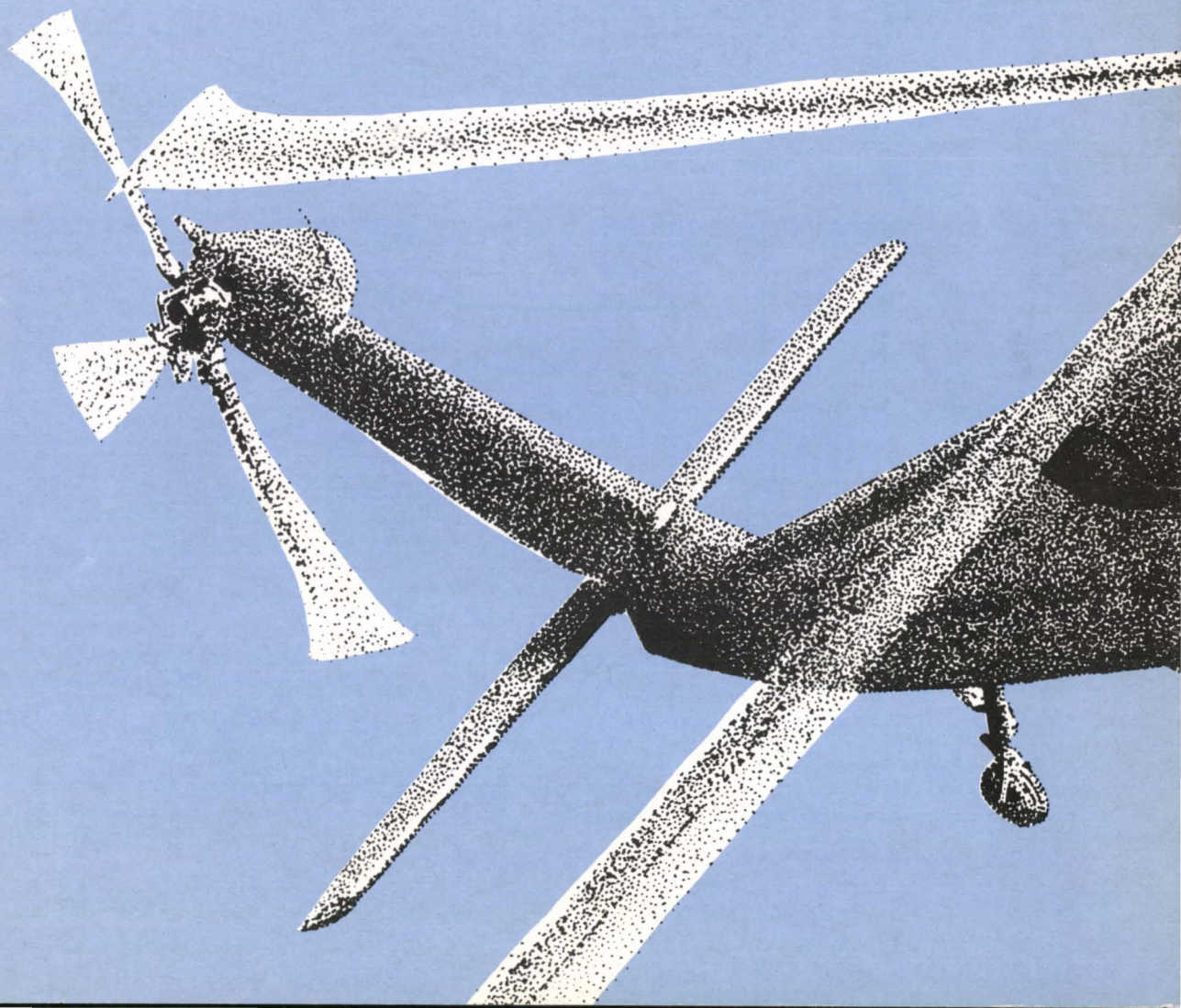
This month the *Aviation Digest* begins a series of articles covering Team Spirit 84. The lead article, "Team Spirit 84: An Army Aviation Overview," by Major General Kenneth C. Leuer focuses attention on the joint efforts of the Republic of Korea Army and the United States; and highlights the role Aviation played in this exercise.

Colonel William C. Page Jr. follows up with "View from the Eagle's Nest." He discusses the problems encountered in Team Spirit 84, and the success of using Army Aviation in sufficient numbers to influence the entire battle area.

Coming in the September issue, the *Aviation Digest* will continue its coverage of Team Spirit 84 with "Fit to Fight," "Dustoff Does It Better," and "45th Transportation Company Keeps 'Em Flying."

The October issue will conclude the Team Spirit 84 series with "Managing Team Spirit Airspace: Dirt to 600."