UNITED STATES ARMY

AVIATION DIGEST

APRIL 1979

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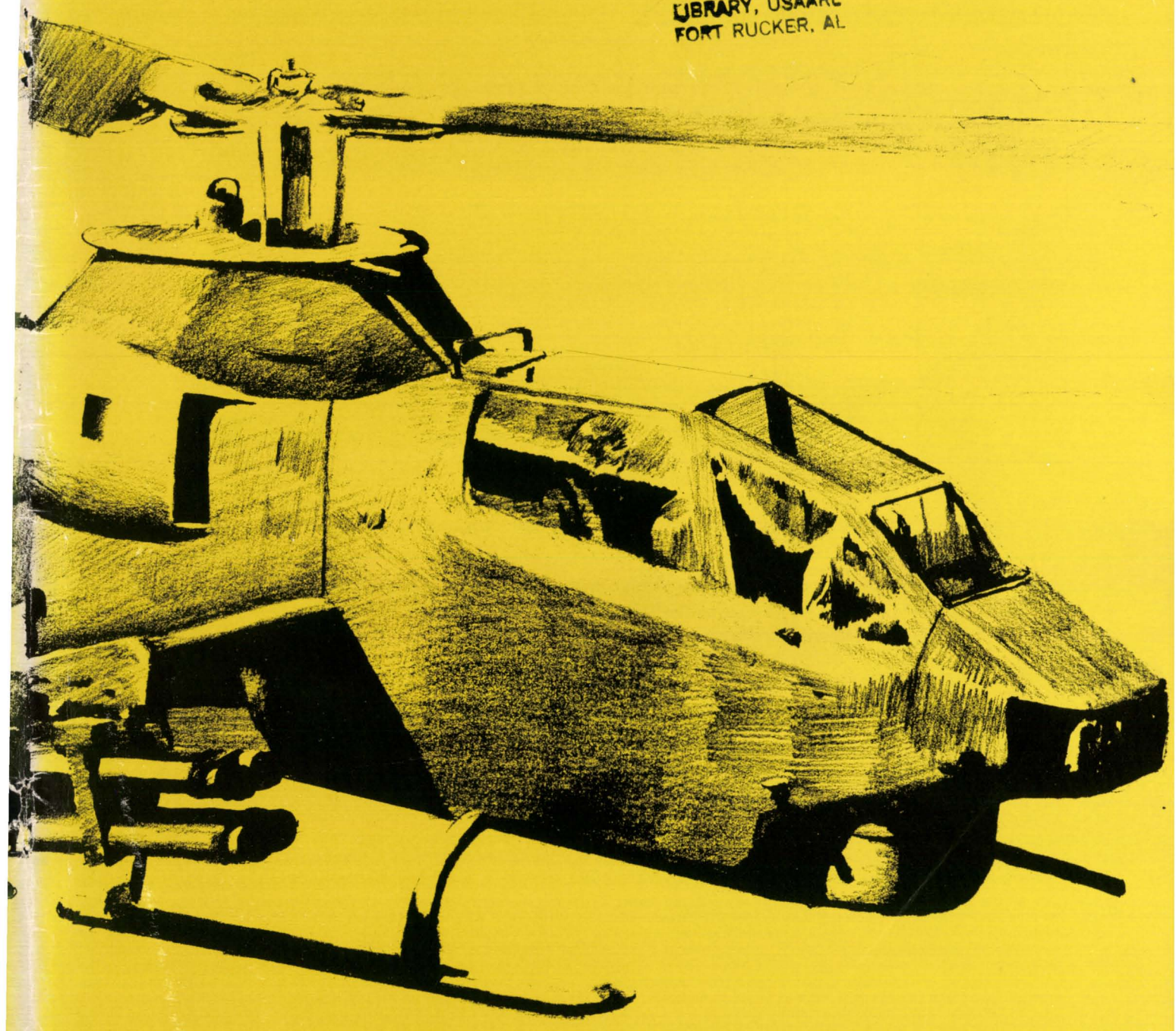

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AVIATION DIGEST
APRIL 1979
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Richard K. Tierney
Editor

ABOUT THE COVER

Touching on air combat from the days of Von Richtoffen to the present, CW3 Bob Baird gives his interpretation of helicopter air-to-air combat in this month's cover story. Beginning on page 1, "Air Combat: Something Old—Something New" provides an interesting look at this timely subject. Cover illustrations by Fred Martin

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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ANNUAL AWARD Monthly Winner CONTEST

AIR COMBAT: SOMETHING OLD SOMETHING NEW

CW3 Robert L. Baird
United States Army Reserve
Ramona, CA

FRANCE, SUMMER 1918. A fighting patrol of three Royal Flying Corps Sopwith Camels drones over the shell pocked trench lines of the Western Front. A series of puffy antiaircraft bursts catches the eye of the patrol leader. Scanning the area, the patrol leader observes a friendly two-seat artillery spotter 3,000 feet below and two miles distant. Close behind the diving spotter, four indistinct specks are identified as Fokker D-VIIs closing in pursuit. Using hand signals, the Camel leader motions for an attack. The flight of three, with height to convert to a speed advantage, roll in on the D-VIIs at about 170 miles per hour.

The Fokkers, intent on the easy kill, are caught by surprise: The Camels rake three of the four Fokkers with deadly fire from their British Twin Vickers machineguns.

The stricken Fokkers spin earthward as the Camels pull into hard climbing turns to reverse back down on the remaining D-VII. The German pilot is quick to realize his fate if he lingers. With aileron rolls inverted and pulling hard, the German aircraft split Ss away from the combat.

California, Summer 1978. Bright midmorning sun warms the desert floor as another hot California summer day unfolds. Two AH-1 Cobras snake across the bleached terrain, weaving slightly. The Cobras are flying at 120 knots, 100 feet above ground level (AGL) to eliminate rotor induced dust trails.

Inside the too-warm cockpits, four sweat-stained crewmembers strain their eyes in constant visual sweeps around the gunships. They are deep in bandit country. The crews are aware that somewhere above them a high performance fighter is lurking and they are the prey.

"Bogie! Left, eight o'clock high, coming down. Break left!"

Both aircraft turn hard left as the trailing Cobra crew spots the threat and calls the break.

"Extend!"

The hard turning Cobras roll out parallel. They angle off from each other, gaining lateral distance while keeping the attacker approximately nose on. The maneuver confuses the tracking problem, forcing the fighter to select one target.

The fighter elects the number two aircraft and keeps turning right to solve the sighting problem. As the right wing comes down the Cobra pilot reverses the left turn out and slams the aircraft back to the right, increasing speed to 160 knots. The fighter begins reversing the turn also but the closure rate is too great. Now the fighter is unable to acquire the Cobra in the gun mode before it must pull out.

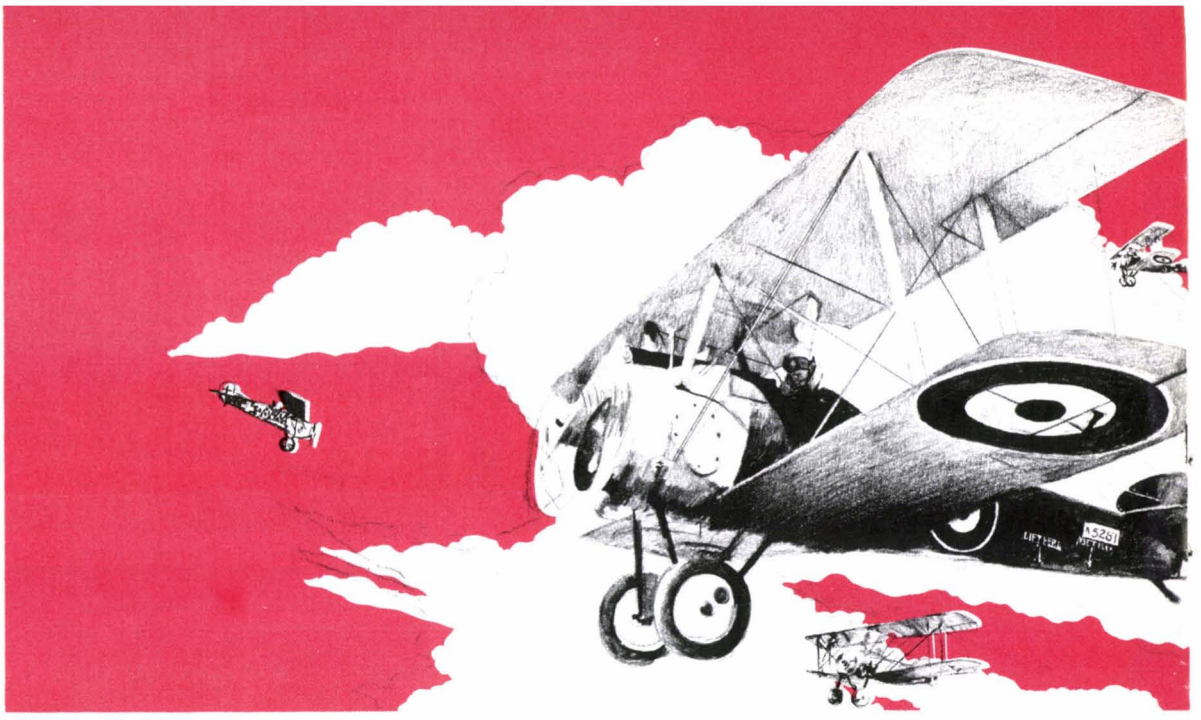
The Cobras turn with the fighter as it flashes by at 500 knots and identify it as an F-5E. The F-5 pulls into the vertical and prepares to reverse for another pass. The pilot, noting the too brief tracking time, elects to roll back in at a lower speed. The speed brake is thumbed as the F-5 rolls around to reacquire the attack helicopters.

Slicing down in a gradual right turn, the fighter pilot reengages one Cobra but loses the other in the pull up and reverse. Speed brake out, the F-5 pilot closes on the selected target. The Cobra breaks right and the F-5 rolls left to center the piper for the kill. *Slight buffet, trim; pulling the nose up a bit; correcting; range coming down; looks good.*

"Guns tracking!"

An unexpected radio transmission breaks the fighter pilot's concentration. A quick glimpse shows that a very nose high Cobra is at the F-5's two o'clock position. The F-5 pilot notes the Cobra pulling around the fighter. The fighter pilot slams the speed brake in, advances power and pulls back into the vertical to disengage.

A kill for the Cobra? Possibly! Against an F-5? You bet! This helicopter versus fixed wing was fought during the summer of 1978 using two AH-1s and an F-5E from the Navy Fighter Weapons School (TOPGUN). Although the outcome of this one battle did not hold true in all engagements, it does illustrate the



outcome is not invariable in helicopter versus fighter engagements. We are only on the threshold in helicopter air combat maneuvering (ACM), and we have a long way to go in developing effective tactics against high performance fighters and HIND-D type attack helicopter adversaries.

Something old, something new. We've come a long way since that air battle in 1918. World War II, Korea, Vietnam and the Mideast all have contributed new weapons, aircraft and thoughts on tactics.

If fought, the next war will be no different in most respects as the new weapons systems or their successors seek to dominate the battlefield.

But what of tactics? Have they really changed all that much over the years? Sure, we are in a high electronic countermeasures environment; ground-to-air and air-to-air missiles are the "in" thing. And, we all know about the ZSU-23 and its relatives. One situation that will really be new to Army air will be HIND-D gunships and swarms of MIG-27s and other close support aircraft operating in our airspace with the intention of eliminating us.

Army aviation's primary mission is to support the ground commander, *and we must never forget that.* But to do so effectively in a high threat situation you must be able to survive air-to-air defenses as well as the ground-to-air. Support of ground combat troops will mean putting an end to enemy helicopter borne raids and roving attack aircraft/helicopters. North Atlantic Treaty Organization air forces will have their hands full at low, medium and high altitudes, and you can bet the 0 to 300 feet AGL area will be saturated with all sorts of unfamiliar shapes.

OK, you agree, so let's press on with an open discussion on helicopter air-to-air. We can, as a start, take many notes from the early air battles of 1918 as well as the latest of 1973. Terminology has changed and weapons systems have advanced from the rather primitive to the extremely lethal with very high probability of kills. Yet basically we use the gun and the air-to-air missile, as indeed were used in 1918.

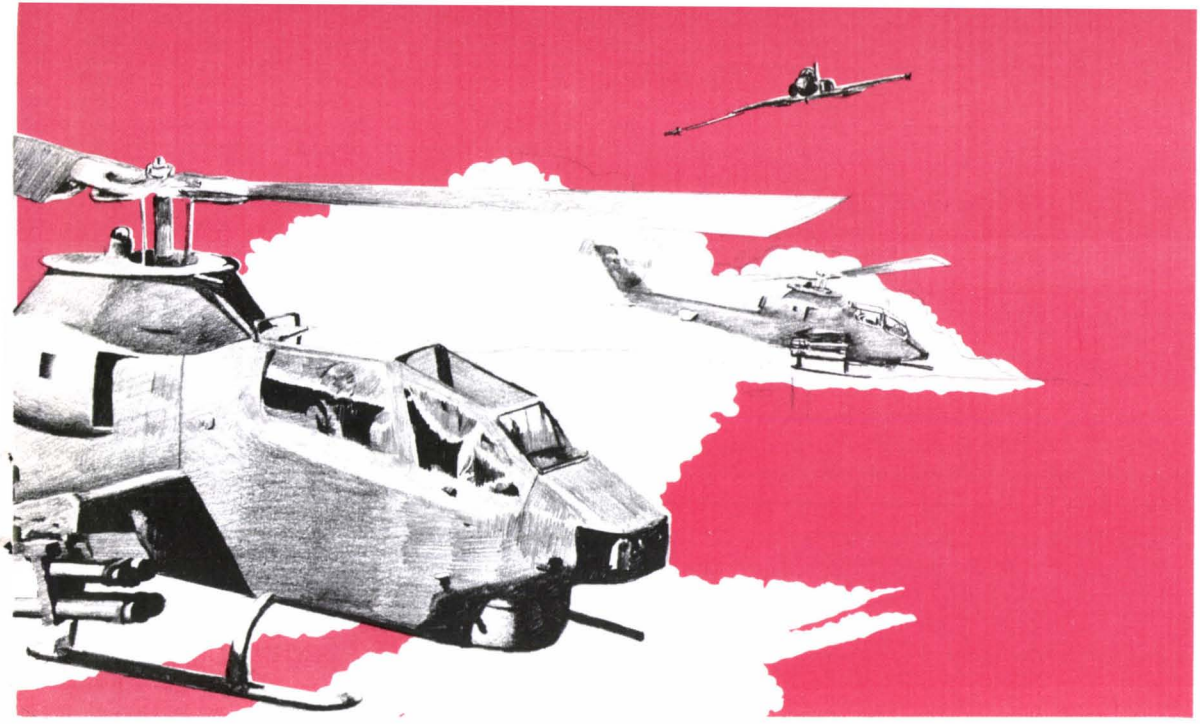
The Camel and D-VII driver operated their airplanes at speeds of around 115 knots, and in their turning and vertical fights the G loading ran around three to four. Sound familiar? Add a few knots, say to 190, keep the G limits, and we're talking about basic parameters of today's attack helicopters.

Our combat arena will change dramatically in one respect. Our freedom of vertical movement in and along the forward edge of the battle area will be highly restricted by ZSU-23 and surface-to-air missile systems, and also the attack threat posed by various MIG and SUKHOI aircraft. The elimination in many cases of this vertical airspace means we will have to concentrate our air-to-air problem in short duration turning fights at very low levels with all the inherent disadvantages that go along with such a situation.

Gun tracking problems and angle of computations should not present a difficult problem in helicopter versus helicopter fights. Although in helicopter versus fixed wing, you normally will only get snap shots and only constant range practice will provide the answers to when and where to shoot. Aircrews must be completely familiar with their aircrafts' performance capabilities, best cornering speed, roll rates, reversal rates, slicing turns, etc. Again, only constant exposure will provide the finesse and ability to extract 100 percent from the aircraft.

G force associated problems in attack helicopters should be minimal. However, even 3 to 4 Gs can restrict a crewmember if the member is not physically fit.

Formations. During the early years (circa 1915) of World War I most air-to-air encounters occurred between opposing single aircraft (one versus one). By



1918 large formations of 40 to 50 aircraft were engaging and the value of mutual support had been proven. In 1939 and 1940 the Royal Air Force basic combat formation consisted of three aircraft making set piece attacks. The Luftwaffe, employing techniques learned during the Spanish Civil War, employed the Rotte, or widely spaced pair, and the SCHWARM, a flight of four consisting of two Rottes. This is the basic finger four formation (figure 1). By the end of the war all air forces were using variations of the finger four, and indeed it remains in use today.

In helicopter offensive and defensive flights this basic formation still offers maximum effectiveness, particularly against opposing air.

Helicopter air-to-air will present some interesting conflictions with standard fixed wing tactics due to the helicopter's uniqueness of maneuvering capability; its very short radius turn; its abrupt reversals; and its speed acceleration/deceleration options. They will present the attacker and target with problems of which the fighter pilot would never dream.

A gun run on a tree line or bunker complex is one thing; tracking a HIND-D at 150 knots-plus in a turning fight is something else entirely. *Somewhere down the line we must introduce basic air-to-air gunnery to all attack helicopter drivers, and as time goes by air-to-air missile firing.*

Air-to-air gunnery, the easy way. Sneak in at dead six and hose 'em down; no turns, no Gs, no problems!

Unfortunately chances of this type attack will be extremely rare, so let's look at the more probable situation. If you see the bogie first, normally the target will be acquired from 9 to 3 o'clock relative. Your attack problem will depend on several considerations: bogie type, number, speed and direction of flight. Based on these considerations you can position your flight in the most favorable position to achieve a kill, and minimize your own vulnerability.

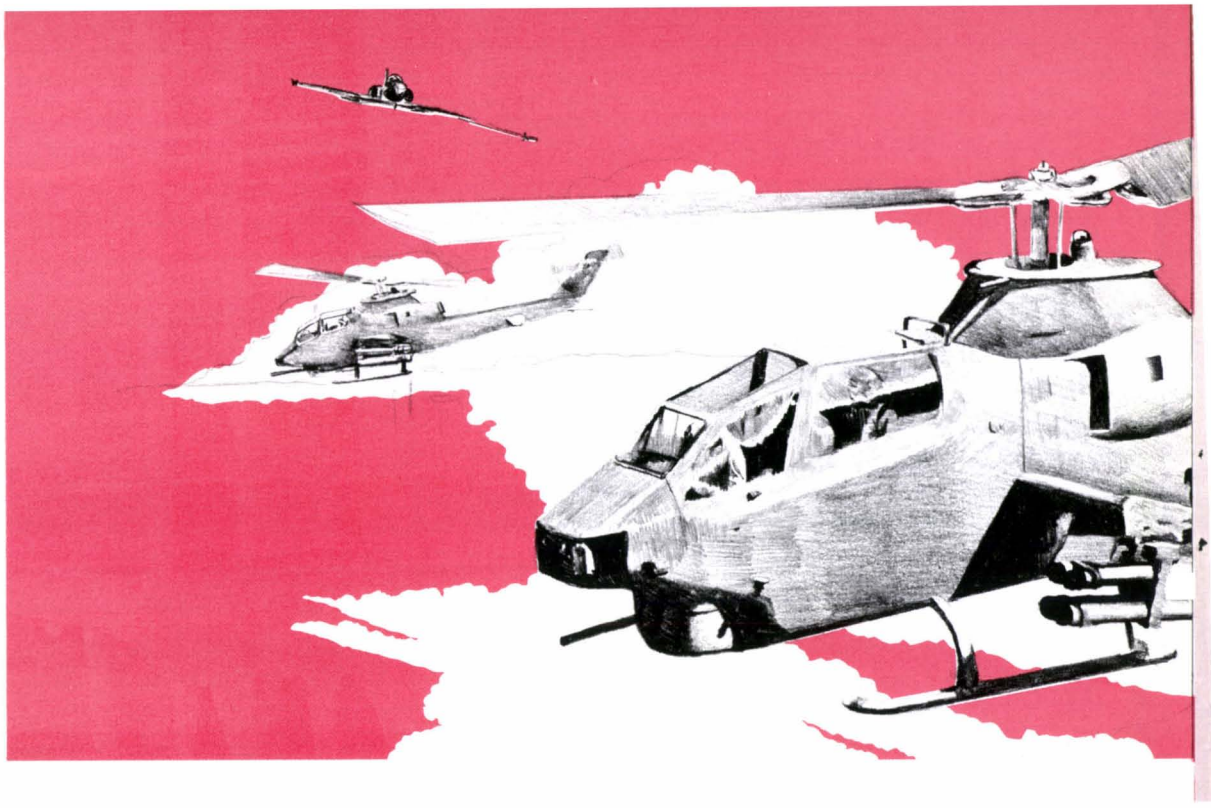
If during the closure the target breaks away and elects to run, a stern chase is inevitable. Knowledge of opposing aircraft performance may dictate your course of action; i.e. if HIND-D can trot off at 190 knots, could you hope to close to a favorable firing position?

If, on the other hand, the target is aggressive, once your attack is spotted, the target will most likely turn into you, presenting a fairly fast closure rate and a chance to improve your snap shooting ability. After the initial pass the fight becomes a turning battle for position and more than likely your shooting positions will again be limited to snap shots head on with breaks to reengage. Consider the break for a moment. Does the bogie have fixed or flex guns, or door-gunners that can present a problem as you steam by? A little knowledge of threat equipment may save your bacon here.

Coordinate your attack with the other elements of your flight. Remember, everyone can't be a shooter. Someone has to watch the back door and provide a "break" call if the attacker is being set up by the threat.

Once committed, don't engage in prolonged turning fights; you are setting yourself up for the threat's wing. Use your crew coordination to the utmost. Your best wing may be your own crewmember. Have the member clear your six and call threats and weapons states as needed (intercom system is still unjamable and may be the only working communication you have). Stay unpredictable. A set pattern run in, attack, or egress will invite a smart retaliation.

In the attack, take the easy one first. This pilot may sharpen up later when you don't need it. Force the enemy to error. Mutual support between all attacking aircraft is of prime importance. An aircraft



separated becomes an easy kill or at best is lost to the fight.

Always keep an *out* option in mind, even a simple plan is better than no plan at all. Stay flexible—an air battle is extremely fluid.

Know your position. You may be able to use altitude over a "secure" area that would be denied completely where the ground situation is RED.

In Vietnam, many times we returned from an engagement with the low fuel light on. We weren't concerned with problems in breaking off combat or possible interceptions on the way home. Times have changed. In the high threat environment, once engaged in air-to-air, we won't be droning along at nap-of-the-earth speeds. We will be pulling max power and maintaining high airspeeds. In the turning fight our minds will be on many things beside fuel, but remember an aircraft lost to fuel exhaustion is the same as an aircraft lost to enemy action. All flight members should monitor fuel state and plan their fights accordingly. Normally, the flight leader should call "BINGO fuel" and disengage the flight. Consideration should be given as to how to disengage, the possibility of having to fight your way out, the distance to the forward refueling area, etc. Leave a little early rather than a little late!

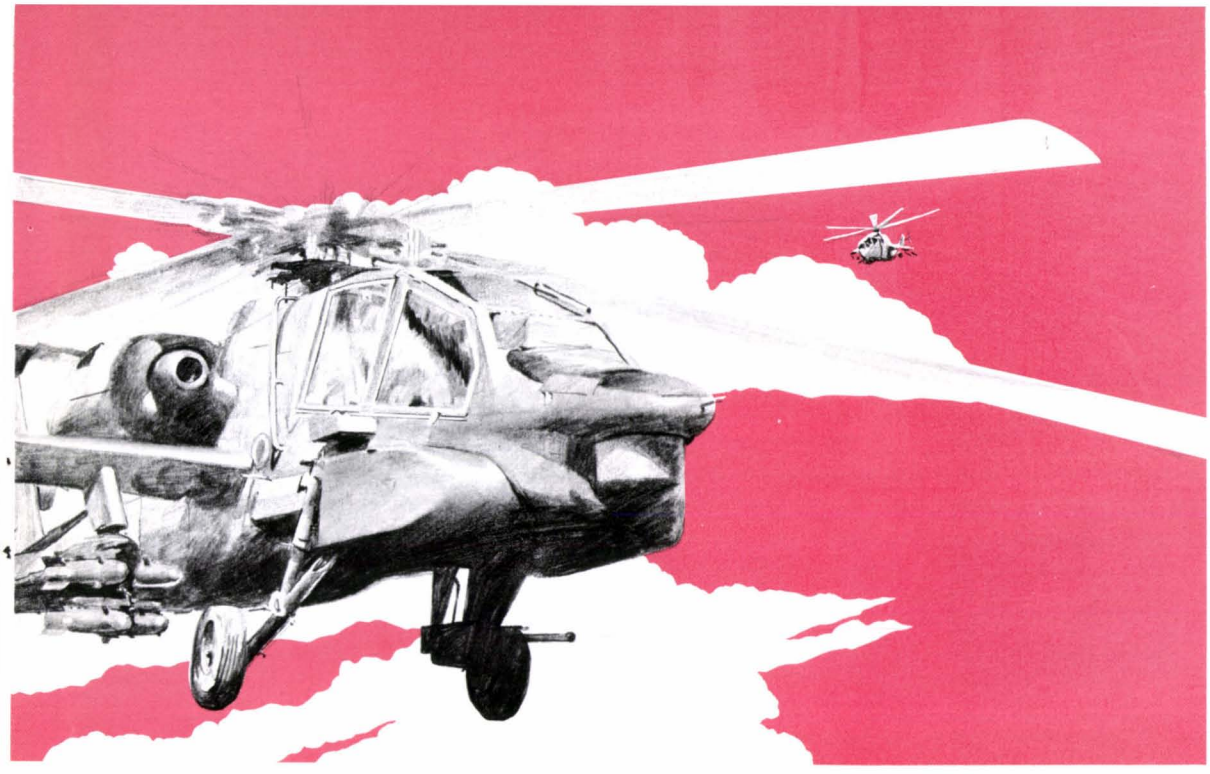
Extremely low level aerial engagements will provide pros and cons that are well worth considering. Treetop levels will provide concealment and a certain amount of masking against heat seekers (not necessarily so in cold European winters). Obstacles, wires, etc. also will remain with us and become even harder to spot while intent on bogie aircraft. Again, crew coordination is the best answer.

Conclusions. In reality it's too early in the helicopter ACM game to draw specific conclusions. We have far to go, and the sooner we get there the better off Army aviation and the ground units it supports will be. *Training, teamwork* and *aggressiveness* are the key words in the air-to-air environment. We must take advantage of the wide spread experience of our fellow services in the ACM arena. From them, Army aviation can learn and profit. A small, elite training unit should be formed along the lines of the Navy's TOPGUN program and the U.S. Air Force's Aggressor Squadrons. The mission of this unit, let's call it GUNFIGHTER as a catch phrase, would be similar to that of the above named squadrons; i.e. to teach the finesse of air-to-air combat, primarily helicopter versus helicopter, but also to include tactics against fast moving fixed wing.

Other lesson plans that could be presented to round out the ACM training period would include aircraft performance, weapons systems, opposing forces' equipment and tactics. Various other subjects related to the Army aviation spectrum also would be included.

To fly and fight effectively, you must know your aircraft and weapons. There are limitations on all systems, and to extract maximum effectiveness you've got to fly and fight within those parameters. To be a good attack pilot you must be aggressive. To remain an alive attack pilot, you must play it smart. Make that your motto—*Aggressive And Smart!* Check six—or checkmate.

For more air-to-air see *Aviation Digest* articles "Check Six Or Checkmate" by the author, October 1977 issue, and "Analogies And Implications From Fixed Wing ACM" by George Haering, April 1978 issue



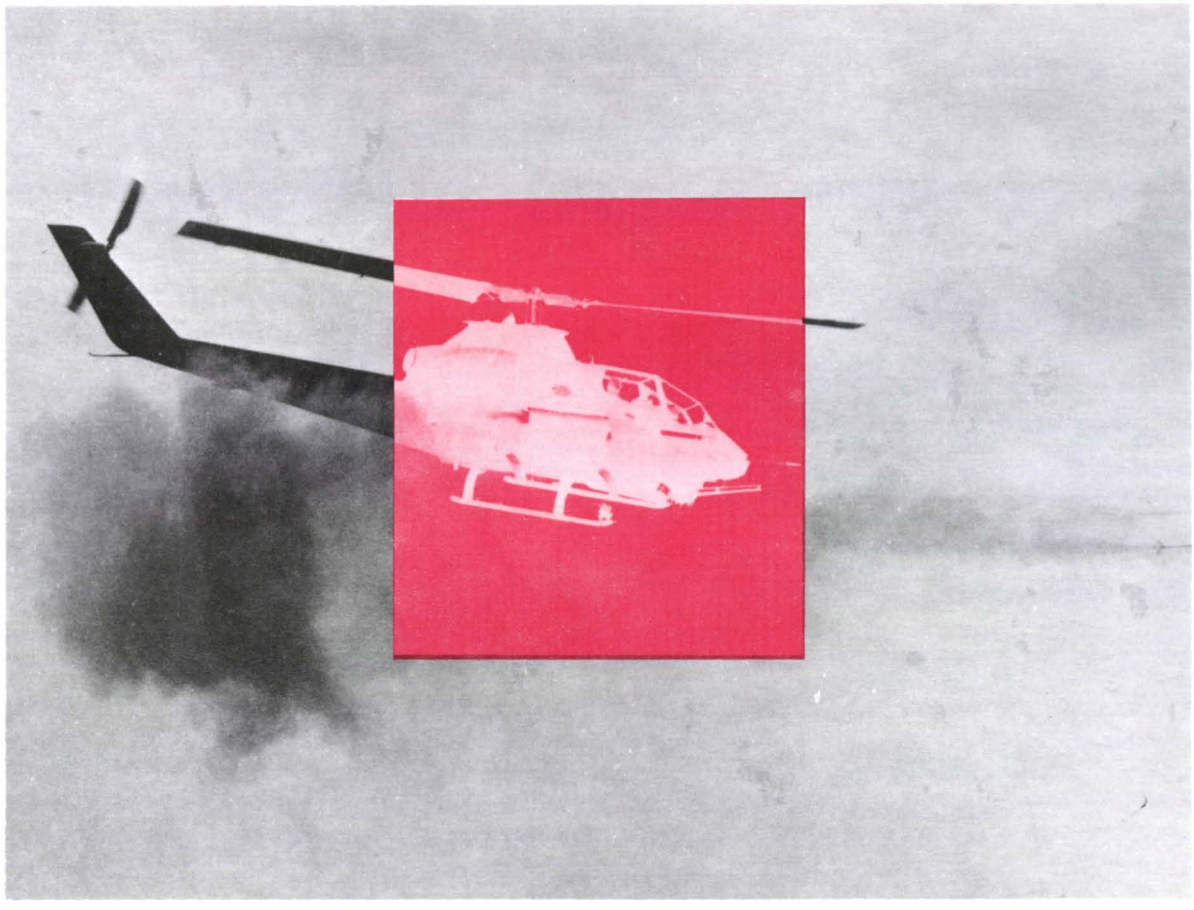
During the height of the Battle of Britain, August 1940, Squadron Leader "Sailor" Malan, one of the leading Royal Air Force (RAF) aces, set forth 10 principles of air fighting. Through the years the RAF, USAF and others have modified these ten "basics" to meet the changing times of the air battlefield. I include the rules as they originally appeared; Spitfire or Cobra, Eagle or AH-64, they're hard to beat.

MY TEN RULES FOR AIR FIGHTING

1. Wait until you see the whites of his eyes. Fire short bursts of 1 to 2 seconds and only when your sights are definitely "on."
2. Whilst shooting think of nothing else; brace the whole of your body; have both hands on the stick; concentrate on your ring sight.
3. Always keep a sharp lookout. "Keep your finger out!"
4. Height gives *you* the initiative.
5. Always turn and face the attack.
6. Make your decisions promptly. It is better to act quickly even though your tactics are not the best.
7. Never fly straight and level for more than 30 seconds in the combat area.
8. When diving to attack, always leave a proportion of your formation above to act as top guard.
9. INITIATIVE, AGGRESSION, AIR DISCIPLINE, and TEAMWORK are words that mean something in air fighting.
10. Go in quickly—punch hard—Get out!

"Sailor" Malan
Commanding Officer
74 Squadron, RAF

August 1940



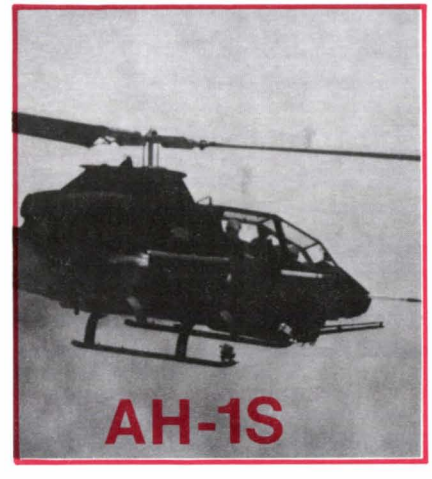
Attack Helicopter Fundamental Tactics

Colonel John C. Bahnsen
Commander, 1st Aviation Brigade
Fort Rucker, AL

SUCCESS OF ATTACK helicopters in battle depends on the pilots' capabilities to assess correctly the dynamics of modern battle and their abilities to employ their helicopters using simple battlefield tactical fundamentals. Our pilots must not only understand *what to do,* they must also understand *why it must be done.*

During conversations with some of the Army's foremost tacticians, I have found consensus on four fundamentals of attack helicopter employment. These four important fundamentals are:

- Combined arms team employment optimizes attack helicopter effectiveness.
- Terrain flying is essential.
- Engaging from maximum effective range, with minimum exposure time to threat air defense weapons, is essential.
- Most critical threat targets must be killed in priority.



Although not an all-inclusive list, these critical aspects of attack helicopter employment should be common discussion points for all Army aviators. They differ little from ground fighting techniques.

The Army needs common discussion points and understanding by all Army aviators in view of the fact that "wearing the wings" qualifies one as an assumed instant expert in explaining to nonaviators how the attack helicopter will fight on future battlefields.

First and foremost, attack helicopters comprise a key part of the

combined arms team. They provide highly mobile, responsive killing power to the ground force commander. Attack helicopters rarely will fight alone. They can, but should not fight small, isolated, one-aircraft battles. The attack helicopter optimizes its mobility and speed of employment by using stealth and complementary supporting fires to bring quick destruction to enemy armor forces.

Coordinated efforts by all combined arms team members are critical to the attack helicopter's success. Multidirectional, sustained attacks are critical aspects of attack helicopter battlefield effectiveness. Enemy air defenses can be overcome best by integrated combined arms team effort, including ground, air and attack helicopter fires. Once enemy air defenses are eliminated, the attack helicopter can wreck havoc with enemy armor formations.

Attack helicopter employment as part of the whole combined arms team—tanks, mechanized, infantry, artillery, air defense and close air support—is a fundamental idea. For those who would knock other weapons on the battlefield, I advise a bit of caution. This is especially true of Army officers criticizing the Air Force. The Air Force well understands the need for suppressive fires, smoke, chaff, flares, electronic countermeasures and integrated defense suppression in order for their primary killing effort to be effective.

Attack helicopters combined closely with Air Force close support and Army ground fires greatly enhance the entire team's survivability, and simultaneously increase overall kill power. We don't need either/or, we need all!

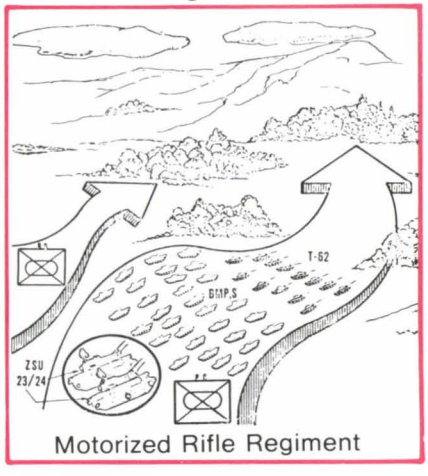
It also is foolish to think that attack helicopters can replace large numbers of tanks or improved tube-launched, optically-tracked, wire-guided (TOW) vehicles (ITVs) or other armored killers. The attack helicopter adds unique mobility to the combined arms teams and it can fight on several different battle-

fields in the same day, miles apart—but it doesn't do other team members' jobs. I liken the attack helicopter to the wide receiver and the safety on a football team. Their speed and mobility can be critical to victory or defeat. *No weapons system stands alone on the modern battlefield.*

"If you can be seen you can be hit, and if you can be hit you can be killed," is a key part of the Army's jargon today. Nothing could be truer for the attack helicopter. Use of *terrain flying* is essential for successful employment of attack helicopters.

Nap-of-the-earth movement, masked by available terrain, avoids enemy acquisition by visual optical and electronic means, providing the attack helicopter protection from threat air defense artillery (ADA) and ground weapons. Avoidance of skylining, or creating a visible signature by dust, snow, leaves, etc., also enhances effectiveness. Careful use of terrain gives the attack helicopter enormous advantages in attacking targets. Surprise is gained, along with cover and concealment. Even the barest desert can provide an adequate firing position and reasonable protection if the terrain and shadows are used properly. Attack helicopters do not attack from open areas, overfly the targets or present flanking views to the enemy. Terrain usage, not armor plating and bravado, makes the attack helicopter survivable on modern battlefields.

Figure 1



Motorized Rifle Regiment

Hand-in-hand with proper use of terrain, the tactic of engaging from *maximum effective range* will further ensure that attack helicopters will live and fight on future battlefields. Even if seen and engaged by the primary threat ADA weapons, the ZSU-23-4, the attack helicopter will be difficult to hit and kill *if* maximum standoff distances are observed.

This maximum distance will, of course, vary according to terrain intervisibility, weather, etc., but it is a key to being able to kill and not be killed. Accurate target acquisitioning, and use of all possible flanking and quartering attack angles, are basic techniques to this tactic.

My fourth key thought on attack helicopter employment is the requirement for the *critical threat weapons* system being destroyed as a matter of top priority. (See "How To Kill A ZSU" by COL Bahnsen in the Nov 1977 ***Aviation Digest.***)

In figure 1 you will note the location of the ZSU-23-4 in an enemy armored force. The ZSU-23-4 normally is found within 500 to 1,500 meters of the lead elements of a threat motorized rifle regiment. These weapons systems must be attacked and destroyed first by either a ground weapons system (artillery normally) or by the attack helicopter.

Techniques to do this with the attack helicopter have been developed and are being refined. It is

risky business, and not easily done, but the use of the three tactics discussed above, plus the full use of radar warning systems, such as the AN/APR-39, make this a viable tactic.

Basically, *the rule is to destroy the air defense first, by any means,* then go after the other armored vehicles.

All in all, attack helicopter employment must be in sufficient quantities under coordinated direction to add surprise and heavy destruction to the capability of our war machine. Aviators employing attack helicopters must be comfortable fighting on the battlefield in the ground environment for they are, in fact, only a few feet above it. The *attack helicopter is a line of sight direct fire weapon system which fights shoulder to shoulder with our armor and infantry forces.*

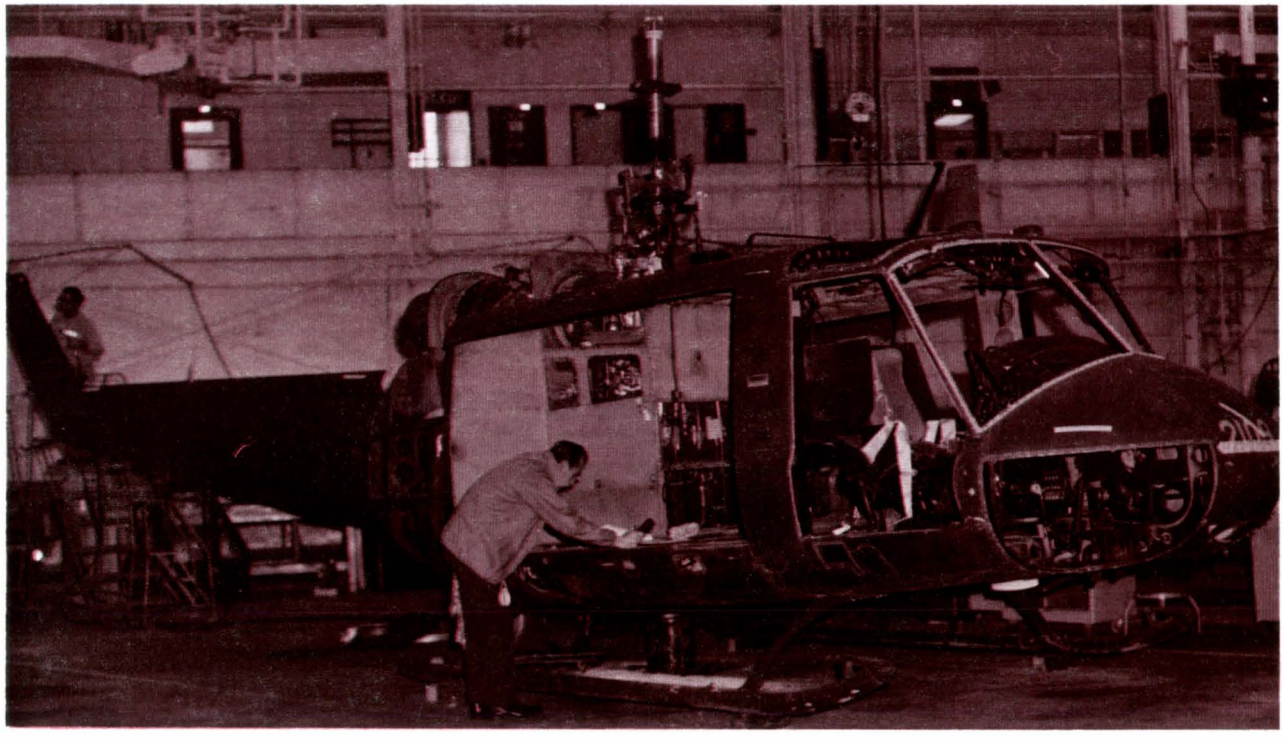
Attack helicopter pilots must be mentally flexible enough for quick maneuver over large distances and be aware of all aspects of the ground battle in several sectors. Without this they are only partially effective. In particular, the knowledge of the full capabilities and benefits of firepower integration is a must in order to suppress the target while killing it.

Fundamental employment tactics of the attack helicopter should not change significantly with new helicopters; new machines simply enhance killing power and survivability.

Ingenious and skilled aviators will apply these basics and change them according to the machine's capabilities and the fighting situation. Perhaps we can devise some of these before we might need them in a war.

(The author encourages disagreement and additional thoughts on attack helicopter tactics for publication—short or long thought-provoking articles are solicited by the editor.)

HUEY CHARMER. The third time around is a charm for UH-1 Huey 62-2109. The aircraft was accepted in July 1963. Then it was flown for 1,785.5 hours at Ft. Benning, GA. The helicopter was brought to the Corpus Christi Army Depot (CCAD), Corpus Christi, TX in September 1967 for its first overhaul. For the next 2,751 hours it was flown around the Aviation Center at Ft. Rucker, AL and then came back to CCAD for a second rebuild. The Huey again saw duty at Ft. Rucker and was flown 4,121 hours as a UH-1H. It came back this year for its third overhaul with 8,657.5 total hours flown since its first acceptance.



New Army Aviation Career Pattern

LTC George A. Morgan
Chief, Aviation Management Branch
Officer Personnel Management Directorate
U.S. Army Military Personnel Center

THE ARMY CHIEF of Staff (CSA), General Bernard W. Rogers, has announced major decisions to implement a new Army aviator career pattern.

The decisions establish long-term management policies for developing aviators under the Officer Personnel Management System (OPMS). They affect branch determination, officer basic and advanced courses, initial utilization following flight school and additional specialty development. Also, the annual training rates developed and the force structure changes under the new career pattern should help ease the current company grade aviator shortage.

These policy decisions will affect nine key areas.

One affected area is *commissioned officer aviator accessions.* Aviation, Specialty Code (SC) 15, will become an entry specialty under OPMS. Officers will be accessed directly into SC15 (Army Aviator), and into SC71 (Aviation Materiel Management); SC67J (Medical Service Corps); and SC15M (Military Intelligence) to meet company grade requirements. Eighty-five percent of the annual flight school training requirement will be met by newly commissioned officers. Inservice officers who desire to attend flight school and have less than 5 years total commissioned service will fill the remaining 15 percent. The 85-15 percent ratio will be phased over a 3-year period starting in fiscal year (FY) 1980.

Branch assignments is another affected area. Under this change, United States Military Academy (USMA) and Reserve Officer's Training Corps (ROTC) cadets and Officer Candidate School (OCS) candidates desiring SC15 must select from Infantry, Armor, Field Artillery and Air Defense Artillery branches. Those desiring SC15M must select Military Intelligence, those desiring SC71 must select Transportation Corps, and those who want SC67J must select Medical Service Corps. Inservice officers not in these branches will be required to transfer to the appropriate branch after completing flight school.

Two other key areas affected by the decisions are *Officer Basic Courses (OBC)* and *Officer Advanced Courses (OAC).* Newly commissioned officers selected to attend flight school will attend the basic course of their branches. All aviators will attend branch OAC. During both OBC and OAC, the integration of ground and aviation forces in combined operations will receive added emphasis.

Another change requires that *flight school graduates be assigned initially to aviation positions only.* Those who do not complete flight training will be awarded a specialty appropriate to their branches and assigned accordingly.

Specialty development also is affected. Aviators will be permitted to acquire any additional specialty within OPMS for which they qualify. By FY 1987, the Army expects enough company grade aviators to be available to permit 20 percent of them to be assigned outside an aviation specialty at any one time for purposes of alternate specialty development.

The CSA decisions also affect *force structure. Warrant officers will replace commissioned officers in 300 aviation positions.* Additionally, more lieutenant colonel and colonel aviation positions will be identified to meet OPMS specialty utilization goals, and to ensure a viable career pattern for all aviators.

Training rates is the eighth key area affected. By more intensively using company grade aviators in aviation, the required training rate to implement the career pattern is less than would otherwise have been required under the previous system of training aviators. *The Army will ask approval to train 598 commisioned officers annually.* These numbers will enable the Army to build a balanced force in all grades and year groups over the long term.

Finally, the decisions will require several *changes in personnel management policies and procedures.* These will be developed in detail by the U.S. Army Military Personnel Center (MILPERCEN) Aviation Management Office in the Officer Personnel Management Directorate (OPMD).

Additional information will be provided as basic policies are translated into management programs.

BINGO!

Major A. T. Hadley III, M.D.
Brooks Air Force Base
San Antonio, TX

WHEN WE ARE talking about Bingo, Skydoc is not referring to that deadly dull game of placing a poker chip over some number, such as I-22. Nor, is he reminiscing about the childhood song, the one that extols the virtues of a black and white dog, whose name happens to be Bingo. Rather the ole Doc is writing about his famous exclamation when one of his patients comes down with more than three veneral diseases at the same time. Then, throughout his clinic, one word reverberates, *"Bingo!"* that then is the true meaning of Bingo.

The hero of this particular saga comes from the enlisted ranks. He was one of those good looking, 6 feet, broad shouldered, black wavy haired types that think they are God's gift to women. Because his name was Buster Katchall and because he possessed a colossal unrestrained sex drive due to developmental failure of the superego, it was impossible for him to leave the local lovelies alone. Otherwise, he was just one of many unrecognized crewchiefs in the Far East that maintain those "birds" that Army aviation people ride around in. He had even been "Crewchief of the Quarter," and "Soldier of the Month" twice.

Whether it was the exotic nature of the country or the erotic nature of its women that made Buster behave as he did, Skydoc can't say. The Doc did try counseling the young lad at the flight line explaining that flying and carousing did not mix, especially on early morning missions. Our young man did not listen to the sage advice, however, of trying to limit himself.

The result was all very predictable. With Buster's drive and more than a little dab of carelessness, he came down with the inevitable. But Buster was a smart boy, or at least he thought so at the time. He recognized the symptoms of intense burning on urination, copious amount of thick yellowish pus in his underpants, and an increased frequency in the urge to urinate, as those of gonorrhea.

Our man knew what the "Winged Physician" would say: Penicillin and no sexual activity; he knew that as he had chatted up several of his buddies, who were now a little wiser. Here Buster made another blunder. He decided to make his way to one of the local faith healers, and, being a wise man decided to save a little money by visiting one of said healers in one of the lesser sections of the village.

The result was predictable. Dr. Wong, the practitioner of the clinic, injected a thick, white, chalky, substance into the left buttock of our crewchief. In addition, our tall black haired friend received some tetracycline tablets from that ancient faith healer "just to be sure." Of course, the dose was just enough to suppress the infection. *But not enough to cure it!*

The next time that Skydoc saw Buster was under a most unusual circumstance. It seems that the SP4 now had a very painful rear end indeed. It also was hot, red, swollen and fluctuant—facts that led the Doc to think immediately of abscess. Of course, that led to cutting, and although the cutter feels no pain, there is one person that must.

No amount of questioning by the "Feathered Physician" could, however, break the cover story of our young friend. Now, old Skydoc wasn't born yesterday, and most times can intuit when someone isn't exactly venturing all the information. The informal grapevine was set in motion, which takes time, since the Doc did not major in Far Eastern languages at any point of his formal educational career. With time and diligence, though, persistence was victorious and the answer became apparent.

Appearances can be deceiving. That thick, white, chalky substance, which looked like penicillin, was in fact nothing but a well-known hair oil. What else looks like penicillin that you can charge for? That was one for Dr. Wong, all right,

. . .Dr. Wong, Buster's "miracle healer". . .

who slipped our hero an injection of hair oil. After 30 seconds of amazement, and 30 seconds of laughter, Skydoc called for the young Romeo, who did not find the matter at all funny.

Fortunately, this time the whole story was divulged in entirety: From how this young girl took him to her very own doctor (didn't cure her either); to how her beauty and charm enticed him to be continually by her side; and on to how he could have lived without her; to how he felt the doctor the girl had taken him to see was legit because he saw a lieutenant from A Company being treated for the same problem. Well the story went on and on. Unfortunately, *this* story does not have a happy ending, or one that would even put the flicker of a smile across your face.

In the words of one of the Skydoc's better medics, "When things go wrong, they go wrong big time." And, such circumstance was no exception. Physical examination revealed the presence of that most gregarious parasite Phthirus pubis, known as the crabs in common parlance. An annoyance, but hardly to be considered a threat, which also could be said of his herpes simplex, except that it wouldn't be true. This little virus has no "cure," and besides causing small red blotches which itch intensely "forcing" one to scratch almost constantly, it also can cause pain on urination and a most unpleasant discharge (certainly a most unwelcome companion).

In addition, Buster had had a small sore that he thought was nothing. And since Dr. Wong also had thought "it was nothing," and since it went away, our crewchief thought nothing more about it. But the blood test confirmed Skydoc's suspicions —being positive for syphilis. And everyone should be yelling "Bingo" by now.

Even more unfortunately, Buster had one more problem. The problem was related to the tetracycline. The drug worked just well enough to make his gonorrhea lie dormant. So when Skydoc asked, "How are you feeling otherwise?" and the reply was, "Not so good, Doc," the "Master of the Medical Arts" knew there was trouble. Reaching for his stethoscope, he heard a faint heart murmur. This murmur was not present at the time of the last flight physical. What was happening was that some of the *Neisseria gonorrhoeae*, that bacteria that cause gonorrhea, were now living on Buster's heart valves. And because they need nutrients, the bacteria found the heart valves very convenient to feed upon. This is one of the very devastating complications of gonorrhea, called endocarditis, and it resulted in a long stay in one of the Army's larger hospitals for our young Romeo.

Skydoc gives a warning. *"For all you that think this condition is rare, remember that it also is real. And if it happens to you, you don't care how rare it is. It is a hundred percent by you."*

"There are a few things to keep in mind," Skydoc says. "In the land of the exotic, your job still is aviation, not to chase the wild women. Too much of the rice wine, local ladies and disco will, as CW3 Flieswell says, 'make your performance fall off' (there are diseases that will cause that, too).

"So don't get into trouble in the first place, but if you do, see your friendly flight surgeon. When you think of all that bother and inconvenience that can happen to you when you associate with those business girls, hostesses, entertainers, friends of the bar or anyone willing to dispense sexual favor, promiscuously, without affection, and for a fee (why not just say prostitute, Skydoc?), why not remember which one the knife is going to hurt—you or the Doc. It has to be one of you.

This story is no laughing matter. The Soaring Surgeon muses, "I wonder how many of my flight personnel will take it seriously?" Hopefully *you* will.

"Till next time then," says Skydoc, "and remember *BINGO!*"

Since the inception of Army aviation, there has been a requirement for an instructor pilot (IP). When something is new, there is too much learned by trial and error. We try to pass on the experience gained from this trial and error so the next pilot will not have to make the same mistakes. The method of transmitting this information is almost as old as aviation itself. It is called flight standardization. There has been significant improvement in these methods over the years, but one thing hasn't changed: IPs are still individuals. They have their own ideas of what is right and wrong, and their own ideas concerning effective teaching methods. How can we teach all IPs to instruct exactly the same? We cannot, and, we don't want to. Each pilot is an individual with a different personality and motivations. We depend on the IPs to maintain the same standards but to adjust accordingly to each individual. What about the situations that cannot be duplicated in school? The situations that one encounters while working in the field; the situations that kill people? How do IPs handle these? Here is how a couple of IPs did

How Far Is TOO Far?

CW4 Joe Cocklin
213th Assault Support Helicopter Company (Blackcats)
Republic of Korea

THIS SHORT STORY begins with a "There I was." In 1964 I was a brand new Wobbly One in a CH-37 Mojave company in Korea. I had been in that assignment for the first 4 months out of flight school. Already I realized I was probably one of the best pilots in the company although I don't think anyone else realized it.

The company standardization instructor pilot (SIP) and I were put on a priority mission to replace a generator at a communications site which had a very small and very high pad. The cloud conditions were broken, which put the pad in the clouds most of the time. On several occasions we attempted to get onto the pad, but each time it would become obscured and we had to break off the approach. The aircraft, because of the weight and altitude, was at max gross weight.

On our final attempt for the day, the pad again was open as we started up, but it soon became obscured again. As we started to break off the approach, I noticed the pad starting to clear so I continued a 360 degree turn and informed the SIP that I thought I could get in. I was impatient and anxious to get the mission over. I hurried because it appeared the pad would cloud over again.

One thing led to another and all of a sudden I had this sinking feeling. The nose of the aircraft was high, the throttle was turned to the stops, revolutions per minute (rpm) was bleeding and we were falling. Up until this flight I had been unaware that there were any stops on the throttle.

As I pushed the button to jettison the load, my entire life flashed before my eyes—or at least the last couple of minutes as I tried to figure out how I got into this situation. I had selected the point where I expected to crash the helicopter. It was the only clear area but it had about a 30 degree slope. "I had run out of ideas and experience," as the saying goes.

About this time the SIP came to life. He pushed the collective down, regained rpm and punched the

button to release the load. The aircraft continued down and the tail wheel brushed the ground. We now had power back and came back to a hover with only the ground beneath the aircraft for a reference.

The SIP said, "You still have the aircraft, get it under control." After much thrashing around, my heart started beating again and I was able to maintain some resemblance of control. The generator, as it turned out, had set down very nicely in the center of the intended landing pad. Of course, I had a very extensive mission debriefing. The memory of that "lesson" is as fresh in my mind today as it was right after it happened.

You say you've heard it all before and "there I was . . ." Well, let's see if there is anything to learn from my experience?

The obvious is that a new aviator who is convinced that no mission is too great and becomes impatient and pushes to get the mission accomplished is the type individual that is an accident looking for a place to happen.

What about the highly experienced SIP who sat through all this and allowed it to go as far as it did? What was the SIP doing? This SIP, I believe, recognized me for the type aviator I was and felt that I needed a good lesson in using sound judgment and recognizing my own limitations. If he had stopped the approach earlier, chances are I would have wondered what he was doing. After all, I knew I had it all together; that is, up to the point where I ran out of ideas, and any lesson value would have been lost. But had he let me go too far? Everything worked out just fine after total panic, and I had learned a lesson that has stuck with me for my entire aviation career.

The primary duty and responsibility of an instructor pilot is to teach. This can be accomplished in a school situation where most of the training is "canned." Or it can be accomplished in the field during unit training. But how can you train a pilot for *all* of the situations which may come about? A good instructor pilot will take the opportunity, as it arises, to teach a pilot a lesson which will benefit the pilot.

The situation we were in has come up a few times since, and I have always remembered what I almost did. The point of all this is how far is too far? Where is the point when the pilot fully realizes a mistake has been made, and when does the lesson stop and aircraft recovery start?

Ten days after my experience the same SIP, another Wobbly One and two crewmembers were killed. The mission: To carry telephone poles onto a very high pad. During the approach, the load was jettisoned and as the aircraft passed over the pad, the tail wheel caught a stone wall and the helicopter crashed. The post-accident investigation revealed that both engines were running at the time of the accident.

We can guess what happened, but in my own mind I feel that the SIP was attempting to impart a lesson to this new aviator, just as he had done to me. Did he just go too far or had there been other factors that we will never know about? Only the SIP really knows. How far is too far?

It is now 14 years later and here I am back in Korea, flying cargo aircraft and doing the same type of missions. Things have changed. Now I am the SIP in a company with numerous young and inexperienced pilots. How far should I let them go? This lesson came back to me recently during a pilot in command (PIC) evaluation ride. On this type ride, I stress PIC responsibilities. I act exactly like a new aviator so the individual taking the PIC ride must do all flight planning, briefing, navigation and decisionmaking.

The mission consisted of a downed aircraft recovery and a navigation problem around a restricted area. The aircraft recovery took longer to complete than anticipated because of rigging problems so we began the navigation problem with less fuel than originally planned. After making a mental calculation, I determined that we would not be able to make the planned flight.

If I stopped the aviator at this point, it would simply have been a discussion as to which one of us was right? I elected to let the aviator proceed to determine how long it would take before the problem was recognized. This way the responsibilities of a PIC would be indelibly impressed on the aviator.

The flight proceeded as planned until it became apparent to me that the low level fuel lights would come on before the flight was completed. The pilot was indecisive, but finally elected to return to the flight plan destination. We had still about 20 minutes of flying to the destination.

I allowed the flight to continue for another couple of minutes and then asked the aviator if he thought we were going to make it back. (We were just passing an airfield that had fuel.) The pilot finally made the proper decision of calling in a flight plan change and landing short of the intended destination for fuel.

In the discussion on the ground, it became quite apparent that the pilot had learned a very valuable lesson. I seriously doubt that this will ever happen to this aviator again. I had gone far enough: The aviator had learned the lesson I had hoped for. But had I gone too far?

It appears that IP decisionmaking is a problem that will stay with us. The decisionmaking process can be made easier by being a true professional. You should know the aircraft limitations and capabilities, always use standard operating procedures and know what your copilot can and cannot do. This will make your job much easier and the knowledge you impart much more valuable.

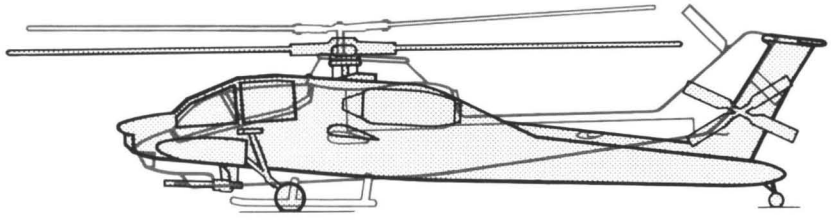
AH-64

LTC Stanley E. Grett
Assistant Program Manager for Requirements
Office of Program Manager, AAH
St. Louis, MO

This article represents an adaptation of a briefing presented to the 88th Armor Convention at Ft. Knox, KY last summer by Lieutenant Colonel Grett, the Assistant Program Manager for Requirements of the Advanced Attack Helicopter Program Manager's office. It is being run simultaneously in *Armor* magazine

Figure 1

AH-64/AH-1 Size Comparison



	AH-64	AH-1S
Rotor Diameter	48 feet	44 feet
Overall Length (Rotor Turning)	57 feet 7 inches	52 feet 11 inches
Width	17 feet 2 inches	10 feet 8 inches
Height	12 feet 7 inches	13 feet 5 inches

THE AH-64 is the advanced attack helicopter (AAH) of the 1980s and beyond. It will replace the current AH-1 series of attack helicopters in some attack helicopter companies and air cavalry troops. Attack helicopter units traditionally have been members of the combined arms team.

As a member of the combined arms team, an attack helicopter must be hard hitting, highly mobile and survivable against numerically superior forces. The AH-64 will be able to live, fight and survive to fight again because of its built-in toughness, optimized weapons lethality and tactics designed for future battlefields. The mission of the AAH is to put firepower on the forward edge of the battle area.

The subsystems that make the AAH a total system for battle are: the HELLFIRE Modular Missile System; the 30 millimeter (mm) Area Weapon System; the 2.75 Inch Aerial Rocket System; Target Acquisition and Designation System; Pilot Night Vision System, which includes the Integrated Helmet and Display Sight System; and its Aircraft Survivability Equipment. This article will discuss only the primary components and capabilities of these subsystems.

The AAH, although more sophisticated and with a greater ordnance payload capability than the AH-1S Cobra, is not much larger than the AH-1S. While the width is greater

at the stub wings, the cabin is only a foot wider than the Cobra. The greater frontal aspect is the result of having twin engines separated for survivability (see figure 1). [A book containing the three comprehensive articles about the AH-1S in the *Aviation Digest's* January, February and March 1978 issues is available upon request. Write: Editor, *Aviation Digest,* P.O. Drawer P, Ft. Rucker, AL 36362 or call: commercial 205-255-6680; AUTOVON 558-6680.]

The major tactical capabilities of the AH-64 include a dash speed capable of dashing from one corps area to another expeditiously, or escorting the UH-60 Black Hawk utility helicopter. In the primary mission configuration on the Army standard hot day, the AH-64 has sufficient endurance to complete the standard European antiarmor mission. It is armed with 8 to 16 HELLFIRE missiles or up to 76 2.75 inch rockets and the 30 mm area weapon subsystem with 320 to 1,200 rounds of ammunition. Armored protection is provided to the crew, which consists of a pilot and a copilot/gunner.

The AH-64 has a lightweight Doppler navigation system and a night vision system for both crewmembers. Self deployability is capable of up to 800 to 1,000 nautical miles using external fuel tanks.

The armament options available are many and varied (see figure 2).

The first option represents the primary mission configuration at the Army standard hot day of 4,000 feet density altitude and 95 degrees. With 8 HELLFIRE missiles, 320 rounds of 30 mm ammunition and fuel for 1.83 hours at the design gross weight this performance is well above the requirements.

The alternate configuration at the standard European day with 16 HELLFIRE missiles, 1,200 rounds of 30 mm ammunition and fuel for 2.5 hours performance also is well above requirements.

TADS/PNVS. The Target Acquisition Designation System (TADS), through the multiplex system, interfaces with the HELLFIRE Modular Missile System, the fire controls and displays, Integrated Helmet and Display Sight System (IHADSS), the Doppler navigation system and the fault detection/location system.

The major components of the TADS are the turret which houses the stabilized platforms, laser rangefinder, common forward looking infrared (FLIR) modules, laser spot tracker, direct view optics, vidicom television system and the optical relay tube which contains the controls and displays. The TADS provides the capability to detect and engage targets at far greater ranges than current systems as well as at night and during adverse weather.

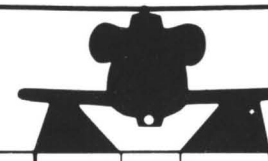
The Pilot Night Vision System (PNVS), through the multiplex, interfaces with the IHADSS, the 30 mm Area Weapon Subsystem, the 2.75 Inch Rocket Subsystem and their respective controls and displays.

GLOSSARY

AAH	advanced attack helicopter
ASE	Aircraft Survivability Equipment
FLIR	forward looking infrared
HELLFIRE	Helicopter Launched Fire and Forget
HEDP	high explosive dual purpose
HMMS	HELLFIRE Modular Missile System
IF	infrared
IHADSS	Integrated Helmet and Display Sight System
IRIS	infrared imaging seeker
mm	millimeter
OT	operational test
PNVS	Pilot Night Vision System
RF	radio frequency
TADS	Target Acquisition Designation System
TP	training practice

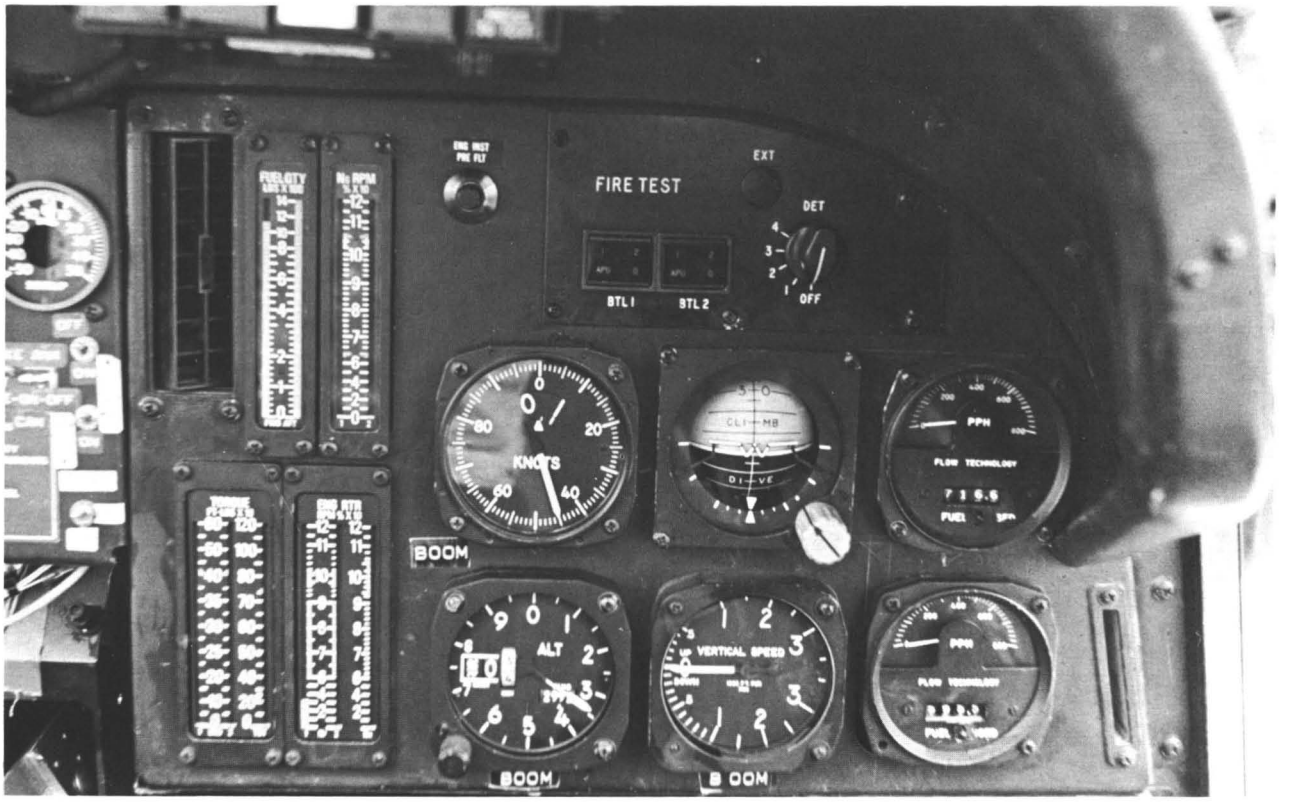
Figure 2

AAH ARMAMENT OPTIONS = MISSION FLEXIBILITY



MISSION				PERFORMANCE		
				VROC	V CRUISE	ENDURANCE
ANTI-ARMOR (DEFENSE) DESERT PRIMARY MISSION 4000'/95°F	4 HF	320 RDS	4 HF	700 FPM	146 KTS	1.83 HRS
TEMPERATE ALTERNATE 2000'/70°F	8 HF	1200 RDS	8 HF	600 FPM	146 KTS	2.5 HRS
COVERING FORCE (AIR CAV) DESERT ALTERNATE 4000'/95°F	4 HF	777 RDS	4 HF	450 FPM	146 KTS	1.83 HRS
TEMPERATE ALTERNATE 2000'/70°F	4 HF 19 RKTS	1148 RDS	4 HF 19 RKTS	450 FPM	146 KTS	2.5 HRS
AIRMOBILE ESCORT DESERT ALTERNATE (4000'/95°F)	19 RKTS	416 RDS	19 RKTS	450 FPM	146 KTS	1.83 HRS
TEMPERATE ALTERNATE (2000'/70°F)	38 RKTS	•788 RDS	38 RKTS	450 FPM	146 KTS	2.5 HRS

Some of the design concepts tried during development of the AH-64's copilot/gunner station. Below, instrument panel. Right, two views of side consoles



AH-64 pilot's station (rear seat) right instrument panel. Note difference between this and other variations tested shown on following pages

The major components of the PNVS are the turret assembly, the IHADSS, common FLIR modules and the symbology generator. The turret slew capabilities, commanded by the IHADSS helmet mounted display, provide the operator use from full left to full right, 180 degrees. The field of view of the PNVS is 30 by 40 degrees, which relates to a vertical area of 268 feet by 364 feet at a distance of 500 feet.

The IHADSS includes the helmet mounted display and the helmet mounted visor which provides weapons sighting and flight symbology. The primary functions of the IHADSS are: the display for nap-of-the-earth night flight, points the TADS, PNVS, missile seekers and provides weapons launch window displays to align the aircraft for rocket and HELLFIRE missile firings.

HELLFIRE Missile System. The HELLFIRE Modular Missile System (HMMS) consists of the missile, the family of seekers, the ground support and training equipment. The laser seeker is the primary seeker being developed for the HELLFIRE missile. An infrared imaging seeker (IRIS) and the radio frequency/infrared seeker (RF/IR) also are under development for the future.

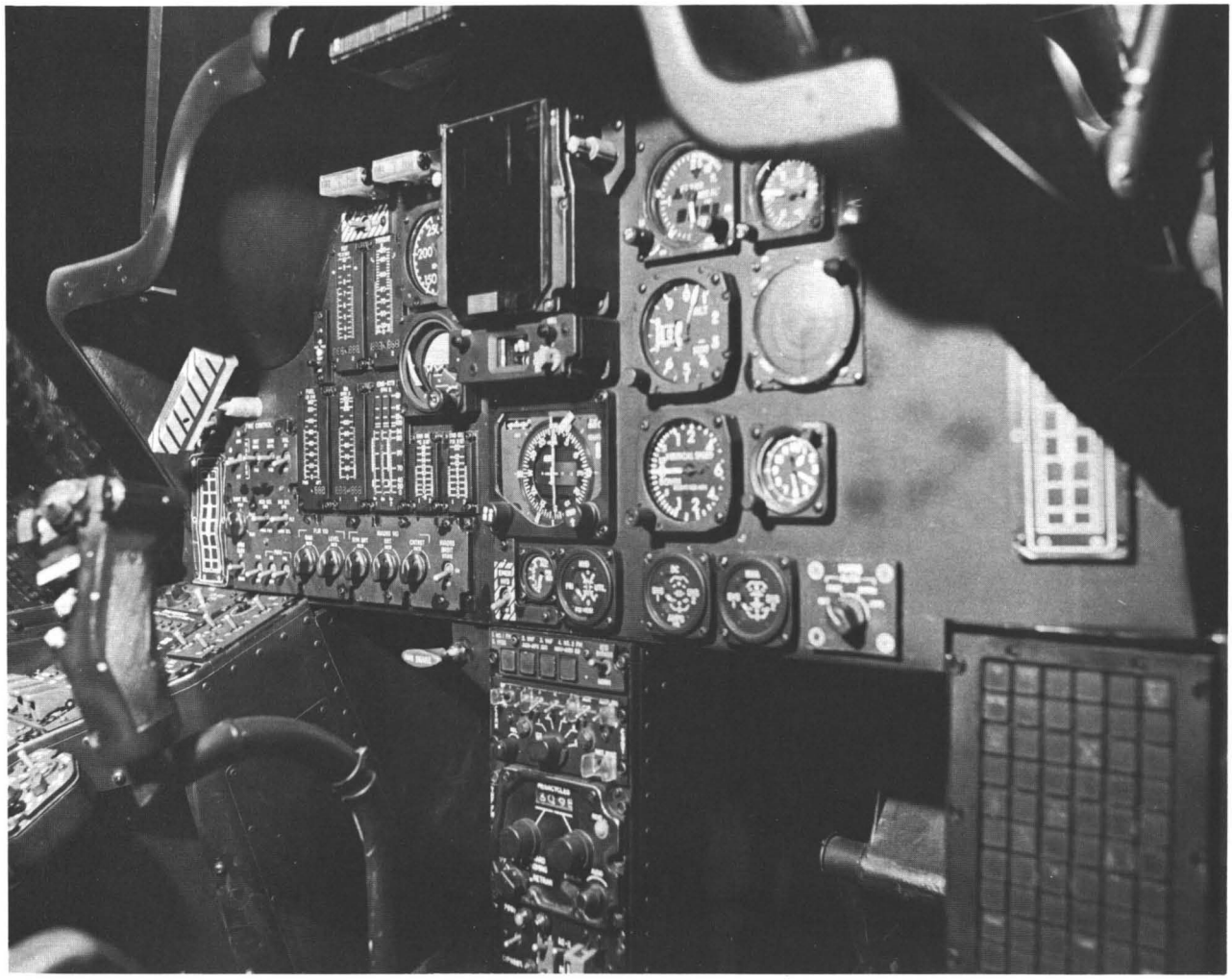
The laser HELLFIRE system provides an increased attack helicopter standoff capability by laser guidance which permits the acquisition of reflected laser energy at long ranges. A reduced missile time of flight and increased missile maneuverability over the TOW increases the probability of hitting the target at extended ranges as well as reducing helicopter exposure.

The many firing options for the HMMS allow maximum flexibility to the commander and the operator. HELLFIRE missiles can be delivered by the AAH with autonomous designation or in the cooperative mode with remote designation by another AAH, an Army scout helicopter or a remote ground designator providing both direct and indirect fires.

In the direct fire mode, multiple targets can be engaged by employing rapid fire, which allows having several missiles inflight at one time. Multiple targets also can be engaged with ripple firings in the cooperative mode with remote designation.

The HELLFIRE missile is programed for two flight altitudes in the indirect (cooperative) mode. A "low altitude" is provided for low cloud conditions and a "high altitude" is available for a clear day with high terrain between the AAH and the target area.

Aerial Rocket System. The primary components of the 2.75 Inch Aerial Rocket Subsystem are the IHADSS, TADS, the air data sen-



One design of rear seat pilot's instrument panel during experimental stage of the attack helicopter

sors and the fire control computer. The primary sighting station is the IHADSS, but the IHADSS and TADS can be used jointly for a more precise firing capability. The system provides for the inflight selectivity of up to five warhead and fuze combinations with automatic inventory.

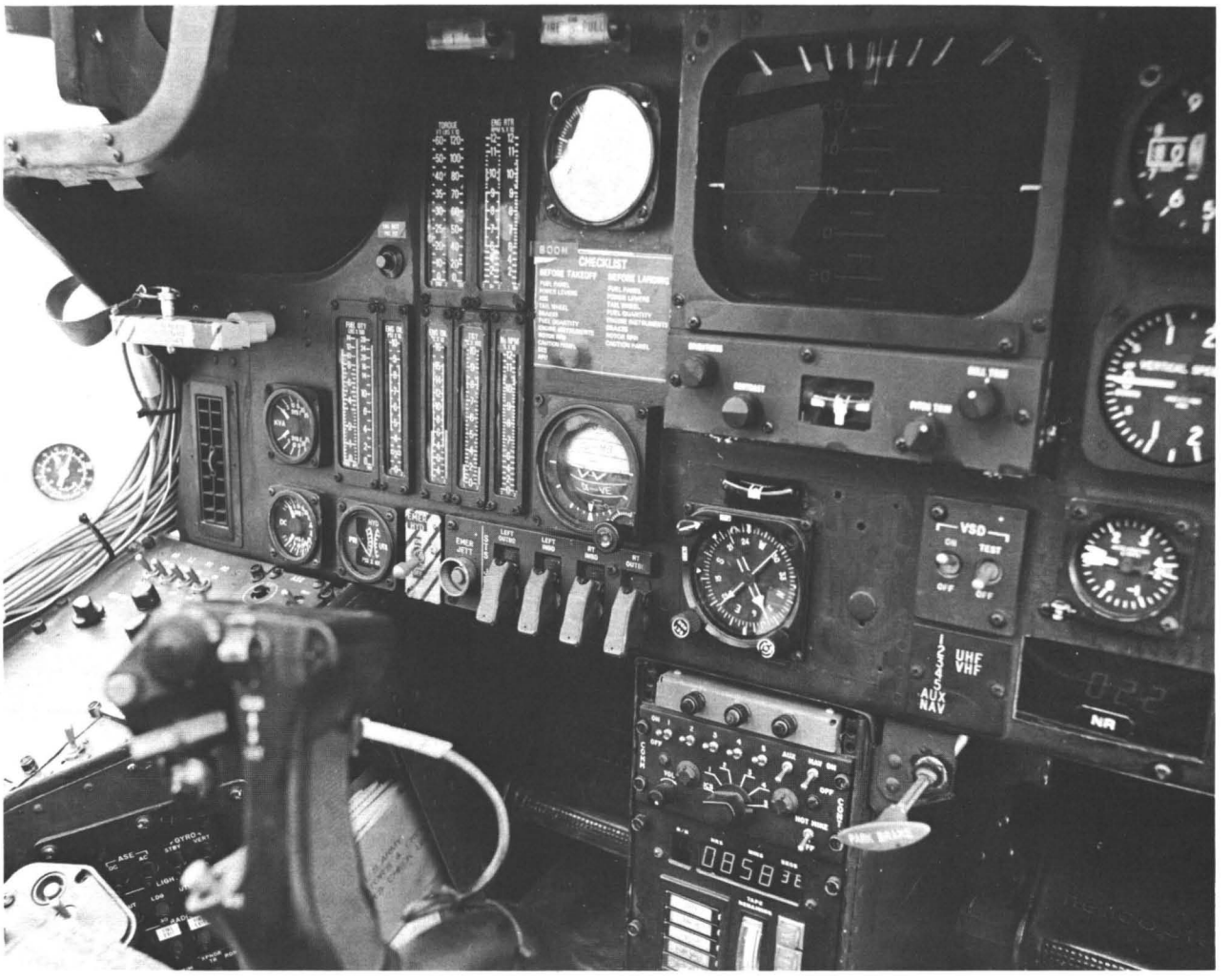
The system has the capability of carrying four fully loaded 19 round rocket pods for a total of 76 rockets with the capability of an effective range of up to 6,000 meters. The 2.75 inch rocket components and capabilities are well known. Two developmental items that will enhance the folding fin aerial rocket are the mark 66 motor for more accurate long range fire and the XM 261 multipurpose submunition warhead which has seven submunitions per round and is reported to be much more effective than the current 10 pound warhead.

30 mm Weapon System. The primary components of the 30 mm Area Weapons subsystem are: the Hughes Chain Gun in its flexible turret, the ammunitions drum and the feed system.

The rate of fire for the XM 230E1 Chain Gun is 725, plus or minus 25, shots per minute with a muzzle velocity of 760 to 800 meters per second. Flexible limits of the system in elevation, depression and deflection provide excellent area coverage. The chain gun, coupled with the fire control system, is extremely accurate. Delivery of this accurate fire capability is provided by the TADS or the IHADSS.

Two 30 mm rounds are being developed for the Army. They are the XM 788 training practice (TP) and the XM 789 high explosive dual purpose (HEDP) rounds. The HEDP has exceptional terminal effects against personnel and lightly armored vehicles.

The XM 230E1 Hughes Chain Gun and the 30 mm ammunition are ADEN/DEFA [the DEFA is a French 30 mm gun system for fighter aircraft; the ADEN is the British version of the DEFA] compatible,



Another design of pilot's instrument panel. Notice new style gages for engine, fuel and oil data at upper left

which results in North Atlantic Treaty Organization interoperability.

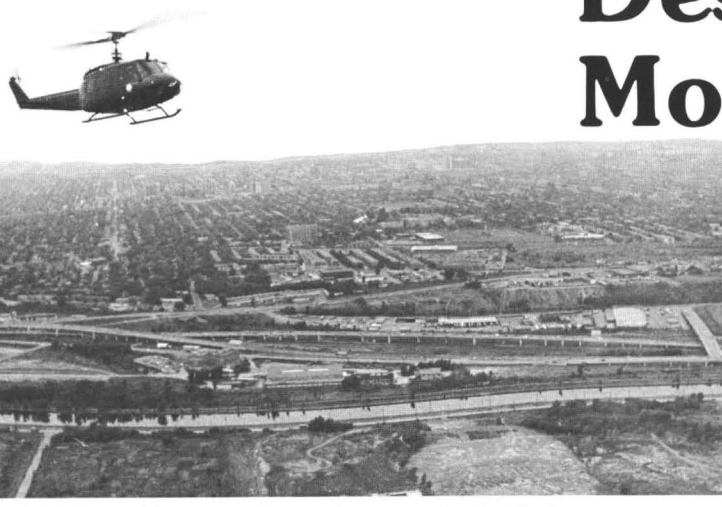
Survivability Equipment. The Aircraft Survivability Equipment (ASE) consists of a suite of both active and passive systems. The AH-64 will be delivered with the AN/APR-39 radar warning receiver installed. Various levels of provisions are programed which will allow the incorporation of the family of ASE systems being developed by the U.S. Army Aviation Research and Development Command, St. Louis, MO.

Survivability/Invulnerability. The AAHs survivability and invulnerability are enhanced through greater standoff capability, redundant engines and flight controls, infrared paint and passive suppressor, armor protection, ballistic tolerant components and crashworthy design for low attrition.

A short film was shown at the Armor Convention entitled "Battlefield Survivability" which addresses the built-in technology aspects of survivability and invulnerability that allows the AAH to fight and survive in the modern battlefield environment.

Major User Milestones. During the development program, there are several tests that involve user (United States Army Forces Command and United States Army Training and Doctrine Command) personnel. User personnel are required to participate in the TADS/PNVS fly-off and operational testing (OT) in February 1980. Operational testing is conducted in two phases which allows for an early production decision. OT IIa is designed to allow the user (Operational Test and Evaluation Agency) to test and evaluate the total weapons system in support of the Army Systems Acquisition Review Council/Defense System Acquisition Review Council process for the production decision. Emphasis in OT IIb will orient on the evaluation and development of tactics and doctrine and the final maintenance concepts for the AAH. The production decision (DS ARC III) is scheduled for December 1980.

Destination: Montreal



A UH-1 Huey flies over Montreal en route to the filming site

Written and Photographed by:

SP5 Jay Schmidt
132 Public Affairs Detachment
Vermont Army National Guard
South Burlington, VT

ENTIRE SECTIONS of the city had been destroyed by last night's devastating fire. Stunned survivors huddled at dawn in a makeshift tent city in a nearby quarry while National Guard vehicles were ferrying the injured. Standing before the TV cameras, the city's mayor was assuring the people that everything possible was being done to care for the homeless. In the background National Guard crewmembers were loading seriously injured civilians aboard helicopters and preparing them for evacuation.

The "mayor" was actor Leslie Nielson, and the helicopters were Vermont Army National Guard UH-1 Hueys assigned to a Canadian production company filming the disaster movie, "City on Fire." It is a motion picture about—as its title implies—a city which burns to the ground despite the efforts of fire chief Henry Fonda. The holocaust, with a setting in Ohio, actually was filmed in Montreal, Canada, where a city block had been constructed and later burned.

Many of the actors and extras were Canadians, including the Canadian reservists who placed white stars on their vehicles and portrayed the Ohio National Guard. The Vermont helicopter crews were the only authentic American military personnel in the film, which is scheduled for release this summer.

It was difficult to arrange for the American helicopters to proceed into Canada. "I originally contacted Vermont's Adjutant General," explained project designer William McCrow. "But he was unable to authorize Vermont National Guard helicopters from Burlington. I then contacted Sikorsky Aircraft, at his suggestion, but they had none available. I later called the Department of Defense in Washington and was able to obtain the authorization."

Flight commander CPT Thomas Shailor and CW2 William Sumner left their homebase in Burlington, VT, early on a Monday morning

The crewmembers talk with actor Leslie Nielson between takes. From left: CPT Shailor, SFC Welch, CPT Mongeon, Leslie Nielson and CW3 Rousseau

Actor Barry Newman and CPT Shailor talk between scenes

last September and flew their UH-1 across the international border into Canada. They were accompanied on the 38-minute flight by another Huey flown by CPT Darrel Mongeon and CW3 Robert Rousseau. None of these men, who are members of the Aviation Company, 50th Armored Division, had previously flown into Canada. This is not authorized without the specific permission of the U.S. Department of Defense.

After clearing Canadian Customs at the Montreal Airport and stopping at a military base for maps and fuel, the helicopters were flown to a quarry near East Montreal to begin the filming on a cloudy, wet day. The film crew explained the situation: The city had been destroyed by fire, and the survivors were gathered into a tent city. The helicopters were needed to fly down into the quarry and evacuate "victims." CPT Shailor was furnished with a portable radio so that he could be in contact, while in flight, with the director of the movie.

For the first scene, the UH-1s left the marked landing area and were flown over the cameras which were located at the opposite end of the tent city area. The Hueys were circled around, low to the ground, and quickly dropped over the tent city and onto the landing pads—blowing over about six tents and exposing the startled occupants.

A production crew member wears the official movie jacket

The guard members pose with three of the stars. Front row from left: CPT Shailor, Leslie Nielson, Susan Clark, Barry Newman, CW3 Rousseau, CW2 Sumner, CPT Mongeon. Back row: SFC Welch and SSG Naylor

The guard members are given a tour of the $250,000 city block set which was burned during earlier filming

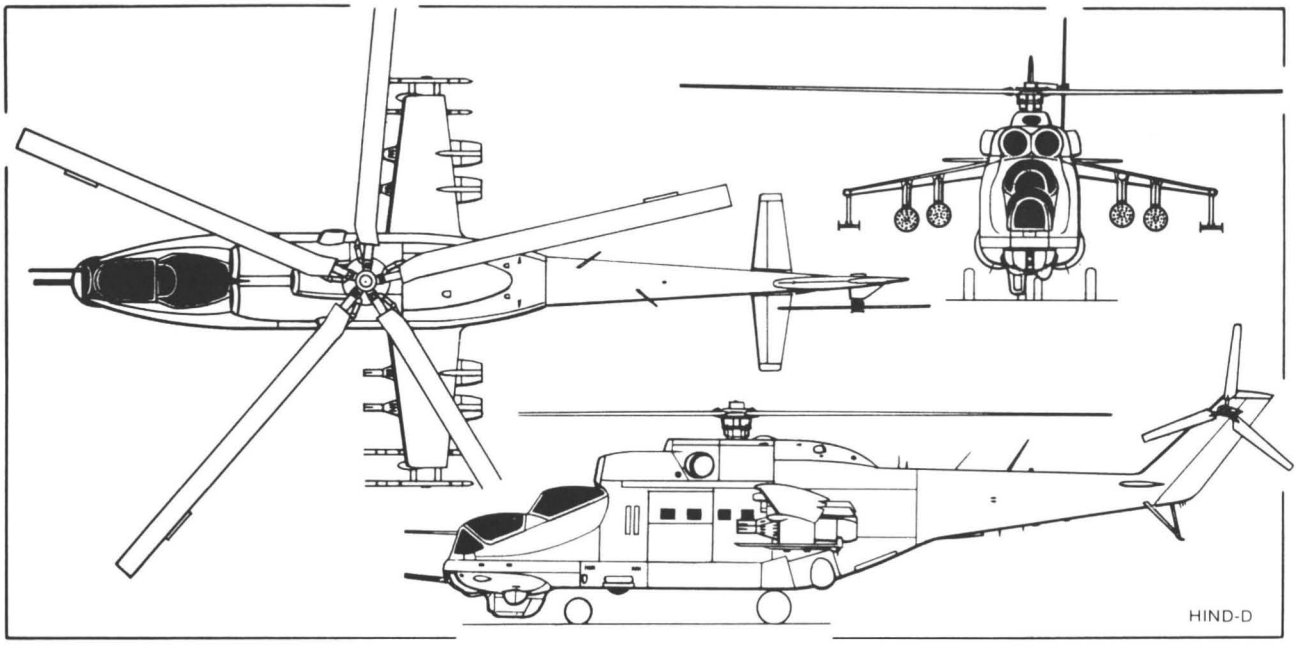
The next incidents placed Mr. Nielson with the TV cameras near Captain Shailor and CW2 Sumner's helicopter while the two crewchiefs Staff Sergeant "Butch" Naylor and Sergeant First Class Chet Welch assisted in the loading of burn victims aboard the UH-1. The final situations required both helicopters to be flown up into the air and hovered in the background while an episode at a medical tent was being filmed. Then, on cue by radio, the Hueys were flown low over the tent city towards the cameras.

According to the movie's director, the Vermont National Guard crews did a marvelous job.

The Vermonters enjoyed performing in a major motion picture. "It was a unique experience. Lots of fun," said CW2 Sumner. "We don't get to see a movie being made very often," added CW3 Rousseau.

Actor Leslie Nielson, as the city's mayor, talks on television while SFC Welch and SSG Naylor load victims

THE THREAT



Mi-24 HIND

THE UNITED STATES has no single counterpart to the multipurpose Mi-24 HIND. Although the HIND is much larger than the UH-1 Huey or AH-1 Cobra, it can fly faster. The Mi-24 appears to combine the squad carrying capability of the new UH-60 Black Hawk with the firepower of the AH-64 advanced attack helicopter (excluding HELLFIRE).

The Mi-24 combines the functions of scout, transport and attack helicopters. Its capabilities include tactical airborne assaults, close air support, antiarmor operations and antihelicopter operations. HINDs are found in the independent attack helicopter regiment of a Frontal Tactical Air Army. Soviet doctrine requires that attack helicopters stay as far as possible from units being attacked, although contour and low level flying are emphasized.

Performance characteristics of the HIND appear to be quite adequate for its role. It has a maximum gross weight capacity of 10,000 kilograms (kg) (22,000 pounds), of which 1,275 kg (2,800 pounds) consist of external weapons. All of the armaments now believed to be employed have ranges of 2 to 3 kilometers, but longer range semiautomatic (or possibly fully automatic "fire and forget") antitank guided missiles are reportedly under development. The HIND has an endurance of 2 hours and 25 minutes at a cruising speed of 295 kilometers per hour.

The HIND-A, B and C each carry a crew of four (pilot, copilot, gunner-navigator and forward observer) in a large enclosed flight deck, while the HIND-D probably has only two crewmembers (pilot and gunner) with individual tandem canopies. All versions are capable of transporting eight fully equipped (or 12 lightly equipped) troops in the rear cabin. In lieu of passengers, the HIND has the room and payload to carry a full reload of its weapons.

All models are equipped with such features as an automatic direction finder navigation system with map display and electrothermal de-icing devices for main and tail rotor blades. The sensor pack under the nose of the HIND-D probably carries a forward looking infrared scanner slaved to the gun, and a low-light-level TV. **(Adapted from CADCA HB 550-2, 31 July 1978.)**

DENSITY ALTITUDE. . .
SUMMERTIME OR

THE TERM "high gross weight" if often thought of as a weight somewhere near the published maximum (such as 9,500 pounds for the UH-1H). This term can be misleading from a planning point of view since it usually refers to a structural, rather than a performance, limitation. A UH-1H at or below 9,500 pounds may or may not be able to hover depending on the DA. The allowable load shown in the limitations block of DD Form 365F has little meaning then, except as an absolute maximum. Rarely can that much be carried.

Perhaps a better term is "high mission allowable gross weight" which takes DA into account and is based on performance. In the case of the UH-1H, mission allowable gross weight is based on hovering ability, and is obtained by entering Figure 14-22 of the operators manual with calibrated torque, pressure altitude, temperature, and the required skid height for hover. Calibrated torque is obtained from Figure 14-21. For a specific mission, this is the maximum (under ideal conditions) gross weight regardless of what the DD 365F says. So far, so good, but how did we account for the effects of density altitude?

Most of us associate high DA with summertime flying and have an almost intuitive feeling that it reduces aircraft performance. What we may not fully understand are the factors that make up density altitude and their direct application to mission planning and execution. Accident files are full of cases in which the aviator did not fully understand the concepts involved or attempted to substitute "technique" for sound planning.

A UH-1H, loaded with crew, three passengers, 21 mermite cans, 18 cases of soft drinks, and other food items, was making an approach to a tactical landing site in mountainous terrain. On final approach, an excessive rate of descent developed. A go-around was initiated with a right turn. During the turn, the aircraft struck trees, the main rotor hit the ground and separated, and the aircraft came to rest in an inverted position and was destroyed by fire. The aircraft was overgross and out of c.g.

A UH-1H with crew of three and nine combat-equipped troops took off across a shallow gully. Just after takeoff, cyclic feedback occurred, the low rpm audio came on, and rpm dropped to 6200. The pilot lowered collective slightly and rpm returned to 6600. A right turn was made toward a landing area. Rpm again dropped to about 5800 and the aircraft touched down hard, yawing to the right. Major damage resulted from an attempt to take off with the aircraft over gross weight limitations.

What really is this thing called density altitude? It obviously has something to do with air density, or mass per unit volume. To be specific, density altitude is altitude corrected for changes in temperature, pressure, and humidity. Air density will be decreased by a rise in temperature, a drop in pressure, or an increase in humidity. This last effect is due to the fact that while water is obviously more dense than air, water vapor is a gas which is less dense than air. A mixture of air and water vapor is therefore less dense than an equal amount of dry air. These effects can be appreciated by considering an aircraft equipped with a barometric altimeter attempting to maintain a constant absolute altitude over flat terrain. Should the aircraft fly into a low pressure area, or into colder air, or into drier air, a decrease in absolute altitude will result even though the altimeter indicates no change. The remedy here is a simple one involving no more than up-to-date altimeter settings.

The effect of nonstandard density on aircraft performance is a little more complicated. Since density enters into the calculation of airfoil lift, it follows that a decrease in density will result in a decrease in lift produced. The exact amount varies with atmospheric conditions and type of aircraft, but, as an example, the difference between flying in humid rather than dry air equates to a degradation of engine performance of a few percent.

There is also a direct effect on engine performance. Less dense air reduces the pressure ratios through an

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U.S. Army Safety Center

ALL THE TIME?

engine, resulting in a loss of power. In a turbine engine, this loss is about 3 to 4 percent, while in a reciprocating engine, the loss can be as much as 12 percent.

Once the problem is thoroughly recognized, corrective action can be taken. During mission planning, the effects of nonstandard pressure and temperature can be taken into account while using the performance charts as indicated earlier. (See "Chuck Greenie Learns a Trade," page 26.) The effect of humidity is harder to measure.

As the temperature of air increases, so does its ability to hold moisture, and thus it becomes less dense. Density altitudes obtained from sources such as Air Force weather stations include the effects of humidity. The standard density altitude formula, the dead reckoning computer and density altitude charts, such as chart 14-1 in the UH-1H operators manual, are based on dry air. If the air is hot and the relative humidity is high, the error can be 1,000 feet or more. Par. 14-10c(1) indicates that 1,000 feet equates to 1 pound of torque or 200 pounds of load. Mission planning that does not consider the effects of humidity can thus result in a decision to carry an extra passenger with potentially disastrous results.

The steps to take then are: (1) Check weight and balance. (2) Obtain DA from an Air Force weather station. If impossible, then use a dash 10 chart with an approximate correction for humidity. If the air is cold and dry, the correction is negligible. If it is hot and humid, add 1,000 feet (or reduce allowable gross weight by 200 pounds, or reduce maximum torque available by 1 psi). (3) Use performance charts to determine mission allowable gross weight. (4) Repeat above steps for each point of intended landing (or hovering). (5) If the result is marginal, reduce the load still further since the charts are inaccurate, and other parameters have not been considered, such as load factor due to angle of bank or deceleration, engine condition, winds, and nonstandard lapse rate.

As an example of these principles, consider the following flight planning problem. You are to transport seven combat-loaded troops from your location at FARRP Alpha to LZ Bravo in a UH-1H. Hover OGE will be required. Your operating weight is 6,300 pounds, you must carry 1,000 pounds of fuel on board, and the trip to Bravo will use 580 pounds. Pressure altitude at Alpha is 1,500 feet and temperature is 34° C. Alpha's elevationis 1,000 feet, while Bravo is at 8,000 feet. Crew chief's name is Raquel. Can you complete the mission?

The first step is to compare lift capability to gross weight at takeoff. At Alpha, gross weight = 6,300 pounds (operating weight) + 1,000 pounds (fuel) + 1,680 (7 troops) = 8,980 pounds. Using calibrated torque (44.5 psi) from Figure 14-21, and conditions at Alpha, Figure 14-22 indicates that a normal takeoff may be made at any gross weight up to 9,500 pounds (although hover OGE may not be possible).

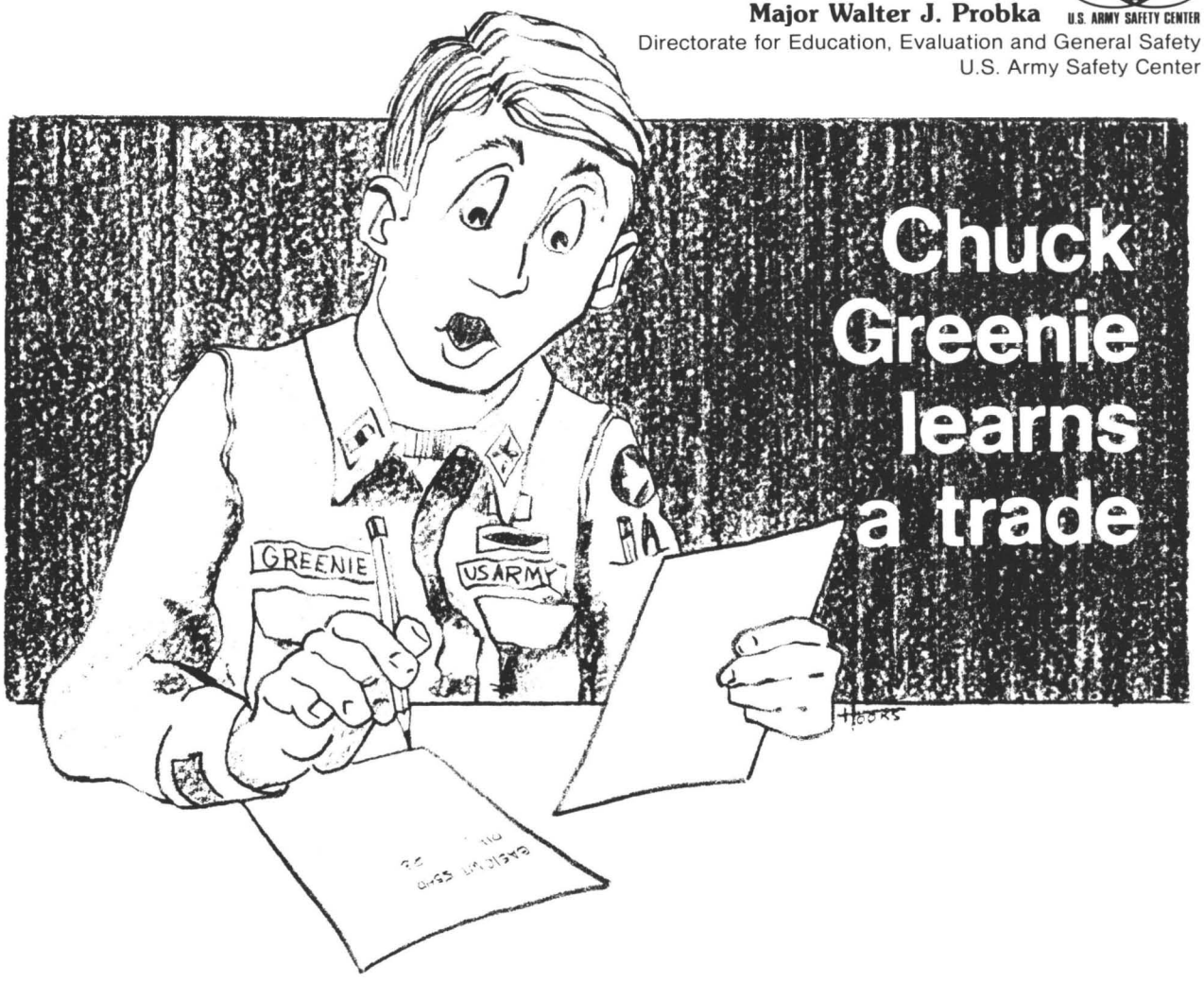
The next step is to determine the conditions at Bravo. Since Bravo is 7,000 feet higher than Alpha, the pressure altitude will be 8,500 feet. Using a lapse rate of two degrees per thousand, the temperature will be 20° C.

The third step is to repeat step 1 for LZ Bravo. When the aircraft arrives, it will weigh 8,400 pounds, but lift capability will be only 7,700 pounds. It now becomes obvious that the mission as stated cannot be flown. What to do? Carry three less troops, right? Wrong! Even then, the ability to hover OGE is marginal, and other parameters, as mentioned earlier, have not been considered. (At only 70 percent relative humidity the maximum load at that temperature must be reduced by approximately 100 pounds.) A larger margin of safety should be provided by carrying only three troops, or flying the mission when the temperature in LZ Bravo is cooler.

Sound by-the-book planning results in power margin, and power margin keeps you in the air—summertime or any time.

Major Walter J. Probka
Directorate for Education, Evaluation and General Safety
U.S. Army Safety Center

Chuck Greenie learns a trade



PAPPY HIGHTIME and his new copilot Chuck Greenie are leaving a flight briefing for tomorrow's mission. Let's listen in.

"This'll be my first mission, Pappy, but it sounds easy enough. Where should I meet you tomorrow?"

"Not so fast, Chuck. Let's go get a cup of coffee and talk about the flight."

Pappy and Chuck walk over to the flight planning room, and two cups later, Pappy has finished with the unit SOP, emergency procedures, and the flight plan.

"Wow, I hope I can remember all that. See you in the morning, Pappy."

"Hold it, Chuck. We're not done yet. The first two flights are no problem, but we'd better take a hard look at that third flight. We're supposed to take a load of tools and spare parts up to LZ Tango. How much can we carry?"

"Gee, I'm not sure. I suppose we should load up and then make a go-no-go check."

"Yeah, but that won't help us when it comes time to hover OGE at LZ Tango. The DA up there will be pretty high. Let's check it out in the operators manual. When we take off from here tomorrow afternoon, the pressure altitude will be about 400 feet, and the temperature 26°C. The max torque available chart shows us up against the transmission torque limit of 49 psi (point A, figure 1). Now, plot that on the hover chart with a 5-foot skid height (point B, figure 2)."

"Pappy, what does it mean when it plots off the chart like that?"

"Anything that plots up there means that we're limited by structural strength, not engine performance."

"That's great. That means that we can load up until our gross weight is 9,500 pounds."

"That's right, Chuck, but it's what's happening at LZ Tango that bothers me. In the afternoons up there, the pressure altitude will be about 10,000 feet

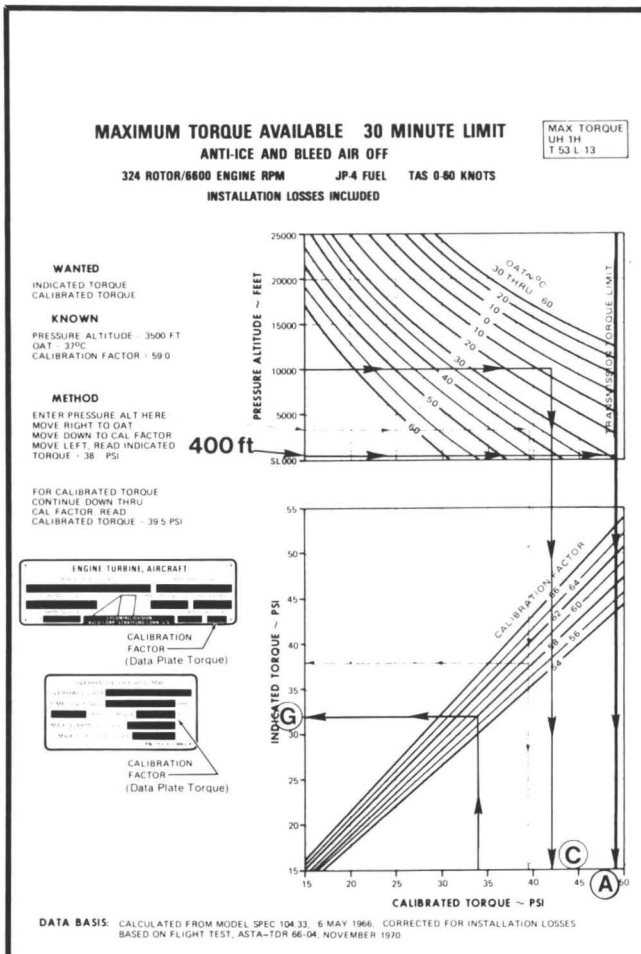


FIGURE 1.— *Torque available - maximum (UH-1H)*

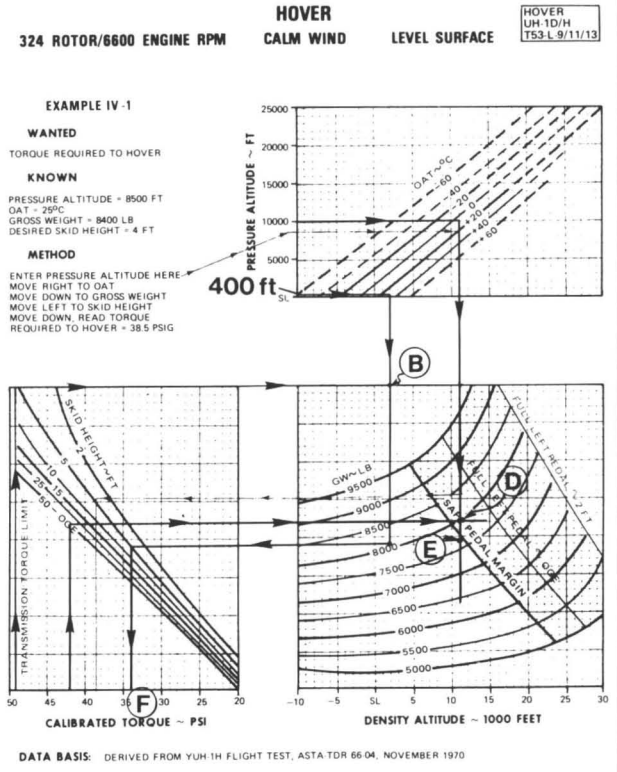


FIGURE 2.— *Hover - torque required, maximum gross weight, and skid height*

and the temperature will be about 6°C. Plot that on the max torque chart." (point C, figure 1)

"I get 42 psi. I know you got the pressure altitude and temperature from the weather briefing, but what do you do if that information isn't available?"

"Easy. Just add the elevation difference to the takeoff pressure altitude that you get by setting 29.92 in the Kollsman window of your altimeter. To get the temperature for an LZ at a higher elevation, just start with the local temperature and knock off 2° C. for every thousand feet of pressure altitude."

"How about running that by again."

"Look here, Chuck. Suppose our field elevation was 1,000 feet, and by map inspection we found the LZ to be at 5,000 feet. That's a 4,000-foot elevation difference. We dial in 29.92 and read, say, 1,500 feet. Now, we add the 4,000 feet and get a pressure altitude at the LZ of 5,500 feet. OK?"

"OK."

"Now, suppose our takeoff temperature was 12° C. Two degrees per 1,000 feet for 4,000 feet is 8 degrees, so the LZ temperature would be 4° C. Got it?"

"Got it."

"OK. Now, back to the hover chart. Use 10,000 feet, 6° C., 42 psi, and OGE hover. What's the gross weight?" (point D, figure 2)

"I get about 8,000 pounds, Pappy."

"Yeah, but at that weight, we're in the area of unsafe pedal margin. It's gotta be life or death before I'll fly like that. Drop on down to the safe area (point E, figure 2) and you can see that our max weight for hover OGE at LZ Tango is 7,700 pounds."

"Uh huh, but how much of that is fuel?"

"Well, it's 30 minutes one way, plus 10 minutes at each end, plus a 30-minute reserve. That adds up to 1 hour and 50 minutes. At 550 lb/hr, that's 1,010 pounds. Fuel remaining at the LZ will be about 640 pounds."

CHUCK GREENIE LEARNS A TRADE

"I can figure the payload from there, Pappy. Just give me a minute."

Pappy goes for another cup while Chuck scribbles and erases and scribbles some more. When Pappy returns, Chuck is smiling.

"How does this look, Pappy?"

Basic weight	**5540**
Oil	**23**
Crew (3)	**517**
Equipment	**100**
Operating weight	**6180**

Gross weight = operating weight + fuel + payload

7700 = 6180 + 640 + payload

Payload = 880 pounds

"Not bad at all. Now, one last thing. How will we know when we've loaded 880 pounds worth at the pickup point?"

"Well, I guess we could ask the crew at the loading point, or we could weigh it."

"Chuck, the crew probably won't know, and unless you plan to bring your bathroom scale, we won't be able to weigh anything. There is a way, though. Look, at takeoff, gross weight = 6180 (operating weight) + 1010 (takeoff fuel) + 880 (payload) = 8070 pounds. Now, we'll plan a hover power check at 5 feet. Entering the hover chart (figure 2) at 400 feet, go across to 26° C., then down to takeoff weight of 8,070 pounds, then over to 5 feet skid height, and finally down to 34 psi calibrated torque (point F, figure 2). Now that clipboard over there lists calibration factors from engine data plates. What is it for our aircraft?"

"58, Pappy."

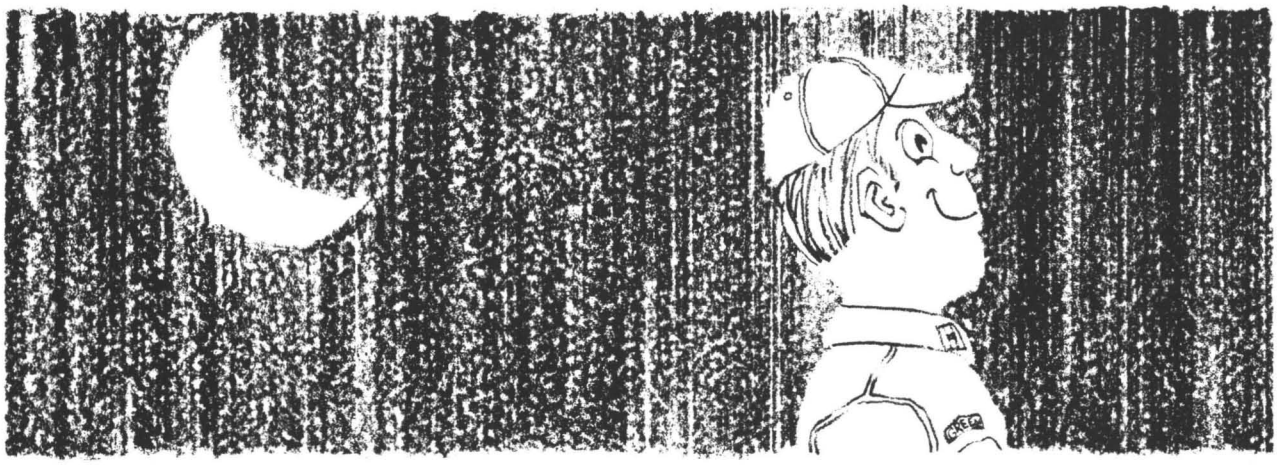
"OK. Using 34 psi and a factor of 58, you find an indicated torque of 32 psi. (point G, figure 1) Tomorrow, we'll make a hover check at 5 feet. When we see 32 psi on the torquemeter, we'll know that our load is 880 pounds."

"I'm with you, Pappy. I guess that about wraps it up, huh?"

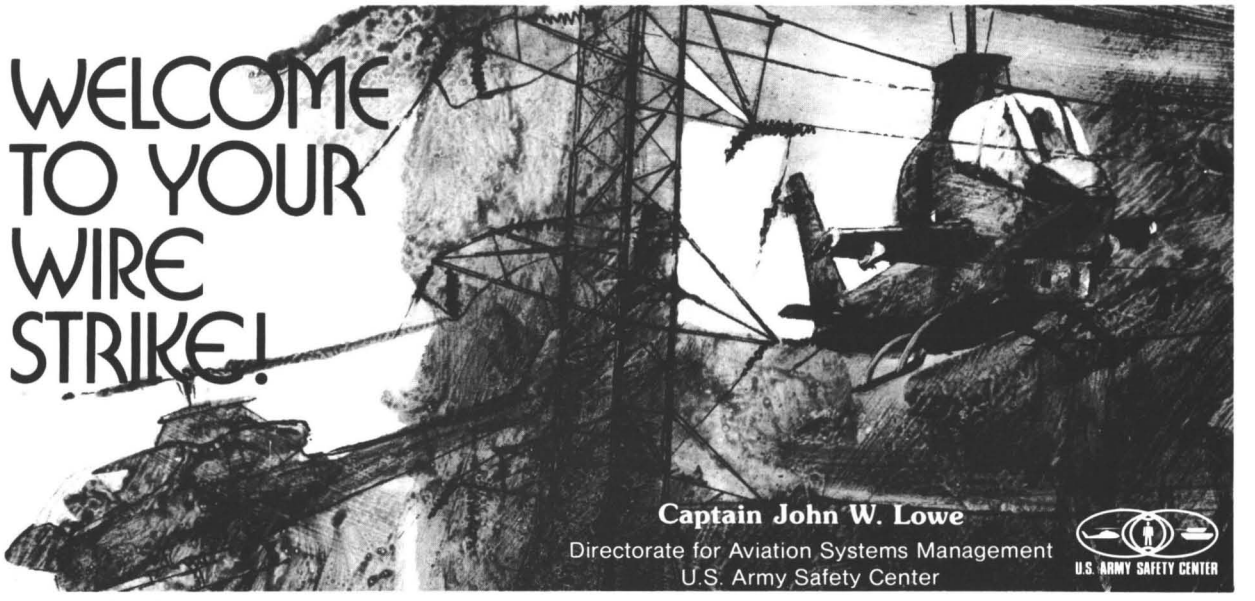
"Just about, except for weight and balance, but I have the feeling you've just about had it for today. Tell you what—I'll take care of it, and we'll get together another time and go over the procedures."

"OK, Pappy, see you in the morning."

Chuck goes home that night feeling confident about tomorrow's mission. He likes the feeling that thorough flight planning gives him. He knows there won't be any surprises.



WELCOME TO YOUR WIRE STRIKE!



Captain John W. Lowe
Directorate for Aviation Systems Management
U.S. Army Safety Center

A CLOSE LOOK at the wire strike data in our computer confirmed some things that most of us who slip the surly bonds on a regular basis already knew, but it's worth another look in view of the fact that we're still trying to fly through 'em. In fact, so many have tried the old cut-the-aluminum ribbon trick that we can almost predict what your very own wire strike will look like. You probably will not be in an authorized NOE environment. A couple of folks have hit wires during NOE flights just to prove it could be done, but for the most part, you're doing a good job of planning, supervising and conducting your NOE training. If you do encounter wires during planned, authorized and supervised NOE flight, normally one of two things will happen: (1) You easily avoid them because you already knew they were there or (2) when one (or a bunch of them) unexpectedly leaps out of the trees, you're going slow enough to avoid becoming intimately involved.

For those who are into numbers, here are a couple for your collection. Between 1 January 1971 and 31 December 1978, 56 people killed themselves by hitting wires. Only two were NOE when they died. Fifty-one were doing 60 knots or better when their aircraft finished second to a wire.

Your very own personal wire strike will probably look something like this:

You'll most likely be in an OH-58, UH-1 or AH-1 (all other aircraft combined have accounted for 15 percent of the strikes, so far), VFR, on a fairly routine mission when you'll be overcome by an irresistible urge to "go down and take a look" at something that obviously needs closer inspection—like an exceptionally well endowed and well displayed member of the opposite sex, or a boat just like the one you want to buy, or a bridge that $50 says you can fly under. If you're really gung-ho (and not too smart), you might just decide to go down and do a little unauthorized contour or NOE training without bothering to do all that ridiculous planning like checking hazard maps, etc.

You'll be looking at something other than what's ahead of you and doing 70 to 90 knots when your skids, windshield and rotor system start doing obscene things with some kind of monster you never even saw (or saw too late). You will arrive at ground level very shortly thereafter. If you survive, maybe you can convince the other people in your unit that flying low and fast isn't nearly as "far out" as you thought it was. If you don't survive, everyone will be scared half to death of wires for a while—at least until everyone who knew you rotates.

We don't have any concrete answers to the problem yet. The R&D community is working on cutters and detectors that will help a lot if and when we get them. In the meantime, the Safety Center advocates the following seven-point prevention program:

- Have a prevention policy written into your SOPs and directives.
- Ensure there is adequate supervision.
- Conduct hazard and obstacle briefings.
- Mark the wires in the areas where you normally operate.
- Avoid low-level flight unless required by the mission! If it is required, PLAN for it in detail (check FM 1-1).
- Maximize crew vigilance and coordination when you're down there amongst 'em.
- And most importantly, when you GO LOW, GO SLOW.

Point of contact at the Safety Center for more wire strike poop is CPT John Lowe, AUTOVON 558-4198/3901.

U.S. ARMY
AVIATION STANDARDIZATION

Directorate of Evaluation/Standardization

REPORT TO THE FIELD

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 558-3617 or commercial 205—255-3617. After duty hours call AUTOVON 558-6487 or commercial 205—255-6487 and leave a message

The Evaluation Division

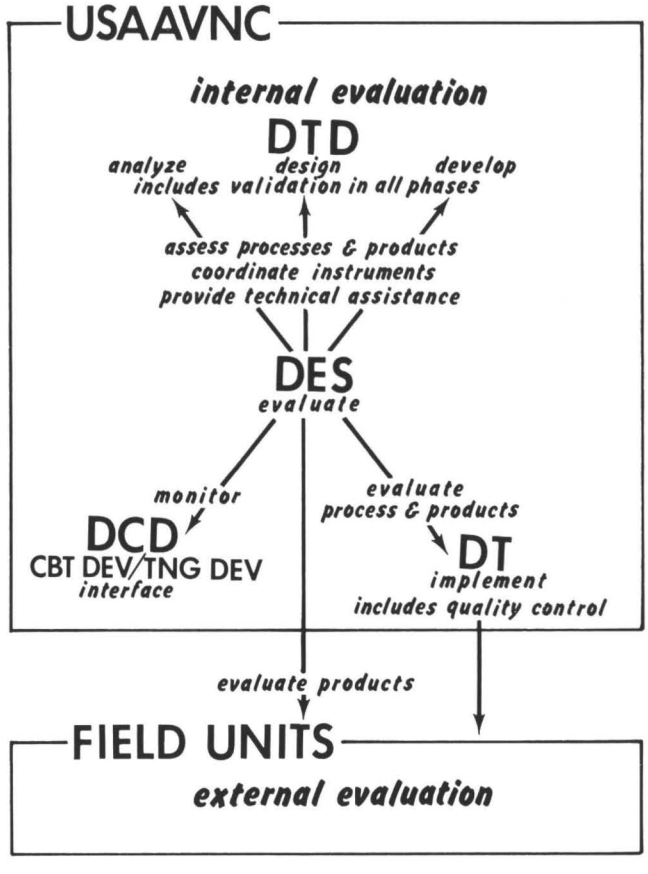
Who? What? How?

MANY ARMY aviators are familiar with the mission of the Flight Standardization Division of the Directorate of Evaluation and Standardization (DES), at the U.S. Army Aviation Center (USAAVNC), Ft. Rucker, AL. However, there are those who know little of the other mission of DES which is performed by the Evaluation Division. That mission is to conduct the USAAVNC training effectiveness program in consonance with the U.S. Army Training and Doctrine Command training mission.

The Evaluation Division is comprised of an Internal and an External Branch, supplemented by a Technical Support Section. The Internal Evaluation Branch primarily monitors and evaluates effectiveness of training conducted in residence at the Aviation Center, together with related systems, manuals and equipment. An added mission is that of assessing student progress and improving the quality of Aviation Center courses.

Figure 1

Evaluation Responsibilities



The External Evaluation Branch determines the effectiveness of training and related systems equipment as measured by individual and unit performance in the field.

The Technical Support Section provides the expertise which permits a scientific approach in the design and conduct of evaluation plans. This consists of the construction of valid data collection instruments, the application of proven techniques for gathering information, and the use of sound statistical analysis procedures. The coordinated efforts of the three elements furnish effective quality control of training at the Aviation Center (figure 1).

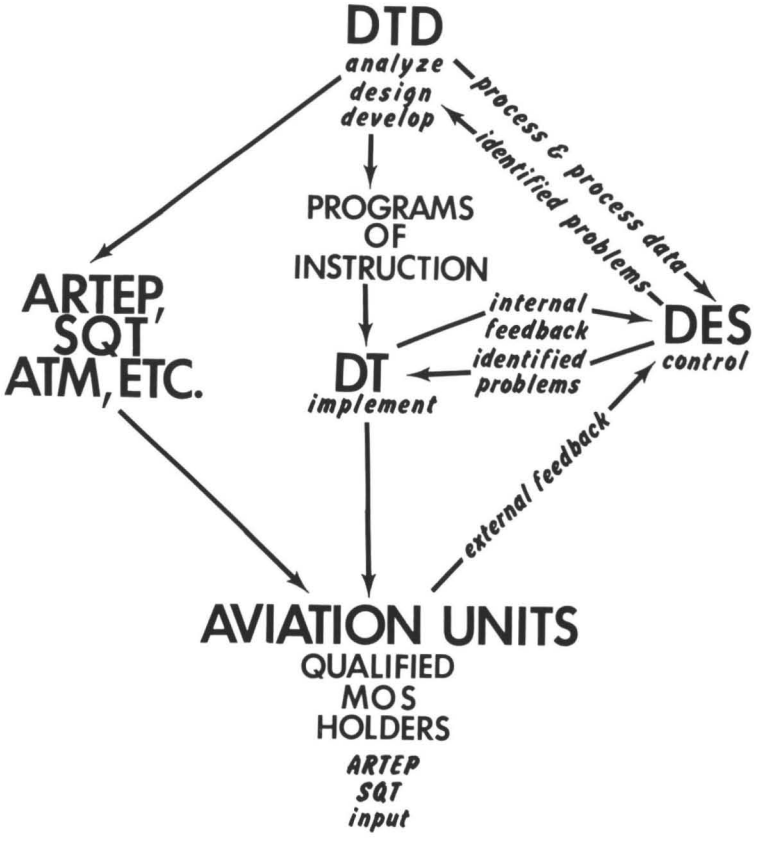
The Directorate of Training Developments (DTD) is depicted at the top of the model in the figure and has illustrated its responsibility for the three phases of analysis, design and development of a program of instruction or training literature. This model also shows the interaction of DES with DTD as well as the interaction with the Directorate of Combat Developments (DCD) and Directorate of Training (DT).

The products discussed as training literature for which the Aviation Center has the proponency include the development of aviation related skill qualification tests (SQTs), Aircrew Training Manuals (ATMs), Soldiers's Manuals, Commander's Manuals, training extension courses and the Army Aviation Annual Written Examination. Development of resident courses of instruction also are included in this area of proponency.

After development and implementation of the above training media, Evaluation Division exercises quality control by the collection and analysis of data reflecting the effectiveness of training. This includes the performance of students during resident courses, the opinion of students while they are in training and the performance of graduates in Army field units on SQTs, Army Training and Evaluation Programs (ARTEPS), and other exportable training media.

Figure 2

USAAVNC Evaluation Methodology



Again referring to figure 1, the model illustrates the evaluation effort conducted by the External Branch of DES. When analysis of collected data has been completed, results are forwarded to the training and combat developers and to the trainer for use in improving the training cycle. Figure 2 shows the evaluation methodology.

The December 1978 issue of the *Aviation Digest* carried an article entitled "Evaluation of Utilization and Training Preparation for Female Army Aviators." This appraisal is a sample of the Evaluation Division efforts. Currently ongoing are evaluations of the Initial Entry Rotary Wing Course, 93H/J programs of instruction, and the UH-1 contact instructor pilots military occupational information program of instruction.

During the course of these evaluations, it has been necessary to gather information from the field using questionnaires. This method permits feedback from the field in sufficient quantity with a relatively small expenditure of funds. A conscientious effort on the part of personnel responding to questionnaires assures a valid evaluation. Findings from evaluations, fed back to the training developer and the trainer, ultimately will produce a more highly trained Soldier.

The Directorate of Evaluation and Standardization also welcomes informal feedback from all members of the Army aviation community. Send us your comments and suggestions for improvement of training. The address is: CDR, USAAVNC, ATTN: ATZQ-ES, Ft. Rucker, AL 36362.

VIEWS FROM READERS

Editor:

Your authors writing on the subject of pistol/revolver (November 1978) were serendipitous, as I will explain later. I am sure the articles brought a storm of mail, as firearms articles will, but allow me to add my comments too, if I may.

First, it was never brought out that the revolver (Smith and Wesson M10) competing with the "65-year-old pistol" was first manufactured in 1899, some years prior to the *conceptualization* of the Government Model (M1911 et sequitur) pistol. Nor was it noted that the .45 caliber pistol was adopted to replace the .38 caliber Colt's Army Special revolver, the latter being deemed of inadequate power.

Second, the term "personal defense weapon" is not desirable because it has never been defined. As with the roses of Gertrude Stein, a handgun by another name is still a handgun. Guns are made to shoot bullets; any other implications are supplied by the user.

Third, . . . the use by one author of the 9m/m Mauser as a "European" cartridge was an unfortunate choice; the cartridge was developed in Europe solely for overseas sales in Africa and South America and was never used in Europe. It is very similar, however, to the 9m/m Bergmann-Bayard cartridge which imitated it, and was widely used by many nations. It was in its day a very powerful cartridge.

Fourth, the use of the term "receiver blow-back" scared me to death (as it probably did many of your readers). All of the pistols I recall being mentioned in the articles operate on the *short recoil* principle. If a receiver (frame, or handle, if you will) blew back into *my* hand, I would be considerably upset.

Fifth, the allegation that the six-shooter be loaded with but five cartridges does not apply to "modern" double action revolvers; it stems from the days of the single action cap and ball and later cartridge revolvers in which the firing pin of the hammer protruded through the recoil plate when the gun was in the relaxed state. It can be seen prudent not to allow the firing pin (or hammer) to rest on the primer of a cartridge (or on a cap); a slight lift and release of the hammer could discharge the revolver. Modern double action revolvers have had hammer blocks for a hundred years; upon release of the trigger, the hammer and firing pin are withdrawn within the frame of the revolver and cannot touch the primer unintentionally—cannot even be hammered into contact. Late model revolvers, though at this point I have difficulty defining "late model," have inertia firing pins mounted in the frame for increased safety.

Sixth, it must be pointed out that there are many selections of pistols and revolvers available which are utterly and unquestionably superior to the relics discussed in the articles. The Ruger Speed Six revolver is modular in concept, does away with side plates and screws which the inept interchange, bend and gouge. (In passing let me note that in all the years the Army has been using the Smith and Wesson Model 10-5 [four-inch barrel, round butt] revolver, it has never published a maintenance manual on the subject; the sole available TM is a *parts* manual containing an exploded drawing.) Of the many superior pistols now available, one might be the HK (Heckler and Koch) P9S Double Action .45 caliber.

Last, it should be mentioned to the authors and your readers alike, that the U.S. is committed by treaty to adopt all NATO standards (after all, we forced the 7.62 mm NATO cartridge on *them*) including the handgun cartridge 9 × 19 mm NATO (9 mm Luger or Parabellum). Requests for Proposals were accepted by the Ordnance Department in the 1950s; many excellent proposals, including those from Harrington and Richardson, Colt's, and Smith and Wesson were forthcoming. However, when the Secretary of Defense learned of this action, he (Mr. Robert S. McNamara) disapproved the action on the basis that the inventory of M1911A1 pistols (which at that time amounted to more than 1.5 million pieces) was sufficient to last the U.S. for many years to come. Two of the aforementioned proposals went on to become very popular handguns: the Colt's *Commander* and the Smith and Wesson *M39*.

Serendipitously, your authors arrived, I think, at the conclusion that neither the pistol nor the revolver under discussion meet, as currently conceived,

our requirements. They drew upon (and for this we cannot blame them) insufficient knowledge, insufficient experience and inadequate exposure to the current handguns picture. (For example, it is easy to demonstrate the superiority of the automatic pistol over the revolver as a one-hand handgun, but who wants to?) And, we must ask ourselves, why does the mystery weapon have to be a handgun as we know it to be a revolver or pistol? The Czech M61 "Skorpion" and Ingram M11 "machine pistols" (submachine guns, if you will) offer squirts of 750 to 1,200 shots per minute with ranges from 50 meters as pistols to 200 meters as machine pistols.

Then there is the "blaster" of Han Solo. But who wants to bring STAR WARS into this?

Keep looking, *Aviation Digest*. Stimulate your readers for the answers. From somewhere out there, helicopter crews will eventually be armed with an adequate weapon.

T. L. Golden
105 Barksdale Drive
Savannah, GA 31405

Editor:

I just finished reading Major Beach's letter in "Views From Readers," December 1978, and hope that his letter may stir some thinking. In my short experience with attack helicopters, I have heard little from attack helicopter pilots to indicate they desire anything other than a light, maneuverable and low signature attack aircraft like the Hughes 500M-D, the merits of which it would be redundant for me to repeat. Not only would this aircraft be a perfect interim weapons platform for the Reserve units, but light attack aircraft units also could be deployed to any potential combat areas with less preparation, in greater numbers, and with less support equipment and supplies than a current active Army attack helicopter unit. These units, either Reserve or National Guard, could quickly augment present and future active Army attack helicopter units who will suffer quick and severe losses in the opening battles of the next war.

There is no doubt in my mind nor in many others to the need for this type of light attack aircraft and possibly we have one last chance in giving them to our Reserve and National Guard units. The possibilities and merits speak for themselves.

CPT Roderick D. Wolfe
Company C, 501st CAB
APO New York 09140

Editor:

I agree with Major Beach's conclusions concerning the need for enhanced antiarmor capability for the Reserve Components ("Views from Readers," December 1978). But I think he overlooked one alternative. It should be feasible to update UH-1C/M gunships with AH-1S dynamic components and TOW missiles. I believe this could provide a cost effective and versatile antiarmor weapons platform.

1LT Dennis W. Nicks
A Co. 9th Avn. Bn
Ft. Lewis, WA 89433

Editor:

Members of the Aerospace Medical Association, among whom are some of the world's foremost authorities in aviation, space and environmental medicine, and the allied sciences to these specialties, will attend the 50th Annual Scientific Meeting of the Association from 14 to 17 May at the Sheraton-Park Hotel, Washington, DC.

This meeting will provide a professionally diverse forum for physicians in almost all clinical specialties, biomedical researchers, nurses and other scientists.

In conjunction with the association's Golden Anniversary meeting, plans are underway by the National Air and Space Museum of the Smithsonian to present a special exhibit depicting the advances made in aviation and space medicine during the past 50 years. This exhibit should be ready for public viewing in May, with an official opening to coincide with the scientific meeting. Additional information may be obtained from the Aerospace Medical Association, Washington National Airport, Washington, DC 20001. (703) 892-2240.

Roland H. Shamburek, M.D.
Executive Vice President
Secretary-Treasurer
Aerospace Medical Association

Editor:

The 8th Annual Convention of the Professional Aviation Maintenance Association, Inc. will be held 18 August in Alexandria, VA. The business meeting and banquet will be held at the Ramada Inn-Old Town, 901 Fairfax Street.

P.A.M.A. is a nonprofit, nonpartisan, nonsectarian and nonunion association organized in 1972 to promote a high degree of professionalism among aviation mechanics, technicians and repair agencies. The association is dedicated to promote safety, knowledge and dignity in the aircraft maintenance profession.

For further information regarding the convention, contact:

Mr. Edwin N. Morey
7221 Carol Lane
Falls Church, VA 22042
Convention Chairman
703/563-5660

Arthur C. Giessman
Chairman Publication Committee
P.A.M.A.

A week-long Wordwide Aviation Logistics Conference (WALC) is scheduled to be held 14 through 18 May at the Federal Mart Building, 12th and Spruce Streets, in St. Louis. It will be hosted by Major General Richard H. Thompson, Commander, U.S. Army Troop Support and Aviation Materiel Readiness Command. The purpose of this WALC is to negotiate with major commands the distribution, support and overall planning of the Army's aircraft fleet for the next two fiscal years.

About 60 high ranking military and civilian personnel, representing major Army commands, will participate in the conference. Before the WALC is adjourned, these conferees will have taken into account Army aircraft authorizations, assets and requirements, to include unit activities, deactivations and relocations. In addition to the control and distribution of Army aircraft, the attendees will discuss and attempt to resolve logistics problems of field units and logistic elements.

GOOD PR IS PRICELE$$

CW2 David M. Battle
498th Medical Company (AA) MAST
Columbia, SC

PROBABLY ONE of the least heard of problems in today's aviation training and operational areas is the lack of effective communication between the military and civilian communities, especially where there are large concentrations of military aircraft. All it takes is one pilot who happens to fly in the proximity of some unsuspecting citizen. In most instances it automatically will be assumed that the pilot is just another hot-roder flying unsafely.

As the peacetime Army continues training to maintain a high degree of readiness with added emphasis on night and nap-of-the-earth flight, it is imperative that the citizenry be informed about what is going on in their area. After all, the majority of these folks are footing the bill through their tax dollars. There is no doubt that they not only deserve the "most for their money," but they should also be accorded an effective knowledge of what we're doing, why we're doing it and how it's being done.

The majority of complaints reported to civil and military authorities would not be made if there was an effective, continuing program aimed at informing the community (up to the state level). Knowing what is going on will alleviate most of the misunderstanding and hostility. Let's face it; we owe it to the people.

Public relations (PR) means just that! Especially when something as intriguing as aviation is involved. Each aviation unit or, at the very least, aviation command, should have "one of its own" as an active public relations officer to work with your local public affairs office (PAO). Team your PR officer with a sharp and knowledgeable noncommissioned officer (NCO) and positive results practically are guaranteed. Guaranteed, that is, if they exercise a bit of effort and initia-

tive. Unless you are at the Aviation Center, the average PAO usually has only minimum knowledge of Army aviation. Your PR officer and NCO could be a lot of help to the PAO. Remember, you must work through your PAO.

Simply because of the nature of aviation, you and your command's PAO will find that news media representatives of every sort will respond to your program, if for no other reason than competition among themselves. We in Army aviation have a rare, valuable and highly marketable commodity whether it be weekly newspapers; metropolitan dailies that run five editions; small town radio stations, or big city TV stations.

All it takes is a few phone calls or personal visits (the latter is much more effective) and the ability to get along with people. As a former newsman in both broadcast and print media, I can't help but stay excited about providing a continuing and interesting educational program to the people we are dedicated to serve. It costs nothing but initiative and time to warm people to our efforts and goals. They appreciate knowing what we are doing. They rightfully believe they are an active part of Army aviation.

It doesn't take sophisticated equipment (other than our aircraft) to turn folks "on" instead of "off." You'll find that after a couple of presentations to civic clubs or radio or TV interviews, requests will start to come in for you to visit another group and then another. If you'll contact schools, the odds are you'll become fully involved in public education and relations to an even greater extent than you first realized.

By stressing aviation safety, you will gain even more respect for the professionals in Army aviation. This never fails to have a snowball effect. Once aviators and support personnel are aware that the eyes of the civilian community are focused on them, they can't help but become more safety-conscious. Who wants to be "the one . . . who spoiled the record"?

Pride and proficiency will become the dominating force. Aviators will realize that each time someone sees them on the ground or in the air, total professionalism is expected. Pride is another motivating commodity.

The commander of an aviation unit, regardless of the size, should be able to see added benefits to initiating a program of good PR. It makes your unit look better through *positive,* rather than negative, exposure. There will be fewer complaints to follow up and an added impetus for aviators to be aware that there are people out there looking and listening—especially looking.

I've never known of an aviation unit that hasn't had at least one camera fanatic. This person can, by merely shooting a few slides, effectively display your day-to-day activities and mission. Couple this with a written outline to accompany the slides and presto—you have an effective, educational and informative presentation to the people who live and work in your area of operations. It doesn't take a Hollywood presentation by any means. The Army catalog of films lists some fine motion pictures dealing with Army aviation. The Army Safety Center, Fort Rucker, AL, publishes a catalog on Army, Navy and Air Force safety films.

Most radio and TV stations have some sort of daily "open forum" or "call-in" question and answer show. Usually the program directors are delighted to have an entire program handed to them, especially one dealing with something as exciting as Army aviation. Don't be surprised if you're asked for a repeat performance. Once folks start participating and taking an active part there is rarely enough time to cover all the questions and areas of interest. Remember to stress safety above all. It certainly makes the public feel more at ease with us. *A word of caution—make sure your representative knows all the answers. Get across the message that we in Army aviation care.*

In these times of continuing cutbacks and the necessity of getting more out of our training dollars, there is no excuse not to get involved with the community. Be prepared and willing. Go out and let them know that we exist for them and are dedicated to them, that we value what they think and respect their feelings. I have yet to see anyone fail to respond to genuine sincerity and friendliness.

Something else you'll more than likely discover once you get your PR program off the ground is that more of your aviators will be willing to go out on these contacts with the public. This is no undertaking for anyone who will look upon it as an extra duty. Appearance, demeanor and the ability to get along with and feel comfortable around people are absolute musts.

You won't find it listed in the ***Wall Street Journal,*** but good PR offers the greatest return for the smallest investment.

Aircraft static displays are excellent methods of informing the civilian community of the Army's aviation mission

Countdown
To The
New OER

Evaluations Systems Office
MILPERCEN

AN EXTENSIVE review of the draft regulation and supporting policies for the new officer evaluation report (OER) has been completed with the major commands. The review was to ensure that the regulation and supporting policies will be effective in the wide range of differing and sometimes unique situations encountered by evaluation chains throughout the Army. The review established that the regulation and supporting policies, with minor policy and procedural changes, were determined to be sufficient to effectively implement the new system.

A transition period to the new system will begin 15 September and continue until 1 November 1979. The transition period was established to ensure that all officers, to the maximum extent possible, receive a final report on the Department of the Army (DA) Form 67-7 OER to close out their records under the current system. A DA circular to the published in June will detail the instructions for the closeout of DA Form 67-7.

All active duty officers will come under the provisions of the new Officer Evaluation Reporting System (OERS) on 1 November 1979. That date was chosen to preclude the necessity to generate closeout reports and set performance objectives during a time when many end-of-fiscal year reports are due and to bypass the time when summer personnel turbulence is still having an impact.

An education and information program has been implemented to inform the officer corps about the new system. Some of the highlights of the program are:

- Military Personnel Center teams will brief the officer corps at major units and installations Armywide starting this month and lasting through August.
- A pamphlet describing, in brief, the new system will be distributed to each officer. The pamphlet will provide instructions to rating officials and rated officers for preparing the OER forms. The pamphlet will be distributed in August.
- Various articles highlighting salient features of the new system are being prepared for publication in official journals and periodicals.
- A television tape is being produced to present an overview of the system and address the hard questions that will be asked about it.
- A comprehensive training package is under development for use in Army service schools. The training will prepare the officers and warrant officers attending the schools to participate in the system and will focus on the processing of the forms for those who will administer the system, including enlisted administrative personnel. Nonresident courses will be developed for Reserve component officer and enlisted personnel as well.

The three forms which the new system uses have been designed and will be available after 1 June 1979.

- The new OER, DA Form 67-8, differs from the current OER in that it emphasizes the duty description, includes a more structured performance narrative, increases the role of more senior officers in the rating chain and provides DA with a mechanism to track the variability of senior raters, and does not utilize a numerical score.
- The Support Form, DA Form 67-8-1, is for field use only in that it accompanies the OER through the rating chain but does not accompany the OER to DA. The Support Form encourages discussion between the rater and the rated officer at the beginning of the rating period on the duty description and specific objectives which

guide performance. The form also increases the role of rated officers by providing them the opportunity at the end of the rating period to describe not only their duties and objectives but also their acomplishments to senior officers in the rating chain.

- The Tracking Form, DA Form 67-8-2, is for DA use in maintaining a record of the evaluation history of each senior rater (normally the next senior officer to the rater). This gives DA the capability to track the variability of senior raters. The form will be maintained at DA and made available to the senior rater.

The direction and major concepts of the new OERS are the results of a comprehensive developmental effort which began in 1973. During this effort, information was gathered from a range of rating environments in more than 100 active Army, Reserve and National Guard organizations, a large cross section of the active Army officer corps, more than 50 selection boards and a large number of DA managers. The effort also included a worldwide survey of the officer corps, a field test of the new system as well as a review of available information from past Army systems, sister services, selected foreign services, civilian industry, Government and academia.

The goal of the new system is, simply, a significant improvement over today's system. It doesn't claim to be a panacea for all the real or perceived shortcomings of the present system. Extensive field participation during the developmental effort resulted in a great deal of assistance, support, and even enthusiasm from a significant portion of the officer corps. This, it is believed, will translate into a relatively high degree of officer corps acceptance once the system is implemented.

The new system incorporates several features which have not been included in previous Officer Evaluation Reporting Systems.

Rated Officer Participation. Participation by the rated officer in the evaluation process provides additional information from the rated officer's point of view to the rating officials, encourages mission related discussions early in the rating period which in turn will improve the professional development of officers, and enhances the effectiveness of organizations by relating performance to organizational missions. This is accomplished by an objective setting process early in the rating period and the rated officers' description of their duties, responsibilities, objectives and contributions on an OER Support Form at the end of the rating period.

Senior Rater Concept. This concept includes two major changes. First, it increases the role of the most senior rating official from a purely administrative role to include a critical evaluation of the rated officer's potential. Second, it allows for greater flexibility in the number of officials in the rating chain in order to deal more effectively with geographical spread and functional autonomy, as well as to reduce field workload. In order to reflect the change in concept, the names of the rating officials have been changed from the rater, indorser and reviewer to the rater, intermediate rater (optional) and senior rater. It is estimated that in accordance with the rules for establishing rating chains, the majority of rating situations will involve the use of two rating officials, the rater and the senior rater. Therefore, in the majority of cases, the senior rater will be the same person as the current system's indorser.

Senior Rater Profile. The profile provides a comparison of a specific rating and a senior rater's normal rating tendency (e.g., easy or hard). This is accomplished by tracking the rating history of the senior rater and making it visible to boards and managers.

Support for Professional Development/Mission Accomplishment. The emphasis in the new system on the increased communication, development of subordinates, and objective setting, provides a major assist to the daily performance in support of organizational missions. This represents an expansion of the traditional functions of the officer evaluation system in recognition of the pervasiveness of the system in organizational activity.

Support for Army Personnel Management Program. Explicit techniques are included which highlight and support the specialty concept of the Officer Personnel Management System, focus the attention of officers on the human side of the organization, emphasize the functions of programs and encourage open channels of communication and constructive problem solving.

Increased Administrative Accuracy. Improvement is accomplished by simplifying certain administrative items such as the accountability of rating periods and by having the rated officer review and authenticate administrative data.

EPMS CORNER Enlisted Personnel Management System

NCO Logistics Program

FOR SOME TIME the Army has recognized the need to maintain a reservoir of highly qualified logistical noncommissioned officers to meet changing requirements in times of emergency. This was recognized by the Quartermaster Corps in 1955 when the Noncommissioned Officer's Career Development Program was initiated. This program was designed to maintain visibility and control over assignments of highly trained logistical noncommissioned officers that had depot level supply and maintenance experience in Europe and the Continental United States. The program proved to be so successful that other technical services formed similar programs between 1957 and 1962.

The Noncommissioned Officer Logistics Program (NCOLP) is an outgrowth of those formed by the various technical services; it became a single program in 1962 as a result of the Army reorganization that eliminated the technical services. Since that time the program has expanded to a membership of 1,230 in the following military occupational specialties (MOS):

32Z	55B	63H	76J	76Z
35P	55G	63Z	76P	
41C	55X	64Z	76V	
45K	55Z	67Z	76W	
45L	62B	71N	76X	
45Z	63C	76D	76Y	

At present the program is experiencing serious shortages in MOS 45Z, 55B, 55Z, 63Z, 64Z, 71N, 76D, 76P, 76W and 76Z. Noncommissioned officers whose primary MOS is one of these, and who meet the prerequisites, are encouraged to apply for program membership. The requirements for membership are outlined in chapter 13, AR 614-200. It should be noted that entry into the program is voluntary and that standards of acceptance are high; only those who have demonstrated outstanding professional abilities in logistics will be accepted. Thus, selections are made by a Department of the Army Selection Board by using the "whole person concept" after a review of the applicant's official military personnel file and information submitted with the application.

If selected the special qualification identifier of "K" will be awarded and attendance to the 9-week NCOLP course at Ft. Lee, VA will be programed as soon as practicable. Thereafter, efforts will be made to ensure that future assignments are to NCOLP positions that are challenging and professionally rewarding. There are 1,929 NCOLP positions worldwide that have been identified as being so technical in nature and so broad in scope as to have a direct bearing on the logistical mission of the Army.

Additional information regarding the program can be obtained by calling AUTOVON 221-8026 or 8027, or by writing to Commander, U.S. Army Military Personnel Center, ATTN: DAPC-EPM-L, 2461 Eisenhower Avenue, Alexandria, VA 22331.

COMMAND SELECTIONS

ON 1 MARCH 1979, Headquarters, Military Personnel Center, announced the names of officers selected for lieutenant colonel level command assignments in fiscal year (FY) 1980. The following officers have been named to command aviation related battalions and squadrons in combat, combat support and combat service support categories:

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Aviation Troop Commands

Ronald H. Bryce
Dante A. Camia
Peter H. Carr
Jacob B. Couch Jr.
Victor L. Donnell
William R. Fisher
Don G. Fite
George D. Fuller (deferred to FY 81)
Charles F. Fulton
Stanley E. Grett
James Higginbotham
Robert D. Hurley
Alan F. Jones
John M. Kilkinney
Joseph W. Kuppich
Kenneth D. Loveless
Lloyd D. Mason
Marvin E. Mitchiner
John Moscrip Jr.
George M. Mullen
Haspard R. Murphy
Gary F. Ramage
James B. Sauer
James A. Scott III
Harold L. Smith
Barry J. Sottak
Gordon W. Tingle
Robert L. Wolf
Robert S. Young

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Aviation Maintenance Commands

Francis Gniazdowski
Edward L. Goff
James Satterwhite
James B. Thompson
Dennis P. Vasey

◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆◆

Air Traffic Control Troop Command:
Emmett F. Johnson

The selected officers will be notified after 1 May 1979 of projected units and change of command dates. Inquiries should be directed to LTC Patty Brown, Aviation Manager, Lieutenant Colonels Division, at AUTOVON 221-0422/7898. Congratulations and best wishes go out to the officers selected for command.

PEARL'S

Personal Equipment & Rescue/Survival Lowdown

If you have a question about personal equipment or rescue/survival gear, write Pearl, DARCOM, ATTN: DRCPO-ALSE, POB 209, St. Louis, MO 63166

Ferry Facts

For those of you who may be required to ferry aircraft from the Continental United States to Europe for instance, or across any distant body of water, it is essential that you have a ferry package of survival equipment onboard your aircraft.

Most of the time, we in the Army are required to borrow this ferry package of survival equipment from the Air Force. However, we have experienced some problems with this procedure, because all *borrowed* items must be returned to the Air Force once you reach your destination. There are no exceptions.

We realize this equipment is nice to keep, or that we may need it later. If that is the case, you can borrow it again as the occasion dictates. The Air Force has expressed concern that some of our Army aircrews have not returned the borrowed ferry equipment.

The Air Force will request that you sign a hand receipt, Air Force Form 261. When you are issued the ferry package you also will be required to leave a copy of your crew orders. Upon completion of your missions, return the borrowed ferry equipment and obtain a receipt at your nearest Air Force installation life support shop.

School Schedule

A list of Air Force aviation life support equipment (ALSE) schools has been distributed to the field by the U.S. Army Materiel Development and Readiness Command project officer for ALSE. However, this list does not contain the specific dates that these courses periodically begin.

Specific starting dates can be obtained by calling Chanute Air Force Base, IL, Mr. Standford Fornof, AUTOVON 862-3034/3094. Authorization to attend these courses is obtained through your base or command training office.

The Top Line

The top line of any flight is having a *reliable* SPH-4 flight helmet on your head (with the visor down). Some SPH-4 flight helmets are not as reliable as they should be because the retention assemblies over a period of time deteriorate from wear and perspiration. A new SPH-4 flight helmet retention assembly and chin strap is available from S9T.

We recommend that you inspect your SPH-4 flight helmet retention assembly. If you determine that it needs replacement, you should requisition the following items:

8415-01-056-0700, Retention Assembly, Regular Size, Cost $7.15;

OR

8415-01-056-0699, Retention Assembly, Extra Large, Cost $7.15;

ALSO

8415-01-057-3502, Strap Assembly Chin, Cost $1.75.

The new chin strap and retention assembly should be replaced as a set, since neither are compatible nor will fit the old chin strap and retention assembly. The SPH-4 Technical Manual is being updated to

Pam Wood
Photos by Tom Greene

reflect this new change. Your authority for ordering the new replacement parts will be the Supply Information Letter, Number 4-78, dated November 1978, which is published by U.S. Army Support Activity, Philadelphia, PA.

Survival Panel

The panel marker, survival (NSN 8345-00-140-4232) once was furnished with each pair of Nomex trousers that you requisitioned. However, the Nomex clothing also is worn by armored vehicle crewmembers, who do not have a need for the panel marker. Therefore, the panel marker was eliminated as part of the Nomex trouser issue. The new one-piece flight suit CWU-27/P does not come with the panel marker, and the marker should be requisitioned as a separate item from S9T.

PREPARE TO SURVIVE

Major Cecil O. Locklear
Aviation Advisor
USAR Aviation Support Facility
Stewart Airport, Newburgh, NY

RECENT EDITIONS of *Aviation Digest* have contained articles which reemphasized the need for post-crash survival training and the importance of operational aviation life support equipment (ALSE) in surviving aircraft accidents.

Those of us who read *Aviation Digest* and *Flightfax* can recall numerous stories on aircraft that crashed in peacetime situations and whose crews and/or passengers died or received disabling injuries not as a direct result of the crash. The fatalities were due to the lack of functional ALSE which prohibited the crews from being located quickly or from administering emergency medical treatment.

Many of us in Army aviation have recognized the need for an effective, operational ALSE program so that we and our peers would have the necessary training and equipment to deal successfully with a post-crash survival situation. Upon recognizing the need, we proceeded to obtain guidance on how to set up our ALSE program, i.e., basic equipment, repair parts and tools, and how to train our personnel. Unfortunately, when we looked for the prepackaged solution, it was not to be found.

To date, a Department of the Army ALSE Program does not exist and a military occupational specialty has not been established for personnel to inspect/repair our ALSE. So what do you do to set up your own ALSE program? Hopefully you do what the 77th U.S. Army Reserve Command (ARCOM), Ft. Totten, NY, has done!

Mr. Al Bevilacque, supervisor of the 77th ARCOM's aviation support facility, and myself, recognized the problem in the ARCOM's aviation safety program of obtaining ALSE for the flight crews and ensuring the operational reliability of that equipment. We developed a solution to the problem and presented it to MG Frederick J. Scheer, commander of the 77th ARCOM, and his staff. MG Scheer approved the solution and directed his staff to provide the necessary assistance to the aviation support facility to resolve the problem.

The first step was to determine what minimum ALSE equipment would be required for the flight crews. The list in figure 1 is what this command considers the minimum essential equipment for CONUS flying over land and when auxiliary equipment is not required. This is not a limiting list for the subunits of the 77th ARCOM, but is a starting point for equipping their flight crews.

Next we determined what organization(s) would be responsible for maintaining the ALSE. It was decided that direct support level maintenance for all ALSE within the 77th ARCOM would be cen-

Figure 1
Minimum Essential ALSE*

Bag, Flying Helmet, Nylon
Boot, Flyers: Man Leather, Black Insulated
Flight Suits (2)
Gloves, Flyers, GS/FRP-2, Nylon, Fire Retardant
Helmet, Flyers: SPH-4 Crash
Jacket, Nomex, Flyers, Lightweight, Olive Green
Jacket, Nomex, Flyers, Medium Wt, Olive Green
Parka, Extreme Cold Weather
Preserver, Life (Underarm) LPU-10P
Radio, Survival, AN/PRC-90
Survival Kit, Individual, Cold Climate
Survival Kit, Vest Type (SRU-21P)

*** Note: This minimum essential equipment is for flying in the CONUS overland when auxillary equipment is not required. Flights exceeding the altitude limits prescribed in AR 95-1 require oxygen equipment. Flights over large bodies of water require adequate flotation equipment. Overseas ferry flights require additional special ALSE.**

tralized at the aviation support facility. A Department of the Army Civilian, Mr. John Chubway, was selected to be the ARCOM's ALSE technician as an additional duty. He was sent to the U.S. Air Force Aircrew Life Support Specialist Course at Chanute Air Force Base, IL. Mr. Chubway and I established the test equipment, repair parts and tools needed, and the inspection/repair procedures and frquency by researching available Air Force technical orders and Army technical manuals.

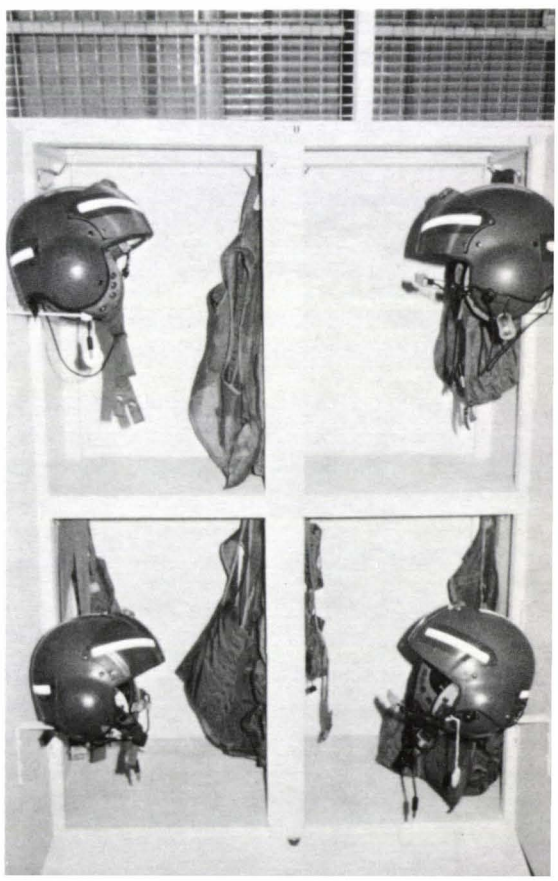
We developed the plans for the physical layout of the ALSE maintenance shop. Due to the uniqueness of the scheduling of flight periods in the Army Reserve (primarily weekends), and the duty hours of the ALSE technician, it was determined that a crew locker system would best satisfy the requirements of crew and ALSE technician access to the equipment. The results of the plans and self-help construction of the crew locker system can be seen in figures 2, 3, 4 and 5.

There still are some minor details to be worked out, but the 77th ARCOM now has an effective, operational ALSE program as part of its overall aviation safety program.

For those of you who are interested in establishing your own ALSE program, naturally I feel that the steps taken by the 77th ARCOM were logical and correct, but there are several items I would like to emphasize. To make the program work *you must obtain command interest and support.* This program requires additional monies to obtain the basic equipment, test equipment, and repair parts and tools. It also requires an individual to supervise and operate the ALSE maintenance shop. This person will have to be taken from the command's current assets; until we get the much needed ALSE MOS no one is going to be assigned to the command for the purpose of maintaining ALSE. The higher the level of command support you can obtain, the better the probability of obtaining these assets.

The ALSE program should be supervised by the aviation safety officer. The safety officer should assist the unit commander in establishing the requirements for their

Figure 2
View of rear side of locker wall system showing entrance doors that allow technical access to ALSE equipment



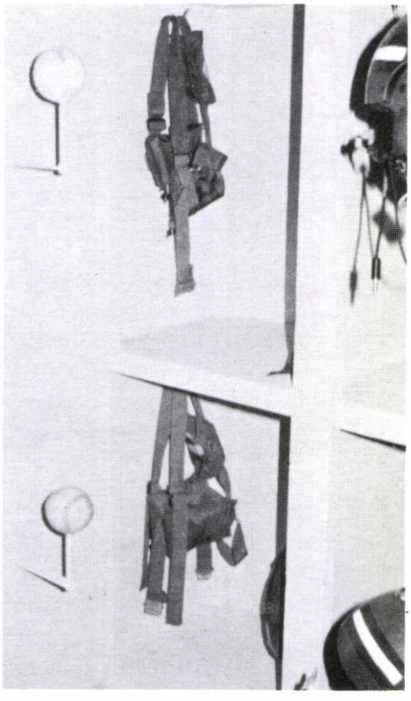


Figure 3
Helmet supports made of steel strips, threaded rods and used softballs

units and also in the selection of the individual to attend an ALSE school. Each battalion or larger size unit should have at least one school trained ALSE specialist within the command. A possible solution would be for each Army airfield command to have an individual attend a formal school, and upon completion of the school, the individual then could establish an ALSE school at the installation for people from the supported aviation units.

The development of the plans and the actual construction of the 77th ARCOM's ALSE maintenance shop was expedited because of the assignment of outside personnel, the advisors. Sergeant Major Luther P. Baethge, aviation enlisted advisor, contributed endless hours to the completion of the maintenance shop. I realize that active Army units do not have additional personnel assigned, and in most cases do not have 100 percent fill. So, who is going to do the work of developing and constructing your ALSE maintenance shop? Try the table of organization and equipment engineer units assigned to your installation. They have the capability and probably would enjoy the opportunity. Realize that an effective ALSE program is not going to be easy, but it can be done. The 77th ARCOM has proven that.

One last comment for anyone who doesn't feel that ALSE is that

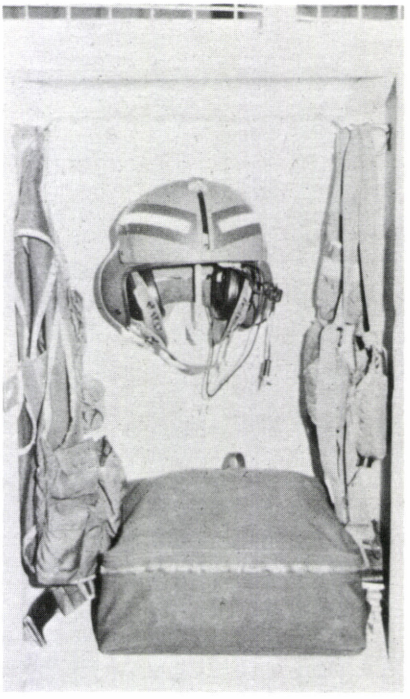
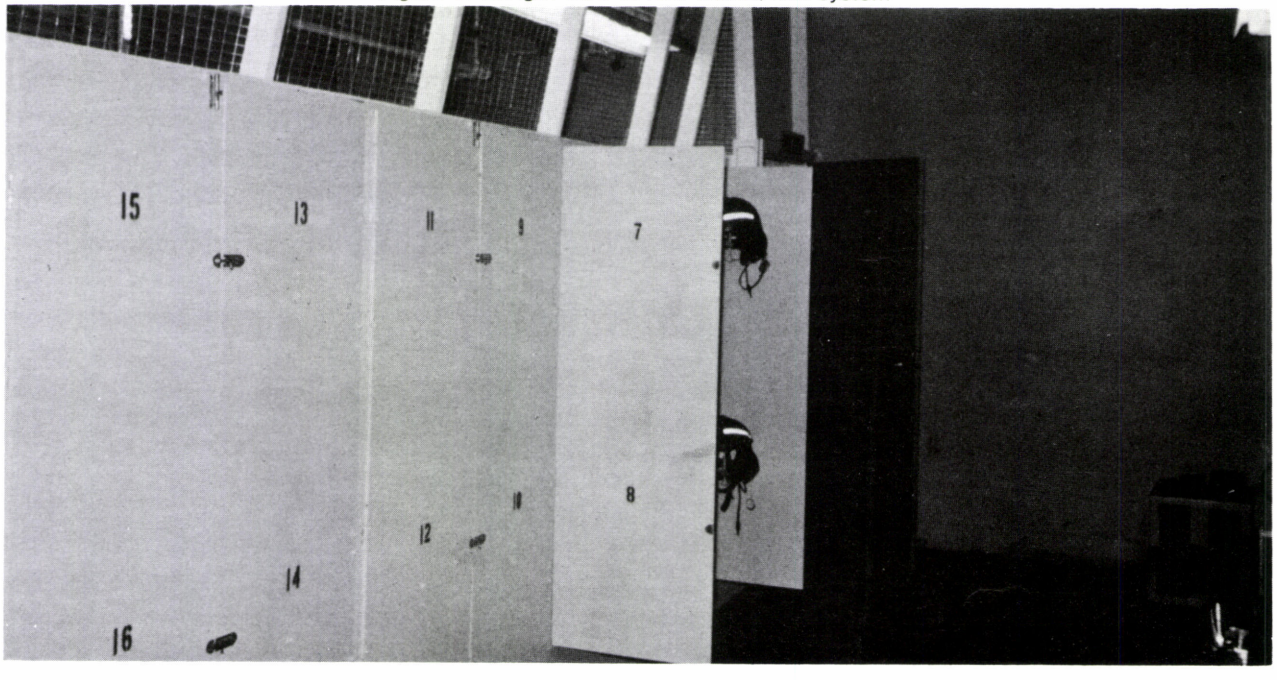


Figure 4
Front view of aviator's individual life support equipment locker

important for Army aviation—it is true that ALSE doesn't help make us better pilots, and most of the time it's a hassle to wear the equipment, until we need it. And, we never know when that might be!

Figure 5: Length view of rear locker/wall system



FIST TAKES TO THE AIR

For more on the employment of an aerial fire support team (FIST) see "Divarty Aviation—An Integral Part of the Aerial Fire Support Team," in last month's issue of the *Aviation Digest*. Major Hutchinson is continuing work on the AFIST concept as a student at the Command and General Staff College, Fort Leavenworth, KS

Major Jim S. Hutchinson

YOU ARE THE commander of a tank regiment moving toward U.S. Forces located somewhere to your front. Your unit is in column formation and you are prepared for a meeting engagement. Suddenly, several thousand meters before you expected to meet resistance, your unit comes under heavy artillery fires.

Quickly you order your units to increase their intervals and speed, but the devastating artillery fires move with them. Numerous direct hits are made on your ZSU 23-4s and your air defense umbrella is weakening. The artillery also has badly damaged your remaining air defense radar system and the vision of your air defense gunners and drivers is obscured. Your regiment has slowed to a "crawl" while clusters of small bomblets burst around it.

Your lead elements have been destroyed and your route of march has been mined. Tactical aircraft attack your tank elements and the effect is devastating. When your remaining air defense assets attack the fighters, attack helicopters strike the flanks of your units. It suddenly occurs that you are being engaged by the simultaneous fires of three different fire support means and that your unit will be destroyed.

The defeat of the Opposing Force (OPFOR) tank regiment in this fictitious battle was the result of the aerial fire support team (AFIST) in action. The concept had its origin in the 25th Infantry Division Artillery.

The core of the AFIST is the aerial fire support center (AFISC) which consists of specially trained personnel who understand and can implement the AFIST concept. These Soldiers are located in a

FIST TAKES TO THE AIR

...a lethal combat tool that would be effective in most areas of the world under most battlefield conditions...

single helicopter. They plan, request, coordinate and direct the combined efforts of the Field Artillery, attack helicopters, tactical close air support and, under certain situations, highly mobile armor-killer teams.

Basically, the center is comprised of the fire support officer, the forward air controller and the aircraft crew. The center also is the command and control element of the AFIST. The other elements are dependent upon the team's task organization but normally would consist of Field Artillery aerial observers, aerial scouts, attack helicopters and close air support aircraft. The AFIST also has the ability to integrate all aerial assets with ground forces. The primary function of the AFISC is to *coordinate* the battle. The other aerial assets, for the most part, actually fight the battle.

Under the AFIST concept, with certain application of the advanced technological weapon systems that will be available in the near future, and with minor changes in doctrine, the AFIST theoretically could be employed with the covering force. This would enable the AFIST to begin attriting the opposing armored forces at a range of 40 kilometers or more forward of the main battle area (MBA). Under this defensive situation and prior to employment of the AFIST, the division commander and staff would analyze the situation and plan where and how the AFIST could best be used. The commander then would task organize the AFIST and covering force and prepare contingency plans for the use of the AFIST.

Preferably, the AFIST is employed against the advancing forces in a preselected "kill zone." The concept calls for massive artillery to be available to support the AFIST. The tasks of the artillery would be a combination of suppressing, screening and slowing the armored columns. An additional major task would be to the *kill* selected targets, particularly major air defense assets.

With the development of the terminally guided projectiles (Copperhead), the family of scatterable mines, the sense-and-destroy armor munitions, and with the other improved munitions in the inventory, the Field Artillery soon will be able to accomplish all of the above missions. This will reduce greatly the effectiveness of the OPFOR's air defense umbrella before tactical air and attack helicopters are committed. Of course, there are very "real life" problems associated with the use of artillery well forward of the MBA, and these are being studied.

Once the umbrella is *weakened*, the attack helicopters and tactical air assets are combined with the artillery to finish the mission of destroying the targets in the "kill zone." The engagements envisioned would be extremely violent and of short duration with large expenditures of munitions and very heavy losses in OPFOR armored vehicles and personnel. Although the task organization of the AFIST, the sequence of fire support assets, and the situation might change, the primary function of the AFIST would remain. It is to function as a coordinated, combined fire support team that simultaneously can engage and destroy multiple armored targets.

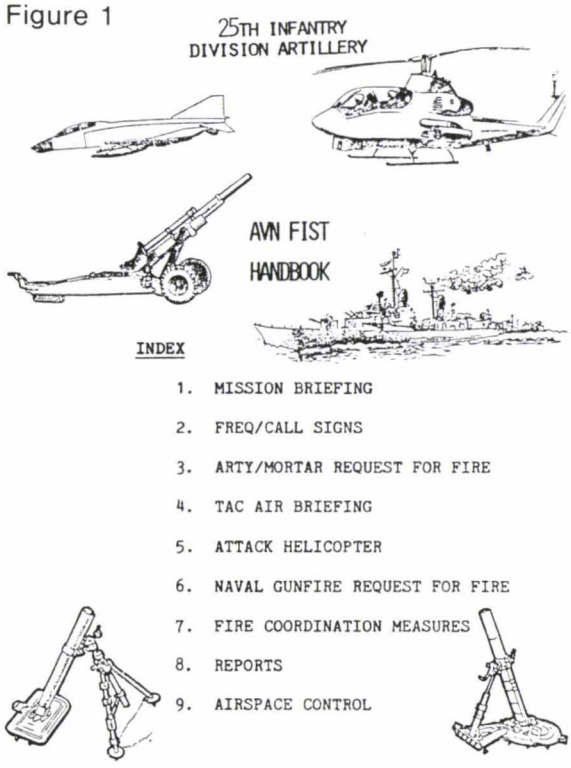
Because of the shortage of aerial observers, the 25th Infantry Division Artillery has concentrated on training its aviators in directing artillery, mortars, naval gunfire and tactical air strikes as well as understanding fire support coordination. To assist these specially trained pilots, the 25th Division Artillery developed an Aviation FIST Handbook. It is a 5-inch by 8-inch handbook designed to fit on the kneeboard of the pilot and is a quick reference to assist the aviator in many aspects of fire support. The cover sheet (see figure 1) also serves as its index. All aspects of directing fire support have been simplified. An example of this is the artillery/mortar request for fires (figure 2). The call for fire has been broken down into three transmissions and all the pilot need do is fill in the blanks and circle the appropriate abbreviations. After some basic aerial observer refresher training coupled with a short class on the handbook, the division artillery pilots have achieved and maintained a very high level of proficiency in adjusting artillery, mortars and naval gunfire.

Certainly the AFIST is not designed to work in all situations, but it is a lethal combat tool that would be effective in most areas of the world under most battlefield conditions. The important thing to remember about AFIST is:

- Its organization can be tailored to the mission.
- It can perform fire support coordination functions with the advantage of being in proximity with the OPFOR.
- It is highly mobile with an excellent communication system.

Its primary weaknesses are those associated with nap-of-the-earth aircraft and radio communication in the battle area. With well-trained crews and sound tactical employment, AFIST has the mobility, flexibility and capability to be extremely effective against fast-moving armored forces. Doubtless this concept will have a prominent place on tomorrow's battlefield.

Figure 1



AH-1 Cobra TOW

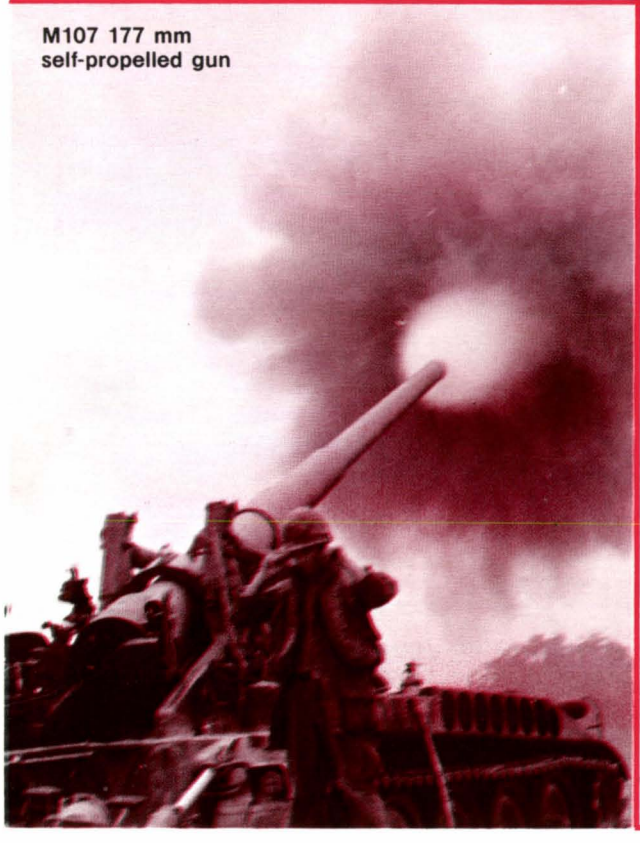

M107 177 mm
self-propelled gun

Figure 2

ARTILLERY/MORTAR REQUEST FOR FIRES

1st Transmission:

_____ this is _____ (AF, FFE, Registration, Destruction), (BP, BTRY, BN), over

2nd Transmission:

(GRID _____, FROM_____R/L_____ + or - _____),

(Direction _____, GT, Reference Line _____ _____),

Description _____ over.

3rd Transmission:

(H/A)*, (TI, ICM, VT, SMK, WP)*

(AMC, TOT _____)*, (Request TOF, SPLASH)** over

* HE, PD, Btry Fires when ready, is standard
** Request if needed

MESSAGE TO OBSERVER

_____ Fires I/E, # Rds I/E

_____ Adjusting Battery

_____ Change to request

_____ TOF

ATC ACTION LINE

UNITED STATES ARMY COMMUNICATIONS COMMAND

After every major aviation accident an attempt usually is made to prevent similar future occurrences. What has come about as a result of that midair a few months ago at San Diego, CA?

Good question! The Federal Aviation Administration (FAA) has indeed launched a program which does several things. The initial step of the program announced by the Secretary of Transportation and FAA Administrator in December will be the establishment of Terminal Radar Service Areas (TRSAs) at 80 air carrier airports in addition to the 105 already available. More than half of the 80 new TRSAs will be operational by the end of 1979. This means that all pilots flying into these areas will be offered radar guidance to keep them safely separated from other air traffic. Although participation is voluntary, any true professional will gladly use everything available to ensure a safe flight.

FAA also has issued a notice of proposed rulemaking to establish 44 new mandatory Terminal Control Areas (TCAs) similar to those already in use at 23 of the nation's major airports. Implementation is expected to be completed at 20 of the new sites within 12 months of the final rulemaking and at all but six locations within 18 months.

The proposed FAA rule also would lower the floor of the Positive Control Area from the present 18,000 feet to 10,000 feet over the states east of the Mississippi River and over most of the state of California. It would be lowered to 12,500 feet over the rest of the country.

Present regulations permit only instrument flight rules (IFR) aircraft in positive controlled airspace above 18,000 feet. The proposed rule would permit a new operations concept called controlled visual flight rules in positive controlled airspace below 18,000 feet. This would permit noninstrument rated pilots to use the airspace when weather permits. They would receive radar separation service from air traffic control (ATC) instead of operating on a "see and avoid" basis as visual flight rules aircraft now do. This positive control below 18,000 feet will begin within a year after the rulemaking is completed.

Concurrent with these actions, FAA is conducting a broad review of terminal ATC procedures to determine if any changes need to be made. For example, they are studying whether practice instrument approach procedures are adequate, whether communications transfers are being properly handled, and whether pilots are knowledgeable about the use of visual separation standards in terminal areas.

All in all, it may be sometime before all the so called "fixes," resulting from the big one at San Diego, fall into place.

Readers are encouraged to send questions to:

Director
USAATCA Aeronautical Services Office
Cameron Station
Alexandria, VA 22314

Limited Quantity Available — Three Part Series About

AH-1S Cobra Modernization Program

The booklet is a reproduction of the three part article published in the *Digest* beginning in January 1978. It describes and details the AH-1S features which will exist in all Cobras by 1985.

Write for your copy . . . Editor, *U.S. Army Aviation Digest,* P.O. Drawer P, Ft. Rucker, AL 36362; or call AUTOVON 558-6680.

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Aviation Students' Clothing Policy

AVIATORS HAVE been reporting to Ft. Rucker, AL in temporary duty (TDY) status for special aviation training preparatory to further assignment without the required flight equipment. Aviators apparently are not aware that the required clothing and equipment will not be issued at Ft. Rucker's Central Issue Facility (CIF) for permanent retention. *Personnel on flight status must have the authorized issue of flight equipment in their possession upon arrival.*

All this is simply a matter of economics. The cost of a full complement of flight equipment is more than $400. This means that each time an individual on TDY is issued flight equipment at the local CIF, Ft. Rucker loses operations and maintenance funds which properly are chargeable to the activity issuing the flight orders.

Personnel on flight status reporting to Ft. Rucker must have in their possession all flight clothing and equipment authorized by CTA 50-900. This includes as a minimum:

- **1 SPH-4 Helmet with Bag**
- **3 Flight Uniforms**
- **1 pair of Sunglasses**
- **2 pairs of Gloves, Flyers**

Upon your arrival at Ft. Rucker, we wish you success in your training, and GOOD FLYING.

James L. Brackin
Supply and Services Division
Directorate of Industrial Operations
Fort Rucker, AL

A 5251