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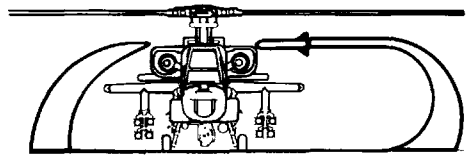
Cover: **Relates to the lead story, "Aerial Combat." The authors insist that we need to achieve low altitude air superiority. Also, lessons learned in *aerial engagement tactics* during previous conflicts are highlighted so that we don't repeat the earlier mistakes. Story begins on page 2.**



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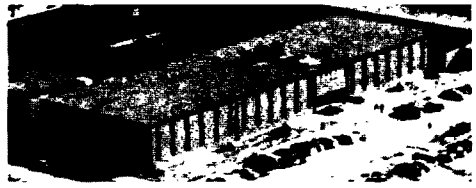

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Richard K. Tierney
Editor

Honorable John O. Marsh
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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"AERIAL COMBAT" BY Major Michael Brittingham and Captain Greg Hampton provides a concise background on this subject together with "lessons learned" application; these are useful for Army aviators so that we do not again make the same mistakes. The authors contend the need to achieve low altitude air superiority is paramount if we are to succeed with our AirLand Battle operations. Specific, time-proven aerial combat tactics are reviewed and the inimitable value of experience and observation through exercises—similar to the Navy Top Gun and the Air Force Red Flag programs—are emphasized.

Captain James Smith's "Air-To-Air Workshop" gives a brief description of the upcoming FM 1-107, "Air-To-Air Combat." The final draft of the Army's first air-to-air combat manual is a product of a workshop that consisted of representatives from Army, Marine and Air Force units who have extensive experience in developing air-to-air tactics and doctrine. In addition, members of the workshop made many recommendations about air-to-air weapons, training and doctrine; the author cites the major proposals.

The Directorate of Evaluation and Standardization's Report To The Field concerns "The New ATMs" designed to help unit commanders implement their Aviation training programs. For years, emphasis has been on basic and emergency tasks, whereas now the stress is on *tactical* tasks. You've already witnessed some effect in your training such as no more touchdown emergency procedures training. Commanders also will have more flexibility scheduling individual flying hours to enable less proficient aviators to practice more and improve their aviator skills.

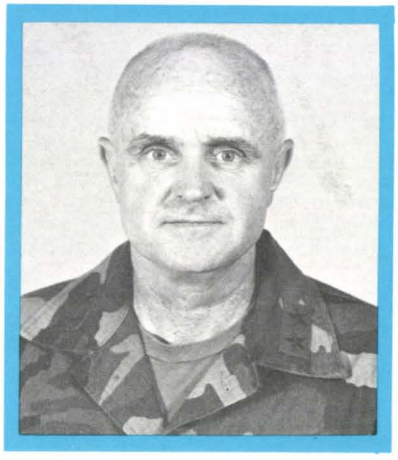
Lieutenant Colonel William Voth offers an update on the missions and functions of the "Threat Branch" of which he is chief. Among the important missions is providing *current* threat data to the Aviation sector of the combined arms team. The unit maintains the Center Threat Reference Library, a compilation of the latest data from many intelligence agencies. The branch supports the Aviation materiel acquisition process with facts, figures, tactics and doctrine about the Threat to make certain that new aircraft and equipment can capably confront the Threat and win. In training and training development, the branch gives guidance for and review of lesson plans for Threat content validity. LTC Voth specifies subject areas and those analysts who specialize in them so personnel in the field can readily communicate with a subject matter expert.

"Watch The Birdie" provided by the Safety Center reminds us of the widespread hazard of bird-aircraft strikes. Frequency of bird strikes from July through October, the period of most migration, is three to four times that of other times of the year. A guide to avoid birdstrikes produced by the Air Force is available through the Army Safety Center.

"Aviation Logistics By Any Name" by Mr. Otis Haislip Jr., describes the newly organized school at Ft. Eustis. The mission is to support the Aviation Branch and to integrate Aviation Logistics into the overall Army Logistics Program.

Captain (P) Charles Henry's article, "The Officer/Warrant Officer Rotary Wing Aviator Course," portrays this training of potential aviators. He describes the 36 weeks and 2 days course from preflight training to graduation.

We at the Aviation Center are leaning forward as we prepare to welcome and train the officers of the first Aviation Officer Advanced Course next month.



Major General Bobby J. Maddox
Commander, U. S. Army Aviation Center
Fort Rucker, AL

MONTHLY WRITING AWARD

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Headquarters and Headquarters Company
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APO New York

AIR TO AIR

AERIAL COMBAT

AS LUCK WOULD have it, Habib's environmental control unit was on the fritz again. It never seemed to work when it was needed. "Damn sand seems to get into everything," he thought. "Maybe someday soon the United States will lift the embargo they've imposed against the Ayatollah and we'll finally get some parts for this worn out snake." Habib painfully twisted his head around in a vain effort to get a bead on the pilot in the backseat, Captain Rydah. "Why can't we make our own flapper valves!" he whined.

"Ah, quit your griping," said Rydah. "We'll be done soon."

It was amazing how much more hospitable a desert war could be when a simple thing like an air-conditioner worked inside their sun-blazed cockpit. It made the low level gun runs against the Iraqi mechanized columns in the 100-degree heat somewhat less tense. "Well then, let's get to it," said Habib in an impatient tone as their wingman, flying another J-model (AH-1) Cobra, pulled up alongside.

Suddenly LT Shamar, in the front seat in the other aircraft blurted out, "I've got two Mi-24s at 2 o'clock. I don't think they've seen us. Nope ... nope they haven't. Hey, what are they doing on our side of the lines?"

Rydah, an extremely quick-thinker, immediately issued his commands. "All right, let's take 'em out!"

A chill ran up Habib's spine. They never told him anything about fighting helicopters during his flight training at Isfahan. "What do we do?" he asked his pilot.

Rydah tersely replied, "We'll just improvise. Allah will protect!"

Both of the Iranian Cobras sucked up as much torque as their engines could wind out and turned to set up an approach from behind their unsuspecting victims. "We'll bounce them from the aft quarter," said the Iranian captain, "with the sun at our backs. Don't shoot until we're right on top of them. I *don't* want to do this twice." Rydah meant business.

The Iraqi gunships were obviously intending to plunder some support element in the Iranian rear and never got a glimpse of the Cobras that were using the rolling terrain to mask their quartering approach. As the two snakes closed upon the Hinds, the gunners in both cockpits pressed their heads hard against their gunsights. Habib waited until the lead Mi-24 filled the sight completely and then let loose with his 20 mm cannon. Almost immediately he saw the numerous flashes of rounds striking the lead Hind's tailboom. Pieces began to fly away from the Soviet-made gunship as it began to disintegrate in front of his eyes. Suddenly it started to catch fire and just as rapidly spun into the ground, gyrating wildly as it plowed into a scrub-covered patch of desert. LT Shamar's fire was equally devastating as evidenced by a plume of thick black smoke eminating from the wreckage of the Hind's wingman a short distance away.

"Allah Ackbar," cried Habib as the two victorious Cobras wheeled back around to view their fallen Iraqui adversaries. "Allah Ackbar! Allah Ackbar."

Though the names and situation may have differed in the encounter described above, the combat action in all probability transpired somewhere along the Iran/Iraq front during April of 1981. On 24 April 1981 the Iranian News Agency reported air-to-air combat between helicopters, stating that Iranian helicopters "blew up two enemy attack helicopters during a dogfight."[1]

In late 1981 the United States Army presented a radically new concept in its Aviation doctrine: that of helicopter air-to-air combat (see October 1981 *Aviation Digest*). For a number of years prior to 1981 numerous authors, both aviators and nonaviators, had been raising the question of whether air-to-air combat between helicopters could, would or should occur. The debate began even before the official news release of the existence of a potential Soviet rotary wing adversary.[2] Indeed, the course of the great discussion has seen the extremes of both sides. It ranged from the white-scarved aviators decreeing that you "check your six—or checkmate partner"[3] to the doubting Thomases muttering that "to think of air-to-air combat as so important that it requires a dedicated weapons system, i.e., air-to-air missiles, is *pure bunk*."[4] We've seen it all. Unfortunately we have lost the better part of 10 years arguing the point and not getting to the heart of the matter.

The threat is *here* and *now*. The Soviets know how much of a deterrent our attack helicopter force is to

AERIAL COMBAT

their armored spearheads and you can rest assured that they will counter it with the most effective means possible: that of another armed attack helicopter. When and if this should occur, the Army Aviation community must act aggressively. We must push the attack helicopter threat out of our airspace. Army Aviation must be the sole owner of the limited environment that we live and work in, for without low altitude air superiority, our highly maneuverable operations will be doomed to failure.

By now you are probably saying to yourself, "Okay, I believe, I believe. But what does all of this rhetoric mean to me. What really is helicopter vs. helicopter aerial combat? How do you fight another helicopter? How can I, an aviator in the field, implement a training program?" This and other articles to follow hopefully will provide you with some of the answers, but first some background.

The first aerial combat between manned, powered aircraft occurred during the early days of World War I, more by chance than by intent. Aircraft were initially seen by the ruling tacticians of that era as being useful only for observation and reconnaissance, not as vehicles for the projection of combat power. "Contrary to some accounts, aerial combat of a sort occurred almost from the beginning, though in crude form."[5]

On 22 August 1914, Sergeant Major Tillings of the No. 2 Squadron (Royal Flying Corps) claimed to have downed a German observation aircraft with a rifle from the front seat of a British aerial scout.[6] Quickly, many pilots began to seize the initiative and applied the existing technology to their aircraft and rudimentary tactics to their flying skills in an attempt to dominate the air over the trenches. Soon thereafter, the first claimed victory came with the installation of a machinegun and on 5 October 1914, came the first aerial kill using the six o'clock, or tail-on, attack technique.[7]

Military aviation rapidly developed into a formidable combat force with an ever-increasing level of tactical sophistication. The pilots and commanders literally had to teach themselves the mechanics of aerial combat, for there was no institutional knowledge to draw upon. A select few, those pilots who could quickly apply lessons learned together with the technological innovations, began to amass a sizeable number of aerial kills.

Contrary to the romantic portrayals of Hollywood, the successful aviators of World War I did not always possess outstanding flying skills or a tremendous repertoire of aerial tactics. Both the renowned German ace, Baron Manfred von Richthofen, and the top scoring pilot of the U.S. Air Service, Edward Vernon Rickenbacker, were initially poor aviators. Each had crashed during his first solo and had experienced difficulty in mastering new aircraft. However, they both possessed a cool demeanor while in the air, an extremely keen knowledge of their machines and, most importantly, expert marksmanship. In an era when the maneuverability of aircraft was the paramount factor in aerial combat, both Richthofen and Rickenbacker (and, in fact, all of the successful pilots) foresaw the folly of continuous turning and looping tactics. Instead they employed a devastating, carefully chosen, slashing style of attack. One high-speed attack, firing at the last second, proved to be the most successful, and, if not successful, would lead to a quick escape. Simplicity, not tactical genius or outstanding aviator skills, produced success for these men, and when forgotten, caused many of their deaths.

While the machines and weapons used during World War I were sometimes crude and unwieldy, the tactics that employed them served as a basis for the aerial combat that would transpire later in history. The tactics which proved to be successful in one war generally proved sound in the next. Whereas aircraft performance and armament increased dramatically during the interwar years of 1919 to 1939, basic tactics did not alter fundamentally. To be sure, operating

Royal Aircraft Factory S.E.5 Fighter

World War I

illustration by Blake Morrison

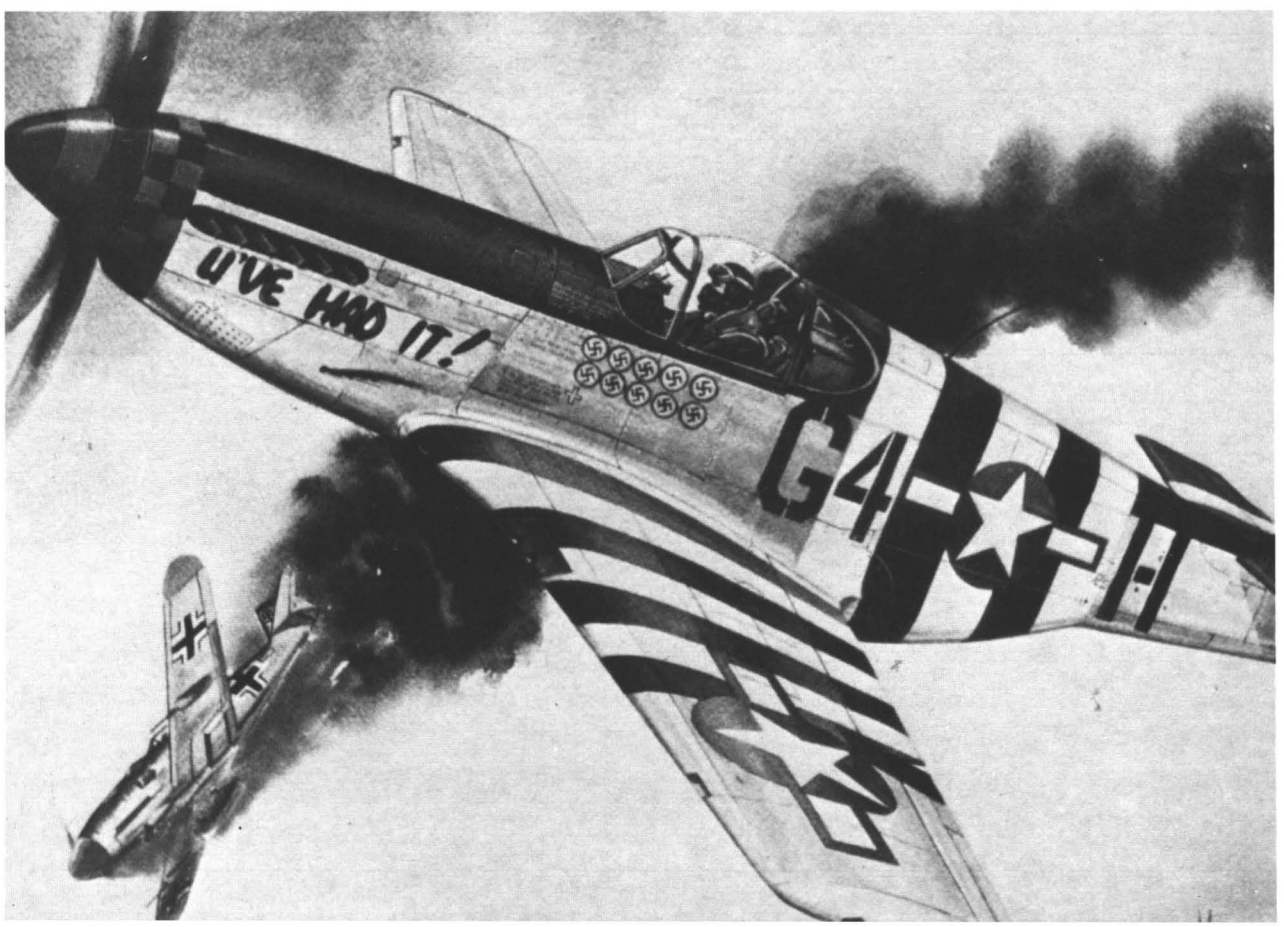
altitudes increased, massing techniques were developed and pilots were becoming better trained. But, the fundamental tactics remained the same!

World War II saw the emphasis on aerial combat swing from maneuverability to speed. The need to rapidly disengage from a fight, to be able to quickly pull away from or close upon an adversary was paramount in the minds of the aircraft designers and pilots. Once again, the high-speed firing pass on an unsuspecting victim was the favored technique of aerial combat. Opening up the throttle to maximum, diving from the rear, firing and rapidly escaping the combat area proved again to yield high tallies for those who religiously followed this dictum. No better example of this can be found than in examining the combat record of the highest scoring ace of World War II, Major Erich Hartman. His tactics were simple. He would always scan for the enemy, attempt to see them first and predict what they would do. Then he would select a situation in which he could control and single out his victim.

Employing surprise, Hartman would dive upon the enemy, usually from behind, close rapidly and open fire (often within 100 meters, sometimes as close as 50!).[8] After destroying the target, or prior to overtaking it, he typically would dive (or turn if altitude did not permit) executing a hard descending turn to clear the immediate battle area and prepare for a subsequent attack. He always attempted to avoid repeated attacks in the same location. Choosing the time and place of his attacks and always knowing and planning in advance how to escape, Hartman was able to survive the war (although he was downed 16 times, mostly due to ground fire and flying through the debris of his kills). In 800 instances of aerial combat, he amassed a score of 352 aerial kills in only 2 years of combat![9] Indeed, the best pilots of World War II employed the practical lessons learned during World War I and modified them to take advantage of their own weapons and aircraft.

World War II also saw the advent of massive formations of heavy bombers, escorted and protected by large numbers of fighter aircraft. Both the American and British Air Forces quickly discovered that large, relatively slow and unmaneuverable bombers operating without fighter escort were extremely vulnerable to attack by Luftwaffe fighters. Some reduction in bomber vulnerability was achieved by increased quantities of

P-51B World War II illustration by Blake Morrison



defensive weapons on the bombers and by flying tight formations to allow effective mutual support. But until continuous fighter protection became routine, frightful losses occurred in the bomber force. Aircraft designed for the necessary speed, maneuverability, weaponization and fuel range were required to allow the strike aircraft to perform their primary mission. Aerial combat in World War II was fought, not simply for its own sake, but for the purpose of preserving some other element of the total force, or for protection (from enemy fighters and bombers) of friendly installations. The need for dedicated, design-optimized air combat aircraft became an inescapable conclusion as air warfare in general grew into a tactically and strategically decisive element of combat.

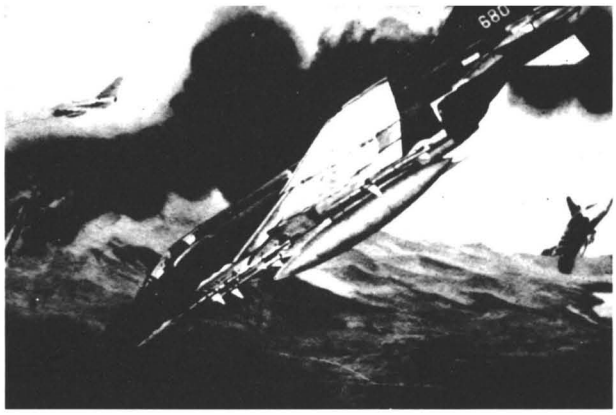
Pilots' training again proved to be critical in aerial combat during World War II. Just as in World War I, a pilot's first days in combat were critical. While precombat training was for the most part adequate on both sides, it was the aviator's survival during the first actual combat engagements which provided the most accurate gauge of whether a pilot would survive in the long run. During World War II a new pilot was often given only a 25 percent chance of surviving his first five combat missions.[10] However, if he did survive the probability of his seeing the end of the conflict rose dramatically. Combat experience in the air, like that of ground warfare, traditionally has a steep learning curve. The lengthy duration of World War II allowed for a great deal of air-to-air combat experience and, as we see later, proved to be crucial during the Korean War. It was to be many years later that we developed effective means to conduct peacetime training that approached the critical experience-building learning of actual combat.

The introduction of jet propelled aircraft during the late 1940s and the start of the Korean War in 1950, moved the art of air combat to greater altitudes and airspeeds. From the outset, the aerial engagements between Communist and United Nations' jets during the Korean conflict were conducted at speeds and altitudes that were unthinkable to pilots just 5 years prior. Whereas combat during World War II was essentially top-ended at around 32,000 feet with airspeeds of 370 to 430 miles per hour, engagements in Korea often began from an altitude of 50,000 feet and at speeds approaching that of sound itself.[11]

Operations in this greater performance envelope, however, were limited by the existing weapons technology. Machineguns and rapid fire cannon were initially the only practical armament the jets had to use in air combat. To be sure, great advancements in gunsights and ranging devices were made, but aerial encounters still relied upon the same weapon employed 35 years earlier during World War I. The pilots of the Korean War quickly found that all of their high performance often only produced one adequate gunshot during an entire engagement sequence. Not until the latter portion of the war did air-to-air missiles see service.

An interesting and crucial dialogue emerged at the point that air-to-air missiles began to prove their worth. The debate over whether or not guns were required, since high technology had given us a long-range (stand-off) weapon, was to continue well into the 1960s. In general, the Air Force missile proponents carried the day, and the fighter fleet at the onset of the Vietnam air war was essentially armed with missiles only. Stand-off weapons, the argument went, have negated the need for guns, since air-to-air combat will now take place at a range measured in miles between combatants who may never even see each other, much less become engaged in a close-in, turning "gun fight." Not only did this philosophy dominate weapons development, it also influenced aircraft design as well, with fighters being built heavier and faster and with generally less emphasis on agility and turning maneuverability.

It required a great deal of experience to master this new type of high-altitude, fast-forward and politically-constrained combat. That was the norm in Korea. Luckily our pilots at the time possessed that experience. The tremendous pool of American and other United Nations' aviators who had accumulated combat experience during World War II proved to be the key in Korea. The jets of the Korean War, the United States F-86 and the Soviet MIG-15, were basically equal to each other.[12] The one-sided air combat ratio in Korea (10-to-14 to 1) was produced primarily by the superior United Nation pilots. Entire Russian squadrons, comprised of many low-time pilots, were destroyed by United Nations' air units. Chinese and North Korean units suffered similar fates as their experience was inferior to that of their opposition. Pilot training won the air war in Korea and, as we shall see, would be our undoing in Vietnam 15 years later.



F-4D Vietnam War illustration by Blake Morrison

The U.S. Air Force entered the Vietnam War confident that it could inflict the same defeat upon its Communist foes as handily as it had in Korea. However, this was not the case. For some reason, during the years between the two Asian wars, our concepts of aerial warfare changed. The Air Force did not possess a dedicated counterair-fighter aircraft in Vietnam. The F-4 Phantom and F-105 Thunderchief were designed as "fighter bombers" and thus did not possess all of the characteristics needed for air combat. While being faster than their principal opponent, the MiG-21, the F-4 and F-105 were outclassed in maneuverability and acceleration—factors of great importance in air-to-air combat.

The combat environment of the air war over North Vietnam (where the majority of air engagements took place) proved to be an intensely air-defended area. Considering their primary mission of supporting the bombing effort in the North, and the obvious tactics that this implied, it's not difficult to understand why U.S. pilots as a whole achieved only a slightly better than 1 to 1 exchange ratio in air-to-air combat during the early stages of the war. Frequently, North Vietnamese MiG-21s would attack the heavily loaded U.S. fighter-bombers, employing the classic element of surprise (and tactics not unlike Hartman's), to attain a quick kill and then retreat into their own highly effective air defense network. But these were not the only reasons for our poor showing in Vietnam.

The vast aviation combat experience pool that we had drawn upon in Korea was simply not in existence in 1967. The World War II and Korean War veterans were now flying for the airlines or had retired from the service. Also, during the interim between the wars, a virtual moratorium was placed on actual air-to-air training by the Air Force.[13] Quite simply we were unprepared for air-to-air encounters and our combat record reflected it.

During the Vietnam War, the Navy was the first service to officially recognize the problem and to take steps to correct it. Recognizing the value of experience and observation in training, the Navy instituted its Top Gun program, in which pilots from throughout the Navy were trained in aerial combat tactics and techniques. Wherever possible, Navy pilots practiced against other Navy pilots who were trained to employ enemy methods, and who flew aircraft whose performance approximated that of the MiGs encountered over Vietnam. A sophisticated recording system was incorporated (Air Combat Maneuver Instrumentation) to allow aircrews to review every detail of their training "fights" during post-mission briefings and critiques. The results in Vietnam were dramatic, as Navy air combat exchange ratios soared in our favor.

The Air Force quickly followed suit, and instituted the now famous Red Flag training program in the Nevada desert to provide its pilots with as close to the real thing as possible. By allowing their pilots the rare opportunity to make mistakes in simulated air-to-air combat, the Navy and Air Force hope to alleviate the beforementioned learning curve problem of actual first combat.

Air-to-air combat during the Vietnam War taught us a valuable lesson in regard to aerial armament selection. The Air Force entered the conflict fully confident in the fact that heat-seeking air-to-air missiles would rule supreme. Soon after the first aerial encounters between the MiGs and our missile-only-armed F-4s, Air Force pilots screamed for their guns to be returned. They found that all the electronic wizardry built into the Sidewinder and Sparrow missiles did not amount to a hill of beans when a short range shot had to be made. Visual firing techniques still had a place in aerial combat and the Air Force quickly added high speed cannons to its aircraft. The gun vs. missile debate of the 1950s and 60s was quickly put to rest. A combination of weapons—guns for close-in work and missiles for long-range shots—was found to be the key. The best air superiority aircraft of today (F-16, F-15) reflect this concept and have proven to be extremely effective in air-to-air support.

The lessons of World War II regarding dedicated fighter protection for strike forces repeated themselves over Vietnam. While the primary mission might have been to bomb the bridge, there were a few incidental hurdles to overcome in the process—namely, tough-minded, well-trained, well-equipped Communist forces which were determined to prevent that mission.

Only carefully thought-out strike force task organization got the job done. Not only dedicated fighter protection, but also air-defense suppression, electronic

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warfare and other special-purpose aircraft were required before fighter-bomber strikes could be made with a reasonable chance of success and acceptable loss rates.

The most recent example of the lessons of air-to-air combat occurred during the Israeli invasion of Lebanon in June and July of 1982. In only 9 days the Israeli Air Force (IAF) managed to sweep the skies over the Bekaa Valley, downing more than 80 Syrian aircraft while losing only 2.[14] While this rather lopsided score was no doubt partially due to an extensive use of electronic countermeasures employed by the Israelis (jamming ground radars, radio frequencies and weapons innovations), one can also detect the superior level of training and experience that the IAF possesses. The pilot, knowing his machine, his environment and his methods of tactical employment, has always been the center of the Israeli Air Force. Their training reflects this concept and it is obviously successful.

History has shown that the successful pilots, those aviators who amassed the highest scores in air-to-air combat, employed a surprisingly simple brand of aerial tactics. The methods of aircraft employment used by the high scoring aces of the past have changed little from World War I to the present. The most successful offensive tactics in air-to-air combat include the use of surprise whenever possible, a fast pass from above, close-in shooting and two elements of mental judgment—the ability to quickly and accurately size up a situation, and prudence.

Even with today's sophisticated, automatic, fire-and-forget missiles, the concept of getting in close, of absolutely ensuring a hit, still holds true. These general fundamentals can be applied to helicopter vs. helicopter combat as well, although the helicopter's unique performance characteristics will cause some modification to specific techniques. Using simple tactics, gaining the first sight of a rotary wing adversary and quickly anticipating what he will do, sets the stage for victory. Possessing the patience and demeanor to aggressively pick a fight to dictate the terms of an engagement, attacking and exploiting enemy weaknesses and then firing as close as your weapons, the situation and the enemy will permit, will yield consistently positive results. By immediately clearing the battle area thereafter you will ensure your survival and allow the battle to be continued again another day.

History is filled with examples of soldiers who have profited from the lessons of the past. Just as Hindenburg applied the lessons learned by Hannibal's victory at Cannae (in 216 BC) into the German battle plan for its stunning victories in the beginning of World War I, so must the Army Aviation community see the lessons of history in its venture into the arena of aerial combat between helicopters. Our counterhelicopter doctrine and tactics are now being developed by some of the best minds in the Army's newest branch. In this development process we must be cognizant of history and apply what has been learned by our aviation predecessors during the last 65 years, for reinventing the wheel is a time consuming and wasteful process.

Army Aviation can provide the ground forces with the low altitude air superiority needed for success on the AirLand Battelfield. To learn how to do this we need only to look over our shoulders and match our weapons to the lessons of our aviation predecessors, for he who fails to learn from the mistakes of the past is destined to repeat them.

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AVIATION CENTER

WORKSHOP

The Department of Combined Arms Tactics hosted an Air-to-Air Workshop from 30 January to 3 February 1984 at the U.S. Army Aviation Center, Ft. Rucker, AL. The purpose of the workshop was to produce the final draft of FM 1-107, "Air-to-Air Combat," which reflects a broad consensus of air-to-air tactics and doctrine for Army Aviation units.

Captain James P. Smith

THE NEED for a doctrinal publication on air-to-air (ATA) combat is based on an increasingly evident threat which exists in the form of heavily armed rotary wing and fixed wing aircraft.

In April 1983 work began on an ATA manual, which was initially called Field Manual (FM) 1-105, "Air-to-Air Operations." The preliminary draft of this manual was published and distributed for staffing at the Aviation Center in August 1983. The Department of Combined Arms Tactics (DCAT) published and distributed Armywide the coordinating draft of FM 1-105 for staffing in October 1983.

The response to the draft was generally poor. Only 11 percent of all the commands and agencies that were sent a draft of the manual replied on DA Form 2028. In addition, most of the responses centered around spelling or grammatical errors. Few responses dealt with substantive issues on ATA tactics and doctrine.

As a result of the response, DCAT decided to host an Air-to-Air Workshop. People from various services and units in the continental United States and Europe attended. All of the attendees had worked extensively in the development of ATA tactics and doctrine. Those attending were:

- 6th Cavalry Brigade (Air Combat)
- 2/17 Cav, 101st Airborne (AA) Division
- 3/5 Cav, 9th Infantry Division
- U.S. Army Europe
- Headquarters, Training and Doctrine Command
- Marine Aviation Weapons and Tactics Squadron-1
- Army Development and Employment Agency
- Tactical Air Command, U.S. Air Force
- Directorate of Evaluation and Standardization, Aviation Center.
- Department of Flight Training, Aviation Center
- Department of Combined Arms Tactics, Aviation Center

As stated, the primary purpose of the Air-to-Air Workshop was to produce a final draft of the Army's first ATA manual. For administrative reasons, the number of the FM was changed to 1-107. To align ATA doctrine with AirLand Battle doctrine, the title was changed to Air-to-Air Combat.

A brief synopsis of each chapter and appendix in FM 1-107 follows:

• *Chapter 1, Introduction:* Provides an overview and incorporates much of the Army's operational concept for air-to-air combat; covers roles and missions of Army Aviation units and aircraft in ATA combat; and briefly describes their employment.

• *Chapter 2, Air-to-Air Threat:* Emphasizes rotary wing and fixed wing Threat aircraft, and describes their tactics and employment. This chapter also contains information and diagrams depicting the Threat helicopter vulnerabilities.

• *Chapter 3, Air-to-Air Combat Operations:* Integrates ATA combat into the AirLand battlefield and tells battalion and brigade commanders how to plan for and conduct ATA combat in combined arms operations.

• *Chapter 4, Principles of Air-to-Air Combat:* Describes the principles that must be adhered to in order to fight and win in ATA combat.

• *Chapter 5, Air-to-Air Tactics:* Covers suggested techniques for the tactical employment of helicopter vs. helicopter; helicopter vs. fixed wing aircraft; and Aviation units vs. Threat aircraft.

• *Chapter 6, Air Combat Maneuvering (ACM):* Provides detailed descriptions of single aircraft and team maneuvers in air-to-air combat. These maneuvers may be used when operation in the terrain flight environment is no longer feasible. ACM is normally used to obtain superior firing positions on an enemy aircraft or to quickly break contact and seek terrain masking.

• *Chapter 7, SEMA Air-to-Air Tactics:* Describes unclassified tactics for special electronic mission aircraft in ATA combat, and covers aircraft survivability equipment (ASE) used on special electronic mission aircraft.

• *Appendix A, Sample Training Program for Air-to-Air Combat:* Provides detailed guidance on the academic and flight training required to train aircrews in ACM and unit employment in ATA combat.

• *Appendix B, Aerial Ballistics:* Briefly expands some of the information found in FM 17-40, "Helicopter Gunnery." Covers factors for consideration in door gun and aerial gunnery.

ATA Workshop Recommendations

In addition to producing the final draft of FM 1-107, the workshop attendees made many recommendations on air-to-air combat. Major recommendations on ATA weapons, training and doctrine include the following:

• Begin training immediately in air-to-air combat. Despite ATA shortcomings in current weapon systems, all Aviation units must be trained in ATA combat and air combat maneuvering. By training now with current systems, Aviation units will better adapt to ATA combat when the AH-64 Apache, the OH-58D Kiowa, the air launched Stinger and improved gun systems are fielded.

• Incorporate ATA combat into AirLand Battle doctrine by incorporating air-to-air doctrine into ATMs for all Army aircraft; FM 17-40, "Helicopter Gunnery"; FM 17-50, "Attack Helicopter Operations"; FM 17-95, "Cavalry"; and FM 100-5, "Operations." Also, add classified appendices to all aircraft operators' manuals. These appendices would address in extensive detail the air-to-air capabilities and limitations of each aircraft, its weapon systems and its aircraft survivability equipment.

• Proposed aircraft modifications include improving the rotor system of the AH-1S Cobra to enhance aircraft agility and responsiveness; installing rearview mirrors on all helicopters to prevent being surprised from the 6-o'clock (rear) position; and complete fielding of ASE on all Army aircraft. Install APR-39s, infrared suppression kits, radar jamming equipment, etc., as soon as possible.

• Establish an air-to-air office at the Aviation Center. It should consist of ATA subject matter experts who are responsible for developing, coordinating, implementing and monitoring ATA tactics and doctrine, training and equipment requirements.

• Incorporate air-to-air training into aircraft simulators.

• Improve weapon systems for ATA combat. Ideally *all* Army aircraft should be armed with an air-to-air missile for long-range engagements and a high rate of fire cannon for short-range engagements.

• Also recommend that the Aviation Center accept proponent responsibility for the development and instruction of ACM by Army aircrews and recognize the need for ACM factors—that they be considered in future Army aircraft (LHX) design, configuration, armament and employment.

The Air-to-Air Workshop was a major step in the Aviation Center's goal of producing a field manual about ATA combat. Although much work must be done to produce a field manual, the final draft of FM 1-107 reflects a broad consensus on air-to-air tactics and doctrine for Army Aviation units.

ABOUT THE AUTHOR

Captain James Smith was a project officer in the Department of Combined Arms Tactics and the point of contact for FM 1-107. He is currently commander of 45th Company, 1st Aviation Brigade, Ft. Rucker. CPT Smith is a graduate of USMA, IOAC and CAS³.

The New ATMs

SINCE THE INCEPTION of aircrew training manuals (ATMs) in 1978, there have been numerous changes to tailor Army Aviation's training program. The purpose of ATMs which have been redesignated as field circulars is to identify tasks that the aviator should accomplish to maintain proficiency. Thus, the ATM delineates the tasks to be performed with conditions and standards that must be met.

Prior to the origin of ATMs, proficiency was maintained by specific annual hour requirements. However, there was no way to show what training was being accomplished for the resource dollar spent. With today's resource constraints, money is just not available to pay for an unlimited Flying Hour Program. Therefore, the use of ATMs can considerably improve the resources needed for maintaining pilot proficiency and unit readiness.

Notwithstanding, aircrew training manuals are not problem free. In its infancy the ATM went overboard with the amount of required tasks, the iterations of each task and how often each should be accomplished. The Aviation unit's specific mission was not given strong consideration. Simply put, commanders did not have any real input that would help them tailor training programs to the unit's mission. Instead, the emphasis was on training in basic and emergency tasks.

Aircrew training manuals to be published:

FC 1-210 "ATM, Commander's Guide"
FC 1-211 "ATM, Utility Helicopter, UH-1"
FC 1-212 "ATM, Utility Helicopter, UH-60"
FC 1-213 "ATM, Attack Helicopter, AH-1"
FC 1-214 "ATM, Attack Helicopter, AH-64"
FC 1-215 "ATM, Observation Helicopter, OH-58"
FC 1-216 "ATM, Cargo Helicopter, CH-47"
FC 1-217 "ATM, Surveillance Airplane, OV-1"
FC 1-218 "ATM, Utility Airplane, C-12, U-21 and U-8"

While the mission of the U.S. Army Aviation Center at Ft. Rucker, AL, is to train pilots for the field and give them the basic skills needed to be an asset to the Aviation community, in the field it is up to unit commanders to train aviators to be assets to the unit in the performance of their mission.

The Commander's Guide, FC 1-210, is intended to be a guideline for the commander, thereby it allows him or her to design training programs around the unit's mission with respect to the experience level of

the aviators and permits the commander to tailor training based on individual needs.

Whereas in the early life of aircrew training manuals emphasis was on training in basic and emergency tasks, now the stress is on tactical tasks. ATMs have been and are still being revised to reflect this new emphasis. An example is the deletion of touchdown emergency procedures. This change alone will no doubt save on the damage costs for training mishaps. To illustrate the point, statistics show that units in the field create a greater burden on themselves, both in maintenance and instructor pilot workload, with the practice of touchdown emergency procedures. If we wrote off every aircraft, each time there has been an actual engine failure or antitorque malfunction, the cost in damages would not even come close to the cost of damages due to training mishaps during which these same malfunctions were simulated.

The touchdown emergency procedure task descriptions will remain in the ATM as an appendix. These maneuvers have been retained for reference only and will not be accomplished.

By using the Commander's Guide and aircrew training manuals, the aviator's readiness level is determined based on accomplishment of the base tasks as well as the special tasks. Moreover, the unit commander is able to reprogram individual aviator flight time to best use available resources. For example, a highly proficient aviator may require fewer hours to sustain his or her proficiency than the average aviator. With that in mind, commanders may consider this and reduce the highly proficient aviator's semiannual flying-hour requirements by up to 25 percent. He can take these reprogramed hours and give them to a less proficient aviator to meet his training requirements. Exercise of this reprograming will not change the unit's total flying-hour program.

Commanders may also adjust unit or individual aviator semiannual ATM flight-hour requirements by up to 15 percent to meet training and mission needs. The aviators may fly up to 65 percent of the annual requirements in one semiannual period, but not less than 35 percent in the other semiannual period. Again, exercise of this authority will not change the unit's annual flying-hour program, nor will it cause an individual aviator's annual aircrew training manual flight-hour requirements or tasks to be reduced. In other words, the aviator still has to fly 100 percent of his or her determined hours and complete 100 percent of assigned tasks.

The commander has been given more flexibility by the deletion of the semiannual iteration requirement. The minimum iterations have been changed to one iteration annually of all base tasks for both FAC 1 and FAC 2 positions. The commander is now required to determine the number of iterations each aviator will accomplish based on his unit's training needs.

Other changes that have been incorporated into individual ATMs include the consolidation of several maneuvers. For example, the normal, shallow and steep approach tasks are now labeled the VMC (visual meteorological conditions) approach. The rationale behind this change is that approach angles are difficult to evaluate for standardization purposes. Therefore, the individual is required to pick an angle that will clear the obstacle and maintain that angle to touchdown.

Another example is the consolidation of terrain flight navigation, nap-of-the-earth (NOE), contour and low level flight into one task—Terrain Flight. To accomplish this task, aviators will navigate their selected routes after determining the mode of flight they will use for the mission (i.e., NOE, contour or low level).

The tactical instrument flight planning, tactical instrument takeoff and approach are no longer mandatory base tasks. They are now considered special tasks and will be accomplished only if selected by the commander as a required task.

In summary, the aircrew training manuals and the Commander's Guide are to help the unit commanders' design and implement their Aviation training programs. We must remember that not all aviators are at the same level of experience, just as no two units are the same. Commanders need some flexibility in shaping aviator training needs to enhance the unit's mission.

Aircrew training manuals are still undergoing revisions. As draft comments are returned and implemented, ATMs that reflect recommended changes are being distributed to the field. In the meantime, we here at DES welcome your comments and questions about ATMs.

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 or commercial 205-255-3504. After duty hours call Ft. Rucker Hot Line, AUTOVON 558-6487 or 205-255-6487 and leave a message

THREAT BRANCH

Lieutenant Colonel William F. Voth
Chief, Threat Branch
Directorate of Combat Developments
U.S. Army Aviation Center
Fort Rucker, AL

THREAT BRANCH is alive and well at Ft. Rucker, LA (Lower Alabama). In my last Threat Branch update article, which appeared in the February 1982 issue of *Aviation Digest,* Threat Branch had nine military analysts assigned. As of this writing, we still have nine, one of whom is a GS-12 civilian who fills an intelligence research specialist (career program 19 GS-132-12) position. While most of the faces have changed, our threat support missions are much the same.

Threat articles, identified by our threat logo as seen above, have become a familiar and, we hope, helpful part of almost every *Aviation Digest* issue over the years. Since "know your enemy" is one of the most basic laws of successful warfare, knowing may well save your life and will certainly help you do a better job!

To get the threat information you need and want, please take a minute to jot down your ideas, questions or comments on the attached questionnaire. We would especially like to know what Aviation threat subjects you want to see in future *Aviation Digest* articles.

Providing current threat information to the Aviation sector of the combined arms team through briefings and publication of threat articles in military periodicals is among our important missions. We also have several others which directly and indirectly benefit you, the combat aviator. We serve as the single point of contact for threat at the U.S. Army Aviation Center at Ft. Rucker, AL. This threat management function includes maintenance of the Center Threat Reference Library which contains the latest, all source, finished products from numerous intelligence agencies. This threat information, including briefings, is also available to you through your local threat representative or intelligence officer (see the threat training article in the April 1983 *Aviation Digest*). Our Threat Reference Library is the major source of information for the many articles and briefings we are called upon to produce.

Our task of supporting the Army Aviation materiel acquisition process in all stages is our interface in the combat development (CD) community. At Ft. Rucker, threat drives the CD train. We enjoy the total support and confidence of the CD structure and participate fully on the CD team.

The most significant new work being done in CD has centered on the experimental Light Helicopter Family, or LHX concept. This completely new turn of the century airframe demands very comprehensive intelligence analysis including postulations of threats throughout its life cycle. In the CD business, the threat intelligence community is often challenged to produce facts and figures on threat equipment, tactics and doctrine in greater detail than the CD'ers can give on the U.S. system they are designing! This difficult task has required one LHX threat analyst on a full-time basis and the dedicated assistance from others on numerous occasions.

As the Army Helicopter Improvement Program (AHIP) goes into its second operational test (OT II) this summer, extensive preparations in all areas are being made. Threatwise, we have published a comprehensive document titled "OH-58D Scout Helicopter Threat Support Plan (TSP)" which will guide testers on what threat the AHIP will confront.

Also in support of Army studies, one of our analysts spent 6 months at White Sands Missile Range, NM, on the Forward Area Directed Energy Weapons Study.

In addition to providing threat support to the resident Training and Doctrine Command system managers for scout, attack and utility helicopters, aircraft survival equipment and Aviation missiles such as HELLFIRE, Threat Branch also supports more than 30 departments, directorates, agencies and other organizations at Ft. Rucker. Numerous briefings, fact sheets, studies and threat guidance in every form possible result from this part of our mission.

The third major mission area of Threat Branch is training and training development. We give guidance for and review of lesson plans for threat content validity. In this capacity, we also monitor threat instruction in coordination with the Department of Combined Arms Tactics. Our branch is becoming more involved in review of all training literature and audiovisual products containing threat portrayals. You can also blame us for those threat questions on the aviator's written examination.

Divided among us are 13 areas of subject matter. Each analyst specializes in several of these and is, therefore, the point of contact in that subject area. The figure shows the areas of interest and the analysts responsible.

Threat Branch is a busy place. We do a lot of traveling to both gain and to give threat information. We receive numerous calls daily from aviators requesting answers to threat questions; and while a lot asked for is unclassified, often a visit to our office or a secure telephone call is necessary due to the classification of the material (ask your local Special Security Office for the AUTOSEVOCOM

number). In this regard, one of our primary missions is getting current threat information to you through publication of threat articles and assisting you in requesting threat training material. Any suggestion how to better do this would be welcomed. Write: Director of Combat Developments, ATTN: ATZQ-D-CT, Ft. Rucker, AL 36362. AUTOVON 558-3506/5671; commercial 205-255-3506/5671. Let us hear from you.

LTC William F. Voth
Aviation (15/35)
*1, 2, 5, 6, 10, 12, 13

MAJ Julius J. Zebehazy
Aviation (15/35)
*5, 6, 7, 10, 11

MAJ Dale L. Radtke
Aviation (15/35)
*1, 2, 4, 8, 9, 12

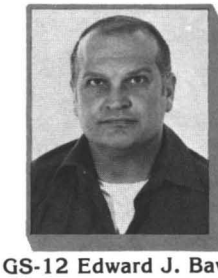
CPT (P) James A. Herberg
Aviation (15/35)
*2, 5, 7, 11, 12

1LT Charles M. Thomas
Military Intelligence (35)
*1, 2, 4, 12

MSG Richard K. McNeal
Order of Battle Analyst (96B50)
*2, 3, 4, 7, 8, 9, 10, 11

SP5 Tonia Perry
Order of Battle Analyst
(96B20)
*1, 4, 13

SP4 Robert A. Jones
Order of Battle Analyst
(96B10)
*1, 3, 4, 13



GS-12 Edward J. Bavaro
Intelligence Research
Specialist (132)
*2, 5, 6, 12

*** Areas of expertise**

1-Nuclear,Biological and Chemical Warfare
2-Tactics and Doctrine
3-Order of Battle, Mid/Far East
4-Order of Battle, Europe
5- Tactical Air Defense
6- Tactical Aviation
7- Ground Vehicles
8- Electronic Warfare
9- Directed Energy Weapons
10-Current Intelligence
11-Field Artillery
12-Materiel Acquisition Process
13-Data Base Management

USAAVNC THREAT BRANCH

Questionnaire

1 What do you think of our threat articles ?

☐ good ☐ o.k. ☐ bad

2 Which threat articles from past issues were outstanding ? _____

_____

...not so outstanding ? _____

_____

3 Are threat articles helpful to you in unit training ? ☐ yes ☐ no

comment _____

_____

4 What threat subjects would you like to see addressed in future articles ?

_____

5 How would you assess the the level of emphasis on threat awareness in your unit ?

☐ satisfactory ☐ unsatisfactory How can we help ? _____

_____

6 Prioritize threats to U. S. Army Aviation by numbering the following one through nine (1 = highest threat):

___ Radioelectronic Combat
___ Small Arms
___ Antitank Guided Missile
___ Tank Main Gun
___ Directed Energy Weapons (laser, particle beam, EMP)
___ Artillery
___ Tactical Air Defense (ZSU 23-4,SA-7,SA-9)
___ Soviet "Army Aviation" (air-to-air)
___ Nuclear, Biological and Chemical Warfare

7 Do you have any questions, comments or requests ?

_____

8 (optional) rank,name _____

duty position _____

unit address _____

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16

AVIATION PERSONNEL NOTES

We Need More Aviation Logisticians

If you are a Year Group (YG) 1978 or 1979 Specialty Code (SC) 15 Aviation officer who would like to hold two aviation specialties, your chance will come sooner than you might think. We need to designate about 60 Aviation officers from each group to receive SC 71 (Logistics) as an additional specialty (ADSPEC). Awarding SC 71 as an ADSPEC to those 15s with 6 years of service is a transition action between accessing SC 71s in fiscal year 1983 and eventually awarding SC 71 as an ADSPEC at the point of Aviation Officer Advanced Course training. In April 1984, Military Personnel Center was to have sent those of you in YG 78 a letter asking for your ADSPEC preferences. A marksense form will be provided on which you should indicate your desires and then return it directly to MILPERCEN. YG 79 officers will be given the same opportunity later in 1984. In both instances, the marksense forms of those SC 15 officers not awarded an ADSPEC of 71 will be retained by MILPERCEN and used during the upcoming "normal" ADSPEC designation cycles for each respective year group (YG 78 officers will be processed later in 1984; YG 79 officers will be designated in 1985).

While we're on the subject of Aviation Logisticians—consider the slot you're in. We recently found two Aviation Logisticians occupying slots coded for SC 72 (communications-electronics materiel management) officers. While such mal-utilization may be necessary under some circumstances it is certainly not desirable. Officers slotted as SC 72 are prohibited from flying and do not accumulate operational flying duty credit.

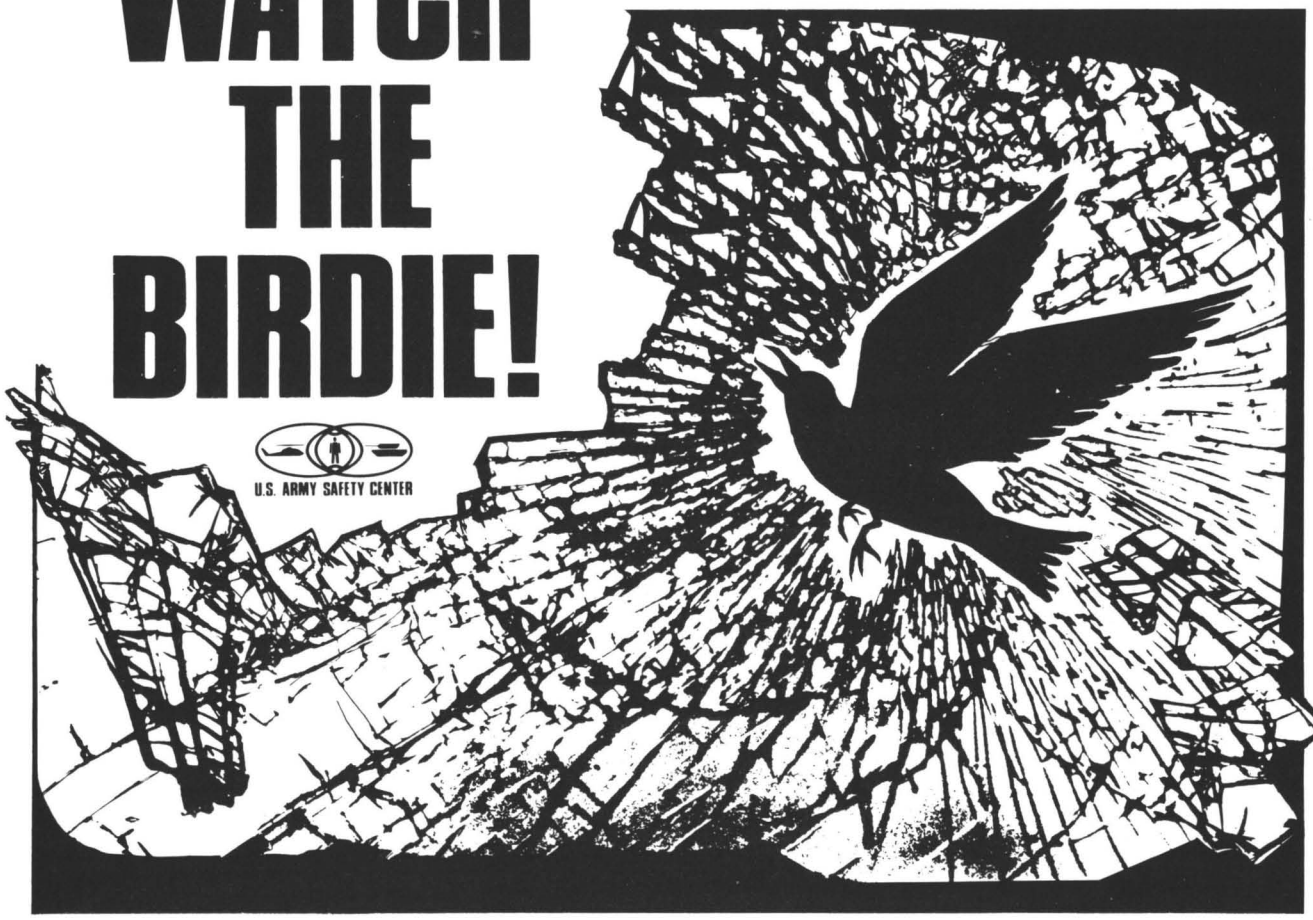
New Engineering Test Pilot Selectees!

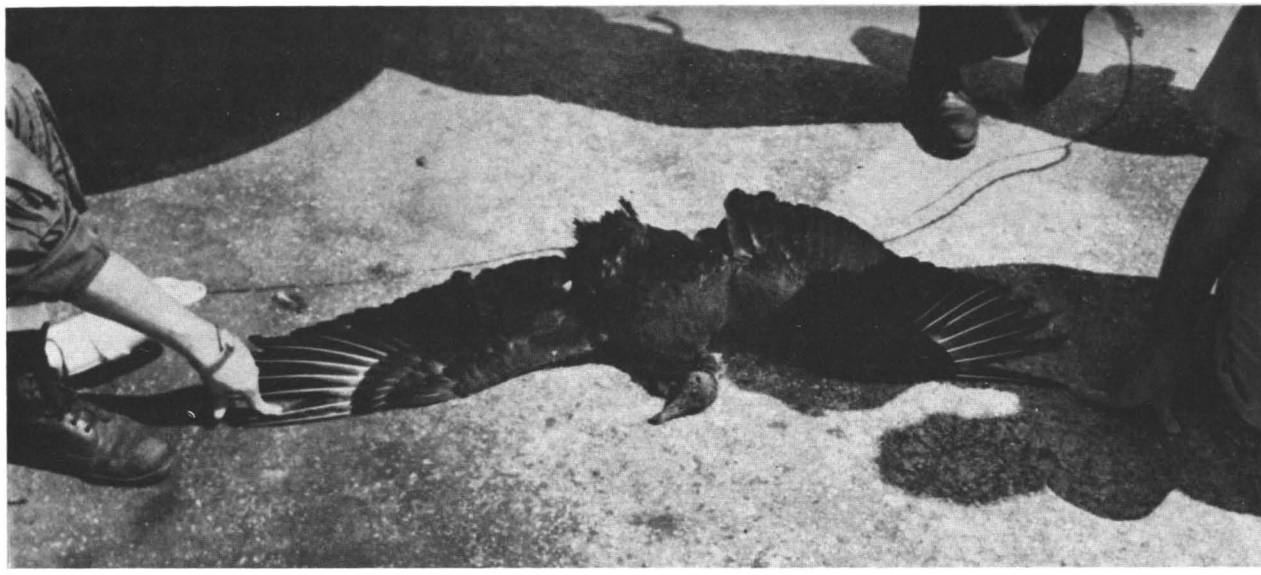
Congratulations to the 10 officers selected by the 1984 Army Aviation Engineering Test Pilot Selection Board. These officers were selected as "most qualified" from 47 applicants, to attend the rigorous Naval Test Pilot School at Patuxent River Naval Air Station. Selectees are as follows:

MAJ John S. Laurence
CPT Edwin S. Borman
CPT James D. Brown
CPT Waldo F. Carmona
CPT Michael R. Clifford
CPT (P) Telford W. Larew
CPT Paul W. Losier
CW4 Michael B. Farmer
CW3 Stephen G. Crouch
CW3 Joseph A. Lyle

Well done! We'll get you slated into school just as soon as possible. For you aviators who are interested in research and development careers—the next selection board will be in early 1985. Check out how you stack up against the prerequisites expressed in DA Circular 351-82-5. There will be a new one out this fall. Don't wait until the last minute to submit your application.

WATCH THE BIRDIE!





WHAT MIGHT AN Air Force base in Delaware, an Army post in Kentucky and an affluent neighborhood in Montgomery, AL, have in common? In one instance all three found themselves taken over by flocks of birds. The birds were eventually dispersed but not before some serious damage had been caused from birdstrikes resulting in a temporary suspension of flying operations at the military installations. The danger to people from histoplasmosis, a disease carried by birds, was a major concern in Montgomery and at Ft. Campbell, KY. It took a cooperative effort involving the Air Force, Army, Federal Aviation Administration, U.S. Fish and Wildlife Service, air traffic control and weather personnel and even an outdoor editor from the local newspaper to finally control the problem at the Air Force base.

There were 3,975 aircraft bird strikes reported to the International Civil Aviation Organization (ICAO) in 1981. Two of the aircraft were totally destroyed, 105 sustained substantial damage and 366 received minor damage. According to ICAO, only one-fifth of its members were reporting for that period; if all members had participated the number of strikes could have exceeded 10,000.

In addition, little information had been received from Central and South America, Africa, the Middle East and Asia. Some of these areas, with their tropical and semitropical vegetation and large populations of wildlife, would have added significantly to the reported figures.

ICAO found 65 percent of the reported bird strikes occurred on the ground during parking, taxiing, takeoff roll or on landing. Forty-two percent occurred above the ground and below 2,500 feet. Five percent occurred while the aircraft was en route.

How much of a problem birds are to your flying operations will vary greatly depending on where you are located geographically and the routes you fly. Army units in the Panama Canal Zone, for example, have found birds to be a significant hazard. It is a problem which probably should be considered in planning air operations in Central America.

If you think all that a birdstrike amounts to is a fistful of feathers, a few bloody remains and a possible dent in the fuselage, consider what happened to a C-5 at Dover AFB, DE, when it flew into a flock of geese at approximately 100 feet agl during takeoff. Examination of the damage revealed a football-size dent in the nose cone of number 4 engine, dents in the leading edge of the cowling, large pieces of metal missing from the first and second stage fan blades of the 1.5 million-dollar engine and large jagged holes ripped through the cowling by a disintegrating engine rotating at 8,000 rpm. The leading edge of number 3 engine cowling had several dents and shrapnel from number 4 engine had caused two bullet-size holes on the outboard side of the engine pylon. Luckily none of the fuel, electric and hydraulic lines located in that area had been hit. Two geese had crashed through the nose wheel well bulkhead and had come to rest 10 feet inside the fuselage. Number 2 engine fan blades showed the same kind of damage as number 4. Outside of minor fan damage, number 1 engine was in pretty good shape. The crew had managed, against heavy odds, to land the aircraft safely. There were 40 passengers on board.

So before you dismiss birds as a minor problem, you might want to assess the hazards they present to your flying operations. The Air Force Bird Aircraft Strike Hazard (BASH) team has done a lot of your work for you. Distributed with the February 1984 issue of the *Air Force Safety Journal* was a guidance package produced by this team which is located at Tyndall Air Force Base, FL. The package includes information on bird avoidance and provides ways to identify conditions which attract birds and methods recommended to disperse them. The package also has a list of state agencies that can help in solving local bird problems. An outline is provided for developing an effective bird hazard reduction plan. The BASH team has given their permission to reproduce this guidance package. Copies will be distributed to all Army aviation safety officers.

The frequency of bird strikes during the months of July through October is 3 to 4 times higher than that in the nonmigratory months of the year. It's time now to get ready—*watch the birdie.*

Sources
Flight Safety Digest, July 1983.
Luckenbach, Michael G., Major, USAF, "Just Another Birdstrike," *The MAC Flyer,* October 1983.
Sterling, Dwight D., Major, USAF, "A Few Good Birdbrains," *Flying Safety,* February 1984.

PEARL'S

Personal Equipment And Rescue/survival Lowdown

Shelley Coles photo by Reflections Studio

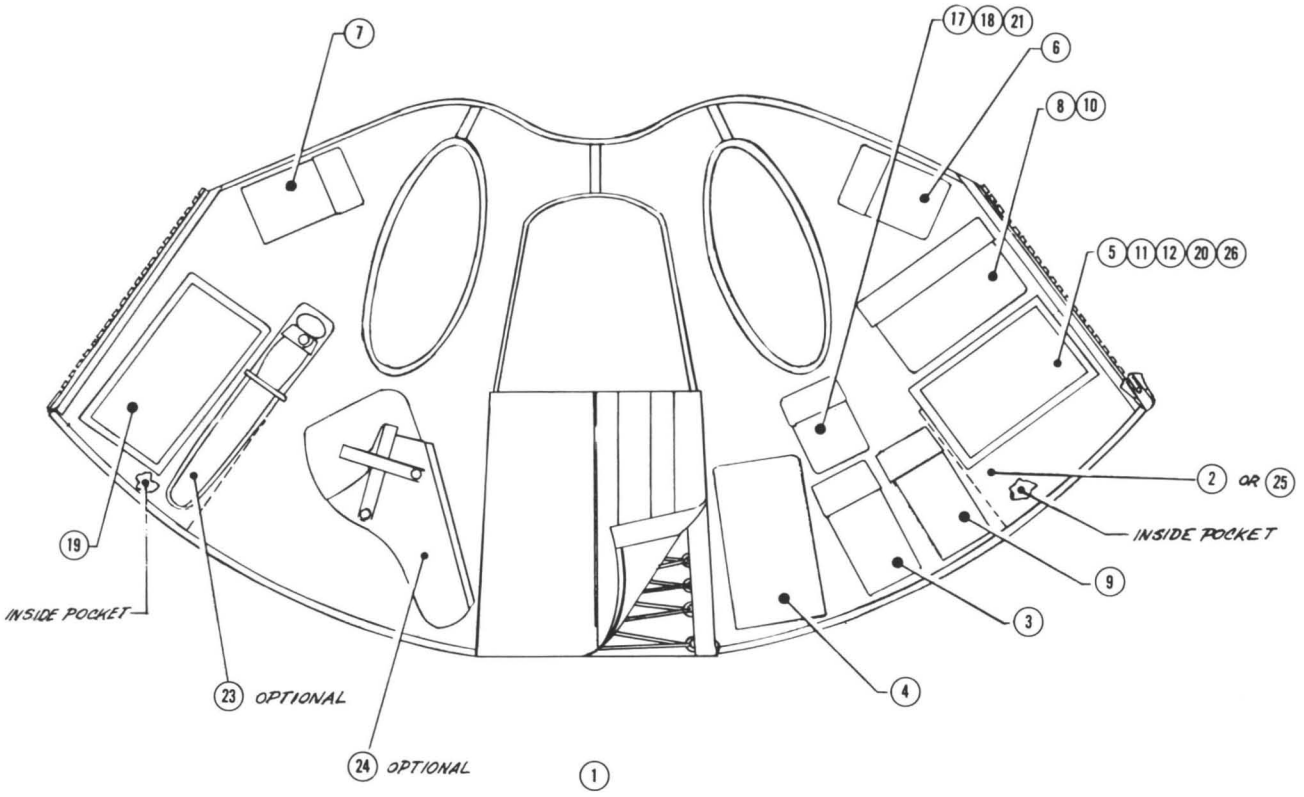
SARSAT

For those of you who think emergency locator transmitters (ELTs) are not going to improve your chances for a quick rescue and recovery because Army aircraft do not have VHF/UHF direction finding capability, or other service and civilian aircraft probably are not monitoring 121.5 or 243.0 anyway, I have two words for you, *COSPAS—SARSAT!* Gee-whiz you think, two more acronyms to try and cram into your already crowded memory. Seems there is a never-ending array of buzz words and acronyms that you never see any hardware or results from. Such is not the case here! SARSAT means search and rescue satellite aided tracking and has been operational since June 1982, when the Soviet Union launched the first satellite known as COSPAS I. Thus the COSPAS—SARSAT. This project was formed when the United States, Canada, France, Norway and the Soviet Union as participating partners joined resources to explore the feasibility of using satellites to detect and locate ELT signals from aircraft and ships in distress. There are three satellites in near polar orbit and a fourth is planned for launch in August 1984. These satellites can determine the geographical location of a transmitting ELT by using Doppler effect (measuring shifts in frequency as the satellite passes over the transmitting ELT). This information is then relayed back to earth via a network of ground receiving terminals. Each participating nation has a national mission control center (MCC) and at least one ground receiving terminal. In the United States the Air Force, Coast Guard, National Aeronautics and Space Administration and the National Oceanic and Atmospheric Administration have cooperated in the SARSAT Program.

The United States MCC is manned by USAF personnel at Scott AFB, IL, and colocated with the Air Force Rescue Coordination Center there. U.S. receiving terminals are located at Scott AFB, IL; Pt. Reyes, CA; and Kodiak, AK. The California and Alaska sites are operated by the U.S. Coast Guard.

In Canada the terminal and MCC is at Ottawa, Ontario, and extends coverage into the Atlantic Ocean. Canada plans to install three more receiver terminals which will extend coverage over all of Canada and above the Arctic Circle. Currently the four North American terminals provide 121.5, 243.0 and 406 megahertz coverage over the continental United States, Alaska, Mexico, densely populated areas of Canada and the maritime regions. Additionally, terminals in France, Norway and the Soviet Union provide coverage of Europe and parts of Asia. For those of you flying in Europe, the terminals and MCCs in France and Norway will notify the USAF Rescue Coordination Center (RCC) at Ramstein Air Force Base in Germany. Upon receiving an ELT signal that is within the geographical area of responsibility for the RCC at Ramstein, the French and Norwegians will also alert the appropriate *national* search and rescue organization.

COMING UP SOON: Pointers on search and rescue plans, operations and procedures for Army Aviation units.



SRU-21/P Survival Vest Component List	
1. Vest Contents, Assembly	16. Deleted
2. Vest, Survival, Small or Large	17. Cartridge, Caliber .38 Ball
3. Light Marker, Distress (Strobe Light)	18. Cartridge, Caliber .38 Tracer
4. Signal Kit, Foliage Penetrating (Flares)	19. Radio, AN/PRC-90 (Pocket used will be NSN 8415-00-442-3616)
5. Survival Kit, Individual Tropical	20. Blanket, Combat Casualty
6. Tourniquet, Nonpneumatic, Camouflage	21. Whistle, Ball, Plastic
7. Compass, Lensatic	22. Operator's Manual (Not Shown—Put in either inside pocket)
8. Net, Gill Fishing	23. Optional item. Knife, Hunting, Sheathed. If issued, may be located as shown in this drawing alongside PRC-90 radio pocket (Item 19)
9. Knife, Pocket	24. Optional item. Pistol Holster for .38 Caliber Pistol. Holster will be fitted to wearer as shown
10. Bag, Storage, Drinking Water, Size B	25. Vest, Survival, Large or Small
11. Mirror, Emergency Signaling	26. Insect Repellent, 1 ounce
12. Fire Starter, Aviation Survival, Magnesium	
13. Assembly Instruction Sheet (Not Shown—Put in either inside pocket)	
14. Deleted	
15. Deleted	

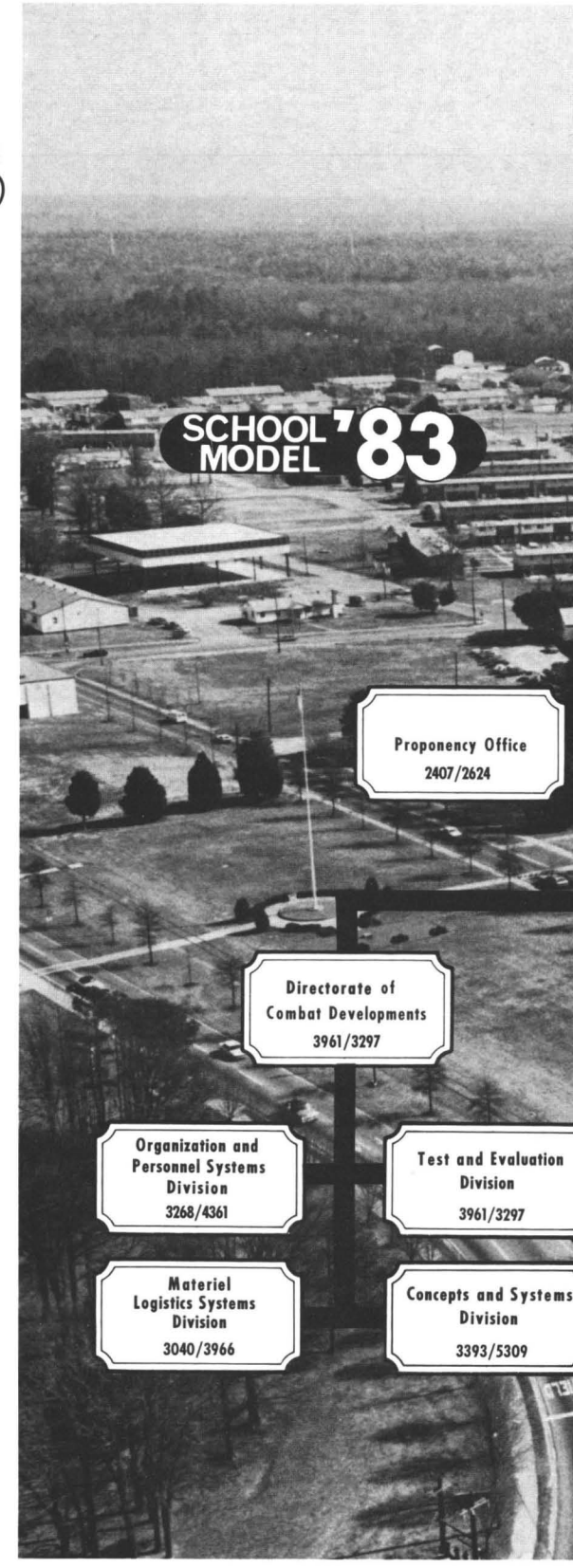
SRU-21/P Survival Vest

The current configuration of the SRU-21/P survival vest is shown above. Notice that there are some new items and some items have been deleted. We recommend you ALSE technicians use this to make copies to include in your unit's survival vests. Point of contact at Natick Labs for this item is Mr. Chuck Braga, AUTOVON 256-5449.

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

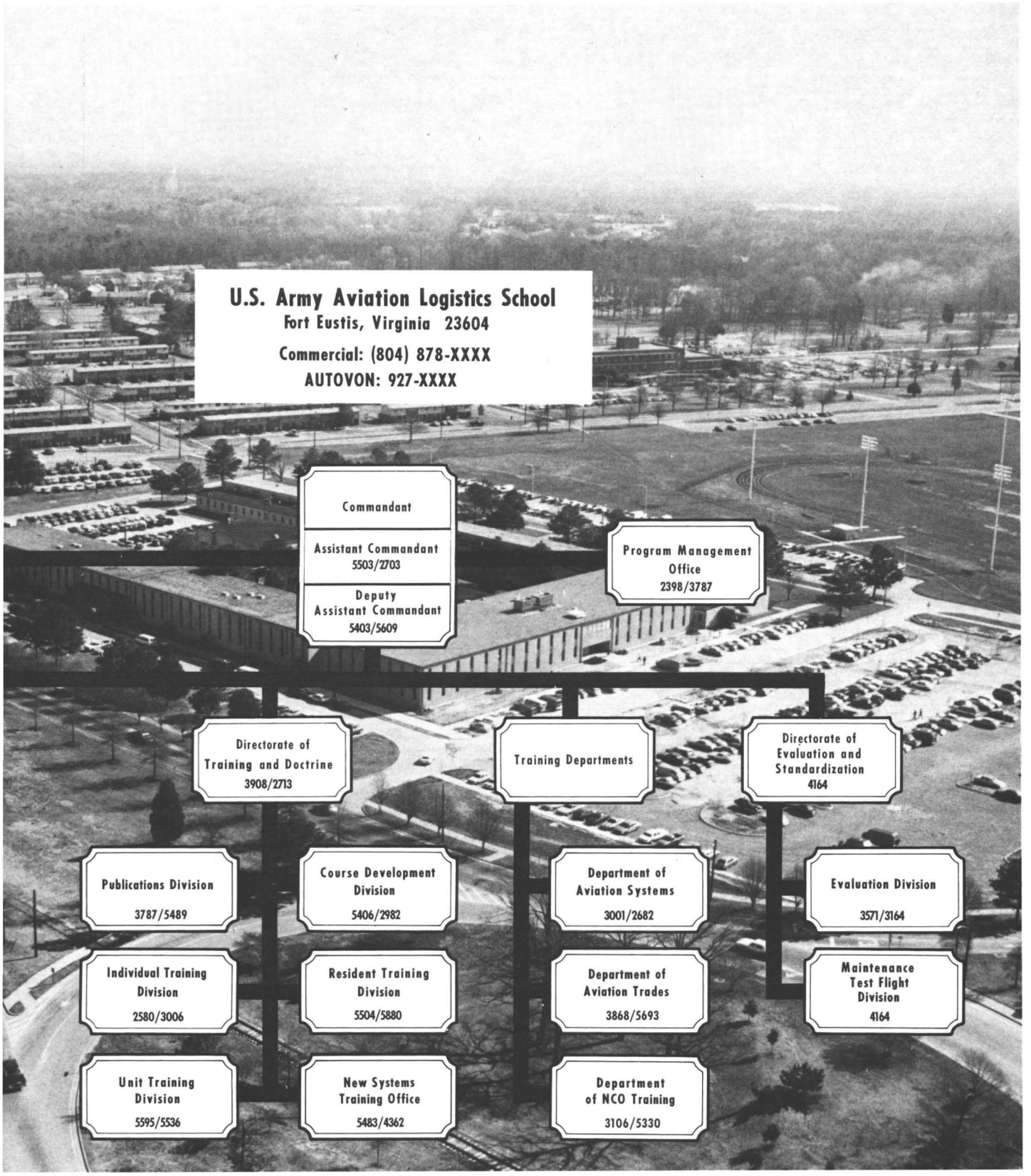
AVIATION LOGISTICS BY ANY NAME

Mr. Otis L. Haislip Jr.
U.S. Army Aviation Logistics School
Fort Eustis, VA



IT WAS JUST WHAT I needed. After 32 years in aviation maintenance and logistics, I became a member of the newest Training and Doctrine Command (TRADOC) service school: the U.S. Army Aviation Logistics School. It was like tasting the sweet spring of youth again. There was only one flaw. I was still at the same place, doing pretty much the same thing I had been doing for years. I guess this deserves an explanation.

The emerging prominence of Army Aviation resulted in creation of the Aviation Branch in the spring of 1983. A part of the Aviation Branch Implementation Plan called for the establishment of the Aviation Logistics School at Ft. Eustis, VA. Sounds like a massive stroke, but not really. Since 1952, the U.S. Army Transportation Corps had been responsible for the Army Aviation logistics program, and the largest part of the U.S. Army Transportation School at Ft. Eustis was devoted to that mission. The responsible general officers got together and decided that the Transportation School could be reorganized to create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Training Departments
Directorate of Evaluation and Standardization 4164
Publications Division 3787/5489
Course Development Division 5406/2982
Department of Aviation Systems 3001/2682
Evaluation Division 3571/3164
Individual Training Division 2580/3006
Resident Training Division 5504/5880
Department of Aviation Trades 3868/5693
Maintenance Test Flight Division 4164
Unit Training Division 5595/5536
New Systems Training Office 5483/4362
Department of NCO Training 3106/5330

two schools at Ft. Eustis: The Transportation School (less Aviation logistics) and the new Aviation Logistics School. Their plan was implemented on 1 October 1983, with no increase in resources at Ft. Eustis.

The mission of the Aviation Logistics School is to support the Aviation Branch and to integrate Aviation logistics into the overall Army logistics program.

TRADOC School Model '83 was also implemented in October 1983, so it was almost double trouble for many of the managers and administrative people—but older members of the staff were more accustomed to the rigors of reorganization: office moves, dividing the files, new telephone charts and numbers, new office symbols, rating schemes, misrouted correspondence, misplaced property, etc. Fortunately, a lot of us were experienced enough to be able to protect the mission workers from most of these frustrations. Consequently, the new school was born without interruption of mission.

An important part of the school's operating procedure is based on a Memorandum of Agreement (MOA) between its commandant, Major General Aaron L. Lilley, and Major General Bobby J. Maddox, commander of the U.S. Army Aviation Center, Ft. Rucker, AL. The MOA delineates responsibilities and operations of the Aviation Logistics School (ALS) as they pertain to the Aviation Branch and the Army logistics community; it also solidifies coordinating procedures.

With a few approved deviations, ALS is organized in accordance with School Model '83. The deviations are designed to save resources. As an example, the School Brigade and the School Secretary's Office support both the Transportation and the Aviation Logistics Schools. Otherwise, the two schools are separate except that they have the same commandant, MG Lilley, and assistant commandant, Colonel Albert B. Luster; both are Master Army Aviators and old hands at Aviation logistics. The deputy assistant commandant of the Aviation Logistics School is Colonel Ronald L. Bellows. Sergeant Major Richard L. Jackson, Ms. Joan P. Garrison and I try to keep the papers moving in COL Bellows' office.

Administrative, logistics and operational support for the Aviation Logistics School is provided by the Programs Management Office and its chief, Major James Means. He manages the TDA (table of distribution and allowances), personnel actions, correspondence distribution, budget, facilities, supply and anything that does not fall in someone else's area.

Personnel management studies, analyses and policies for Aviation logistics enlisted personnel, officers and warrant officers have their origins in the Proponency Office. Its chief is Major (P) Colon Keel. Conversion of personnel to the Aviation Branch has given him a king-sized migraine, but he hangs in there. With an AUTOVON call in each hand, we think the Signal Corps is going to claim him as a part of its communications network.

The Director of Combat Developments (DCD) is Lieutenant Colonel Gary Johnson. His folks develop concepts and studies for Aviation logistics. These often materialize as new support equipment. They also develop Aviation logistics organizations. As all the new things (organization, operation plans and new equipment) are put together, his test and evaluation people design tests to make sure it all works as planned. Some of DCD's projects include the Transportable Helicopter Enclosure (a portable maintenance shelter), a self-propelled maintenance crane, a new ground power unit, the Helicopter Internal Cargo Handling System, Unit Productivity Studies, and Battle Damage Repair Systems. Organizational design activity has been so hot and heavy of late, that LTC Johnson is beginning to think that Infantry Division 84 beats any number that Excedrin has shown on TV, and Basis of Issue Plan is something that happens after swallowing too much force modernization.

Lieutenant Colonel (P) Grover Snipes is the Director of Training and Doctrine (DOTD). His organization develops Aviation logistics doctrine and training. When the reorganizational smoke cleared, he found

that all the spaces in his doctrine office were vacant; but that has been fixed and a thorough review of all doctrine is underway. The training development mission applies to new and current systems, for both resident and nonresident application. His products include resident training and training management materials, Trainer's Guides, Soldier's Manuals, Job Books, Skill Qualification Tests, Army's Training and Evaluation Program, Training Extension Courses, Individual and Collective Training Plans, Programs of Instruction, Individual Training Plans, etc.

Resident training is accomplished in the three training departments. They occupy a training complex of more than 500,000 square feet of shops, hangars and classrooms.

The Department of Aviation Systems Training is headed by Lieutenant Colonel Roger Syverud. He and his instructors train the 67 series military occupational specialities (MOSs); they also conduct the Aviation Maintenance Officer Course, to include the maintenance test flight tracks. He has a lot of exciting things going on. The 66 series technical inspector courses have started, and the Aviation Life Support Equipment Course is on line. He will open a new hangar late this summer in preparation for AH-64 Apache and OH-58D Kiowa (AHIP) training. In October 1984, his folks will launch the Aviation Logistics Officer Course, an extension to the Aviation Branch Aviation Officer Advanced Course (captain's training).

Major Donald Bruns is in charge of the Department of Aviation Trades Training. He and his crowd of expert instructors teach the 68 series MOSs. They are also teaching component repair procedures to the new 66 series technical inspectors. Plans are underway for extensions to armament and electrical training necessary to support the AH-64 and OH-58D. Also, they conduct the only nondestructive inspection training in the Army.

As director of Noncommissioned Officer (NCO) Training, SGM Andrew Hale is in charge of the advanced NCO courses. Activity in his area includes plans for implementing a common core of instruction that has been developed by the Sergeant's Major Academy; target date is fiscal year 1985. His people also teach skill level 30 NCOs. Plans in that area include the development and implementation of technical tracks in the various specialized skill areas.

Lieutenant Colonel Harry McGinness is the director of Evaluation and Standardization. The folks in his organization share a special privilege. They go around checking on everyone else. They periodically check on the application of systems training procedures used in the development of training products; they check on the conduct of resident instruction to ensure that learning objectives are met; and they conduct follow-up inquiries to see how well our graduates are performing in the field. An important part of their mission is the conduct of maintenance test flight standardization evaluations in the field. Their unique acquaintance with inside and outside operations makes them a valuable source of advice in designing new programs and modifying current ones.

That summarizes the establishment of the U.S. Army Aviation Logistics School. Aviation logistics is not new for us—but the new name, creation of the new Aviation Branch, new aircraft coming into the inventory and implementation of some long needed MOS changes—have all combined to create a high level of excitement and enthusiasm. It has even caused us to seek opportunities above those defined by our mission. As an example, we have created an Aviation Supportability Committee to seek out problems that exist in fixing, fueling and arming aircraft on the battlefield. Letters have gone out to invite input and we are receiving a good response. We hope to prioritize these problems and orchestrate firm resolutions. If you have a pet problem in this area, or any area having to do with Aviation logistics, let us know.

As for myself, I am so thrilled about the Aviation Logistics School that I want to run right out and rig a biplane (which is the ultimate satisfaction for an old-timer).

This is the fourth in a series of articles that covers the new training plan developed for Aviation officers, both commissioned and warrant. The first article, "Training The Aviation Warrant and Commissioned Officers" was an overview of the entire training plan and appeared in the March issue. In April the Aviation Digest published the "Aviation Officer Basic Course" and the "Warrant Officer Candidate Military Development Course."

The Officer/Warrant Officer Rotary Wing Aviator Course

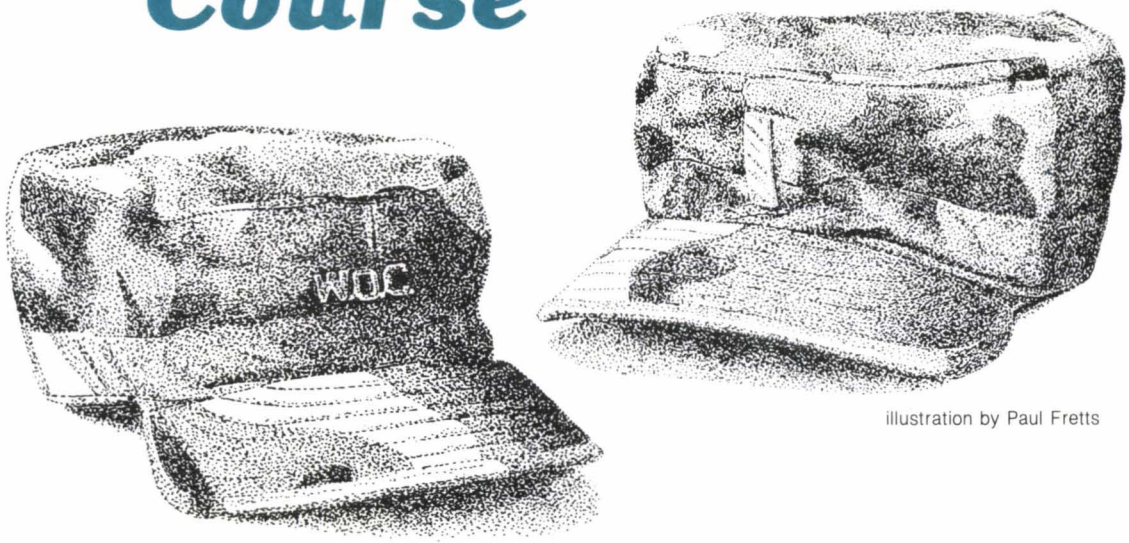


illustration by Paul Fretts

Captain (P) Charles W. Henry
Course Development Division
Directorate of Training and Doctrine
U.S. Army Aviation Center
Fort Rucker, AL

THE OFFICER/WARRANT Officer Rotary Wing Aviator Course (O/WORWAC) is the second phase in the training of potential Aviation commissioned officers and Aviation warrant officers and is 36 weeks, 2 days in length. It provides academic and flight training leading to qualification as an Army aviator.

The O/WORWAC consists of several phases which are depicted in the diagram on page 27.

Preflight Training

During the 2-week period known as preflight training, Aviation students are provided academic training to prepare them for their first flight. Students are taught basic aerodynamics, helicopter controls and functions, visual flight rules (VFR), aviation weather and TH-55 Osage aircraft systems. Students also undergo physiological training such as an altitude chamber exercise, and attend a series of aeromedical classes. All training during this phase is designed to acquaint the student with the basic principles of Aviation.

illustration by Bill Totty

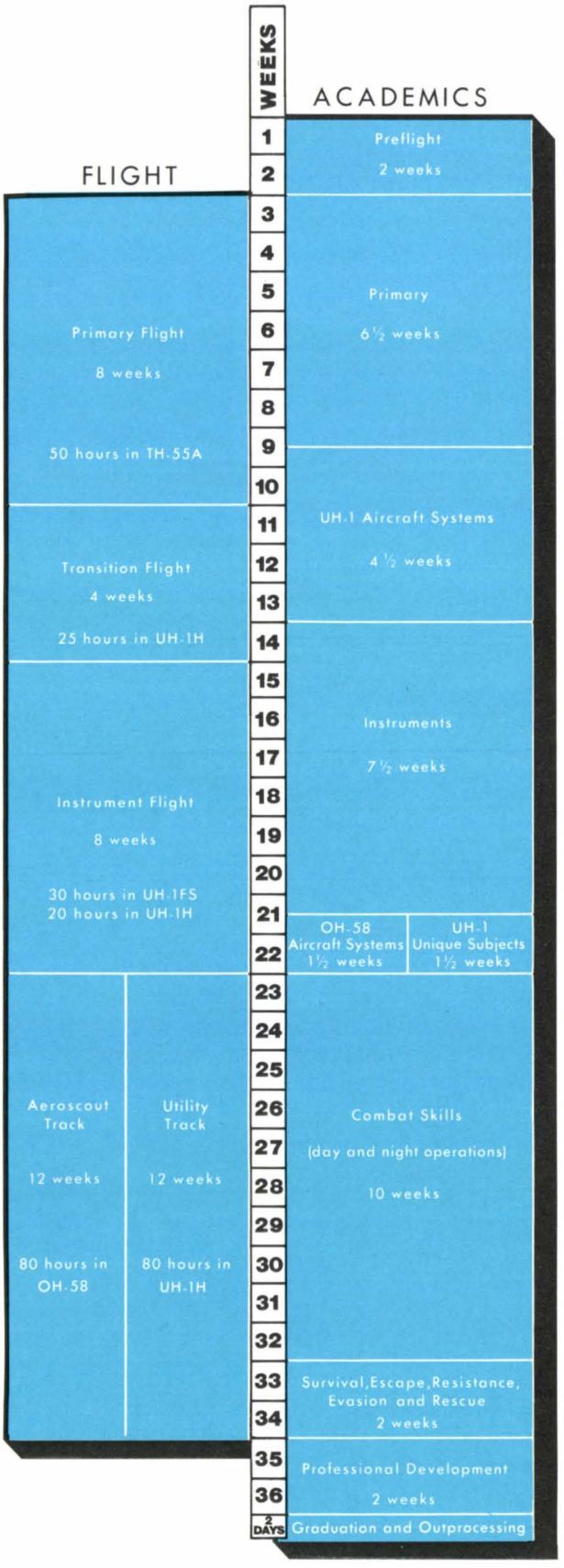
Primary Flight Training

During the third week of the course, students move onto the flight line at Hanchey Army Airfield to begin their flight training. From this point on, students spend about 5.5 hours per day at the flight line, and about 3 hours in academics with a 40-minute lunch break at midday. At the conclusion of the formal training day, students have homework assignments to complete in preparation for the next day's training.

The flight training during this phase consists of about 50 flight hours, flown over an 8-week period. Primary flight training is conducted by a civilian flight training contractor. The TH-55A is used to train flight students in basic helicopter flight skills. Students learn such fundamental skills as starting and runup procedures, hovering flight, takeoffs and landings, straight and level flight, basic flight maneuvers and emergency procedures.

Upon demonstrating satisfactory performance in required flight tasks, students are allowed to solo. After successfully soloing, students begin to alternate between dual flights with their instructor pilot (IP) and solo flights. The dual flight periods allow the IP to introduce new flight maneuvers and to evaluate and upgrade previously acquired skills. The solo flights are used to practice maneuvers designated by the student's IP and to build self-confidence. Students are counseled and receive flight grade slips at the conclusion of each flight training period.

As students approach the 50-hour mark for flight time, they take their end-of-phase flight evaluation.



The end-of-phase flight evaluation includes an oral examination on general flight characteristics of the TH-55, VFR flight regulations, and other related subjects, and a hands-on flight evaluation. During the flight evaluation, students are graded on their proficiency in performing specified flight tasks learned earlier in the phase.

Successful completion of the end-of-phase checkride coupled with successful completion of all academic requirements during this phase qualifies student aviators to move into the next phase of training, UH-1 Huey Transition Flight Training.

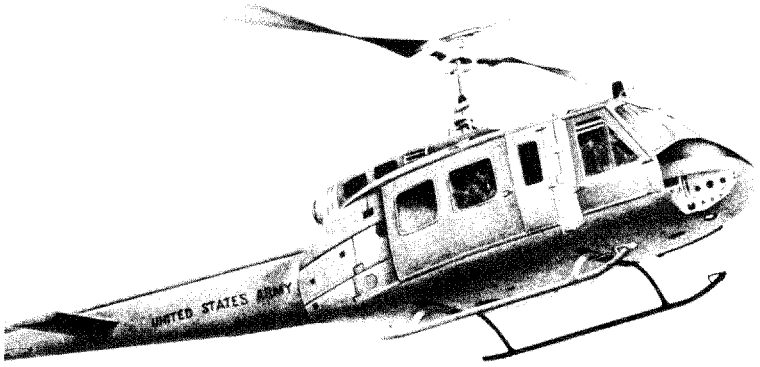


illustration by Bill Totty

UH-1 Transition Flight Training

The UH-1 Transition Flight Training phase is 4 weeks long, providing students with 25 hours of flight instruction in the Huey aircraft. This phase of training is conducted from Lowe Army Airfield. Prior to going to the flight line, however, students will have already undergone some training on the systems of the UH-1H. They also will have completed hands-on exercises in starting, runup and shutdown procedures using the UH-1 Cockpit Procedures Trainer.

All flight training during this phase is conducted by military and Department of the Army Civilian (DAC) instructor pilots assigned to the Contact/Night Qualification Branches of Lowe Division. Most flight training during this phase is dual flight, with only minimal solo flight. Emphasis is on emergency procedures training and the development of the students' self-confidence in their abilities to fly the UH-1H. The academic and flight training during this phase is designed to qualify the students to fly the UH-1H.

The UH-1 Transition Flight Training phase culminates in a flight evaluation. As in the Primary Flight Training phase, the flight evaluation includes both an oral examination and a hands-on flight evaluation. Students who successfully pass all academic and flight requirements qualify for advancement to the next phase of training, instruments.

Instrument Flight Training

The Instrument Flight Training phase is 8 weeks long. It provides students 30 hours of instrument flight instruction in the UH-1 flight simulator (UH-1FS) and 20 hours in the UH-1H aircraft. This phase of training is conducted by a civilian flight training contractor.

The first 4 weeks of the phase find students training in the UH-1FS. The UH-1FS is used initially to train students in basic instrument flight skills. In a short period of time students progress from these basic skills to flying complete instrument flight profiles in the UH-1FS.

Academic training during this period emphasizes learning the regulations and procedures that govern flying in instrument meteorological conditions. Students learn to interpret various aviation weather reports and to extract data pertinent to their planned route of flight. They also learn how to plan an instrument flight and translate the plan onto paper in the form of a DD Form 175, Military Flight Plan.

After completion of training in the UH-1FS, students and their IPs move to the flight line at Cairns Army Airfield. Here, during the final 4 weeks of the phase, students receive 20 hours of instrument flight training in the UH-1H. The training in this phase culminates in an instrument flight evaluation administered by a fully qualified military instrument flight examiner. Successful completion of the instrument flight evaluation qualifies students for the award of a rotary wing instrument rating.

Combat Skills Flight Training

Upon completion of the Instrument Flight Training phase, students separate into two tracks for the Combat Skills Training phase—the Utility Track, and the Aeroscout Track. Each track is 12 weeks long and provides students with about 80 hours of flight training instruction. Most of the academic training is common between the two tracks, providing students in each track with a good overview of the role of Army Aviation in combined arms operations.

Academic training for each track emphasizes the tactical aspects of Aviation operations. Students are taught tactical communication procedures, security procedures and mission planning techniques. They learn to plan, call for and adjust artillery fire. They learn to operate in a nuclear, biological and chemical environment. They are familiarized with the principles of survival, escape, resistance, evasion and rescue operations. The academic training is put to use during daily flight training periods and during a battle simulation exercise.

The Utility Track

The majority of the students in any given flight class move directly from instrument flight training into the Utility Track of the Combat Skills Training phase. These students continue to fly the UH-1H aircraft. During this phase, however, the flight training provided by the military and DAC IPs of the Combat Skills Branches, Lowe Division, Aviation Center, expands upon previously acquired flight skills.

Students are trained to fly and navigate at low level, contour and nap-of-the-earth (NOE) altitudes. They receive qualification training in night flight techniques using night vision goggles (NVG). Students are also trained in, and conduct, multiaircraft operations in support of training at the Air Assault School at Ft. Rucker, and the U.S. Army Ranger Camp at Eglin Air Force Base in Florida. By the time students complete their training in the Utility Track, they are well versed in performing a number of missions normally assigned to utility helicopter units.

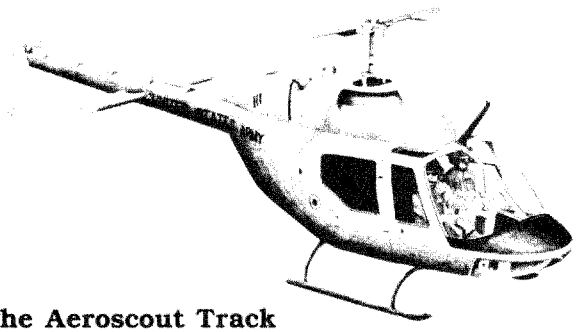


Illustration by Bill Totty

The Aeroscout Track

A selected number of students from each flight class, currently 20 students per class, are chosen for training as aeroscouts. The training of these students is provided by the IPs of the Aeroscout Branch, Hanchey Division, Aviation Center. It is the mission of these IPs to transition the aeroscout students into the OH-58 Kiowa helicopter and then train the students in the skills required of U.S. Army aeroscouts.

During the first several days of the Aeroscout Track, students learn the systems, capabilities and limitations of the OH-58. They are trained to fly the OH-58 and to execute appropriate emergency procedures applicable to the aircraft. Students progress rapidly through the transition training phase and move into Combat Skills Training.

During Combat Skills Training, aeroscout students learn to fly and navigate at low level, contour and NOE altitudes. They receive qualification training in night flight techniques using NVG. They participate in a live fire exercise involving aerial adjustment of artillery. They also participate in a joint air attack team exercise incorporating Air Force A-10 aircraft with Army attack helicopters under control of the aeroscouts.

Aeroscout students receive academic and flight training in those missions normally assigned to air cavalry or attack helicopter units. They learn to conduct route reconnaissance, zone reconnaissance and screening operations. They also learn to select holding positions, attack positions, and ingress and egress routes for attack helicopters. Students who complete the Aeroscout Track are well qualified in all basic tasks associated with performance as Army aeroscouts.

Professional Development Training

The 2-week long Professional Development Training phase updates flight students in several areas. Students are familiarized with the officer efficiency reporting system; instructed in unit physical security requirements; and versed in additional duty requirements found in most Aviation units. These updates, along with the other subjects covered, prepare flight students to go into their initial Aviation utilization assignments as officers well acquainted with the responsibilities and requirements of their anticipated duty positions.

Students who successfully complete all academic and flight training requirements are qualified for graduation. During their last week at Ft. Rucker, they participate in a last tactical formation flight and prepare for graduation ceremonies. The day prior to actual graduation the warrant officer candidates receive their appointments as U.S. Army warrant officers. The graduation ball follows, that evening. During graduation ceremonies the following day, O/WORWAC graduates receive the silver wings which identify them as Army aviators.

Upon graduation, most of the new aviators depart Ft. Rucker for their initial Aviation utilization tours with Aviation units in the field. Some graduates, however, remain at Ft. Rucker for transition into other aircraft or air traffic control training prior to their initial Aviation utilization tours. No matter what the assignment, graduates of the rotary wing aviator course are well qualified to fulfill their roles in the U.S. Army's newest combat arms branch...Aviation.

Coming Next Month:

A detailed look at the Aviation Officer Advanced Course (AVNOAC) and the Aviation Warrant Officer Advanced Course (AWOAC).

U.S. Army Communications Command
ATC ACTION LINE

Joint Use of Military Airfields

THE FOLLOWING is extracted from the executive summary of the Department of Defense/Department of Transportation Congressional Directed Plan for Joint Use of Military Airfields and is provided for general information.

"The 1958 Aviation Act authorized the Department of Defense (DOD) to regulate public use of military airfields. The DOD had released 24 airfields for joint use, when it was determined that such use would not adversely affect ongoing military operations. In addition to the 24 domestic military airfields having joint use agreements, many other airfields permit limited civil operations on a case-by-case basis in response to specific requests.

Within this context, and in response to PL97-248, the DOD has developed a systematic approach for additional airfields to be made available when a qualified sponsor proposes joint use at a military airfield. The cornerstone of this approach is the following DOD policy on joint use:

> The Department of Defense determines the feasibility and extent of joint use at military airfields. The Department of Defense will consider joint use when it is determined that joint use does not compromise military response, security, readiness or safety. Joint use of military airfields will be considered on a case-by-case basis when a formal proposal is submitted by a local government agency eligible to sponsor a public airport. Established criteria and good judgment will be used by the Department of Defense when evaluating formal proposals.

From this policy, criteria for submitting and evaluating joint use requests have been developed, and are described briefly:

Submitting Joint Use Requests—Joint use requests will be considered when proposed by a local government agency eligible to sponsor a public airport. Civil operations must begin within 5 years of formalizing the agreement between the concerned service and the local government agency.

Evaluating Joint Use Requests—Generally, an airfield will be considered for joint use if it does not have a nuclear alert force, pilot training (student or qualification), nuclear storage or a major classified mission. Joint use operators should not require co-location of military and civil aircraft, routine access to the civil facilities through the installation, nor increased airfield operating hours.

When evaluating each proposal, the appropriate military department, at a minimum, will consider the following areas:

a. Airspace
b. Traffic mix
c. Installation mission (current and future)
d. Type of proposed civil use
e. Existing civil facilities
f. Airfield configuration
g. Availability of land
h. Navigation aids
i. Fire, crash and rescue capabilities
j. Aircraft arresting systems
k. Encroachment
l. Security
m. Manpower requirements
n. Reimbursement terms
o. Environmental impact

As stated, the above is extracted from the "Executive Summary" of the DOD/DOT Plan for Joint Use of Military Airfields. The director, USAATCA-ASO is the executive agent for Department of the Army Deputy Chief of Staff for Operations and Plans on joint use matters. Mr. Burch, AUTOVON 284-7796/6304 is your point of contact for joint use matters.

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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