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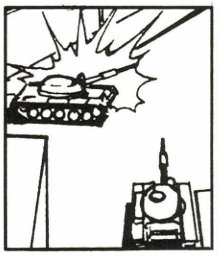
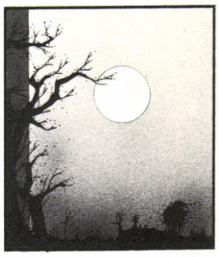
page 4



page 8

2 **SOTAS—The User Has A Say,** LTC Dick Rasmussen
4 **SOTAS, Army Aviation Combined Arms Team,** COL Wayne B. Davis
8 **Helicopters In Urban Combat, An Unanswered Question,** CPT (P) Adolf Carlson
16 **The Black Hawk And The Huey—Partners In Total Support,** MAJ (P) Leon L. Bennett
18 **I Can't Hear You,** SP4 Robin Proctor
19 **Wire Strikes**
22 **Reporting Final**
24 **Antihelicopter Operations,** MAJ Frank E. Babiasz and CPT Carl E. Daschke
28 **The Vital Link, The Aviation Liaison Officer,** 1LT Keith E. Sims
30 **Threat: REC—An Integral Part Of Soviet Doctrine,** MAJ Forrest D. Williams
32 **Aviation Accident Law,** MAJ David E. Prewitt
36 **PEARL's**
39 **OPMS Corner: Where Do You Stand In Army Aviation?** MAJ William B. Leonard III
42 **DES Report To The Field: Analysis Of Army Aviation Accidents FY 79**
45 **Views From Readers**

page 16



page 24

page 36

Inside Back Cover: **ATC Action Line**

Back Cover: **Changes In Aviation Selection And Training Program**

Cover: **In articles beginning on page 1 readers are introduced to SOTAS, the Army's new Standoff Target Acquisition System which is in the engineering development stage. SOTAS is expected to unify the work of the intelligence and target acquisition communities on tomorrow's battlefields, where such unity can mean the difference between victory and defeat**

Richard K. Tierney
Editor

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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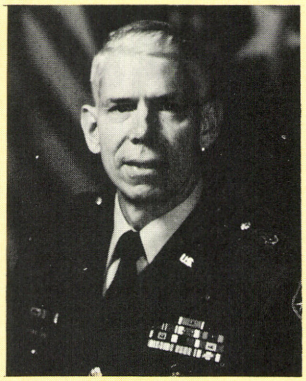
SOTAS



BG Stubblebine

THE MOST IMPORTANT new intelligence, surveillance and target acquisition system the Army has today is the Standoff Target Acquisition System. In my opinion it truly qualifies as a force multiplier and is the most significant new ISTA system that we plan to put on the modern battlefield.

I have, perhaps, a unique perspective of SOTAS. As former commander of the Army Intelligence Center and School, Ft. Huachuca, AZ, and now commander of the Army Electronics Research and Development Command, I have been both user and developer. So it is from that vantage point that I say SOTAS, more than any other system, will bring the intelligence and the target acquisition communities together for the first time. These communities, widely separated heretofore, are coming closer and closer together in modern battlefield architecture. SOTAS is the catalyst in that process.

SOTAS is the first of these tactical ISTA systems where a single collection platform can serve multiple functions. It provides a dynamic "mover" picture to the decisionmakers at brigade and division level while providing the same information simultaneously to our killer systems—artillery, tactical and advanced attack helicopters. This capability is important from an affordability point to view because it capitalizes on a single technology for multiple purposes. It may be the first major effort in creating a single ISTA system. In addition it has the future potential for distributing the information acquired by SOTAS down to battalion and company level as well as up to higher echelons, such as corps.

Some years ago SOTAS was called ALARM. In those days, although we could appreciate its potential power, there were onstation and survivability weaknesses. We were not convinced we could keep it onstation long enough nor were we sure it could survive a mid-intensity war. Survivability is never guaranteed, but today, with the aid of the Black Hawk helicopter, SOTAS can become the predominant keeper of the mover information so vital in gaining and keeping the tactical advantage in battle.

SOTAS proved itself the consummate system recently in European exercises. In fact, it performed so well that our commanders in Europe have opted to retain the experimental models until full up production can be achieved.

In the mover, shooter, emitter ISTA scenario, SOTAS is king.

Brigadier General (P) Albert N. Stubblebine III
Commander, U.S. Army Electronics Research
and Development Command
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See Glossary
Page 4

SOTAS The User Has A Say

Lieutenant Colonel Dick Rasmussen
Acting TRADOC Systems Manager for SOTAS

THE TRADOC SYSTEM Manager for the Standoff Target Acquisition System is charged with conduct of the total system management within TRADOC to ensure that the user total system efforts are developed and fully integrated early and continuously throughout the development cycle. Specifically, the TSM-SOTAS office ensures that plans for training, personnel, logistics, testing and new doctrine/tactics are timely and fully integrated into the materiel development program. These responsibilities are far-reaching; this includes being the primary user representative in all studies, evaluations and other efforts supporting the development of SOTAS.

SOTAS is a new concept and will not replace anything currently in the Army inventory. It is a heliborne moving target indicator system, assigned on the basis of one SOTAS per division. This platoon sized element will be integral to the division combat electronic warfare intelligence battalion. Each platoon will use four EH-60 helicopters from which the MTI sensor data is transmitted to several ground stations via a secure data link. The SOTAS operational and organizational concept calls for the primary ground station to be collocated with the division TOC and passes intelligence information to the All Source Analysis System (ASAS), while targeting information is passed to TACFIRE. There are five secondary ground stations, one located with each maneuver brigade, division artillery and the division's tactical command post. Ground stations are mounted on 5-ton trucks. In addition to target information into TACFIRE, the SGSs also supply intelligence information on moving targets to the brigade TOC.

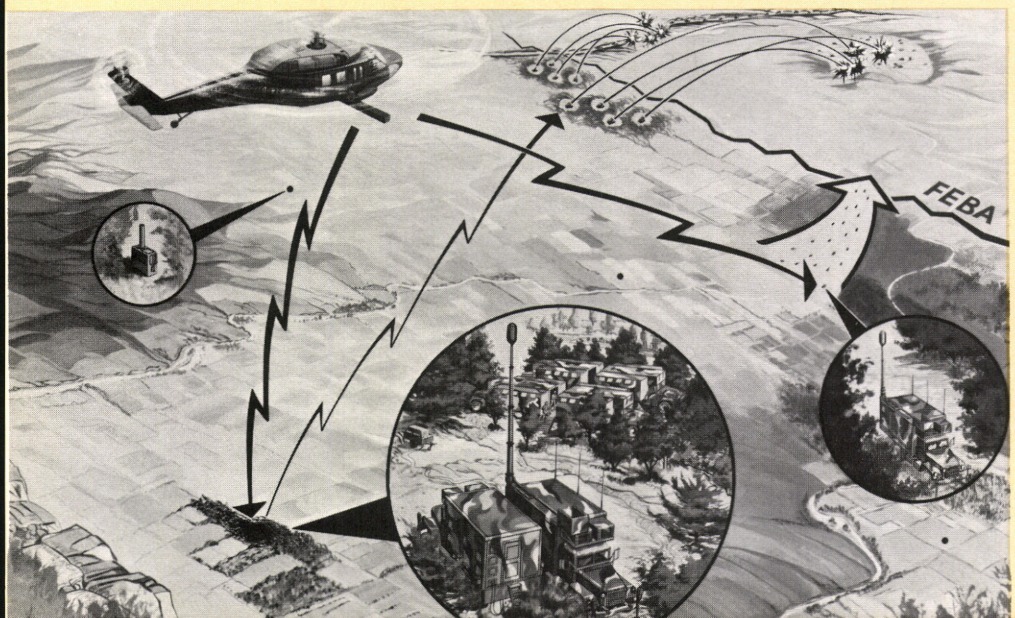
The United States Army Intelligence Center and School has TRADOC proponency for SOTAS. The TSM officially was chartered by the TRADOC Commander, General Donn Starry, in March 1978, and proponency transferred officially to Ft. Huachuca, AZ from the Combined Arms Center at Ft. Leavenworth, KS on 13 October 1978.

In addition to supervising and monitoring the numerous activities of this program it is essential that we meet with the user community as often as possible to ensure we are truly presenting their views. The "users" are located at Forts Sill, OK; Benning, GA; Knox, KY; Gordon, GA; Lee, VA; Leavenworth, KS; Eustis, VA; and Monroe, VA. The 1st Infantry Division, the Reforger division at Ft. Riley, used SOTAS during Reforger 79.

It should be noted here that the SOTAS systems currently stationed in USAREUR are referred to as the Interim-Interim, or I^2 SOTAS, and should not be confused with the ED model. The I^2, using advanced development (AD) hardware, is a temporary measure that is configured much differently than the ED and production versions will be, but provides for today a tomorrow capability. Personnel from the PM and TSM offices participated in Exercise Reforger 77, 78 and 79, maintaining that close user contact requisite to adequate operational development.

Now to briefly discuss the status of the program as it pertains to training, personnel and logistics.

Training. Motorola Government Electronics Division is charged with the responsibility for the development of the technical manuals and the extension training materials.



SOTAS is a heliborne MTI system. Data is transmitted to ground stations mounted on 5-ton trucks

Additionally, they will write the program of instruction for all individual operator skills.

Honeywell Systems Research Center in Minneapolis will use these Motorola created materials to develop the program of instruction and incorporate POIs concerning team member skills. Honeywell will then train the Army instructors.

The Green Suit instructors, using the Honeywell facility, will then train other Soldiers who will particiate in OT II. This concept will be used to train the search track operators and the tracking surveillance supervisor. Motorola will train all ED maintenance personnel other than the aircrews and maintenance personnel for the EH-60B helicopter, who will be trained by Sikorsky. A 10-week course for STOs and TSSs is currently planned. The additional time to train maintenance personnel has not been determined, but should be minimal.

Personnel. Studies have been conducted to determine which MOSs are best suited for SOTAS. In the I^2 system we are using a combination of combat (11, 12 and 13) and intelligence (96B and 96D) MOSs. I^2 operators are E5 to E7 in grade. The ED and production SOTAS platoon being developed will include junior enlisted Soldiers (skill level 2) as well as skill level 3 and 4. The studies also indicate that within the skill level 2 category, the 96D Imagery Interpreter had the best prerequisite for operator skills, thus the ground station operators will be recommended to be from the 96 career management field. The TSS prerequisites are most closely aligned with the Order of Battle Warrant Officer 964A MOS. The primary ground station workload requires three 8-hour shifts of one TSS, two STOs and an RTO each. An evaluation is being conducted to determine the manning requirements for the SGSs, however, the ED production contract requires one STO on an 8-hour shift.

We are getting smarter as we go along, and are currently updating the SGS tasks to determine if there may not be a requirement for two Soldiers per shift. In addition to the aircraft maintenance MOSs, other skills required to maintain the system will include data link repairman, sensor (radar) repairman, computer repairman, and airconditioner repairman. MILPERCEN's initial recruiting and training plan has been published to support the fielding of SOTAS.

Logistics. The area of logistics, and specifically the area of maintenance, is proving to be a challenge, for SOTAS falls under two maintenance systems. The aircraft requires three level aircraft maintenance, whereas the ground stations and components are maintained at the traditional four levels of ground maintenance.

Where the aircraft will be stationed will determine if an AVUM section will be required in the SOTAS platoon. If collocated at the division airfield as Division 86 dictates, support can be provided by the division aviation battalion. It is currently planned that platoon personnel, through the use of built-in test equipment and built-in test software, will be able to perform the organizational maintenance. This area of concern will be monitored carefully once the contractor has completed his front end analysis (FEA) to determine the critical operator tasks. Direct Support maintenance will be provided by the CEWI battalion through the use of contact teams. The total maintenance effort is being closely monitored and coordinated within TRADOC and DARCOM to ensure ease of maintainability.

As noted, SOTAS is in the ED phase of development, and all of us are working toward a successful OT II. An interim SOTAS system, using prototype hardware being built under the ED contract, will consist of two YEH-60B helicopters, one PGS and one SGS, which is different than the production platoon described earlier in the article. It is planned that the interim detachments will replace the I^2 systems in Germany, providing each U.S. division commander in Germany with an earlier full-up capability. To accomplish this feat, plans are being made to form a SOTAS unit.

The SOTAS unit will support OT II testing and will be reconfigured into four SOTAS detachments that will deploy to USAREUR upon completion of OT II. The initial group of Soldiers to arrive in the unit will go TDY to Honeywell and be trained as the players for OT II. One more class will be conducted to train the remaining personnel who will return to the OT II site, receive and assemble their equipment and deploy to USAREUR. The I^2 detachment's equipment will be returned to CONUS. This in itself is an ambitious plan, requiring continual coordination with many commands and agencies.

There are other activities that keep the TSM office hopping. We are supervising the revision to the SOTAS O&O concept to incorporate all SOTAS capabilities, and recently hosted an ROC review and update panel. Coming up in the near future is an update to the Cost and Operational Effectiveness Analysis and the Cost and Training Effectiveness Analysis. Both will be conducted at TRANSANA.

The role of the TSM in new systems development is to act as the TRADOC representative to assist the PM in development and orderly fielding of the system. The TSM monitors, supervises, energizes and acts as the coordinating office for all activities in the user community. The SOTAS program has provided this office with a number of challenges and experiences found in few Army careers. It is a rewarding assignment in that each member of the office has an opportunity to help develop and field a portion of the U.S. arsenal that will satisfy a need and be compatible with other systems in the hands of our combat Soldiers. This office stands ready to assist in any way that we may be able to help.

See Glossary
Page 4

SOTAS
Army Aviation Combined Arms Team

Colonel Wayne B. Davis
Project Manager
Standoff Target Acquisition System

IMAGINE THE advantage any commander would have if he could look into a crystal ball, located in the command post, and see how the enemy is deploying forces well beyond the FEBA. The Standoff Target Acquisition System, or SOTAS, is such a "crystal ball" for our brigade, divarty and division commanders. For the first time ever, they can observe on a screen exactly what they are up against. Enemy tanks, trucks and helicopters are displayed moving across an electronic map. The display provides their number, speed and direction of movement, along with other information.

During combat our commanders could determine from the display if the enemy is trying a frontal assault, a flanking movement or whatever. And when the enemy's main thrust becomes apparent, our commanders could employ the Multiple Launch Rocket System, the Remotely Piloted Vehicle working with laser-guided artillery projectiles, our AAHs and our other killer systems—all of which can be employed optimally at their maximum effective ranges to cause the earliest possible attrition of enemy forces. While this is occurring commanders could be moving ground maneuver forces by our UH-60 Black Hawk units and ground tactical vehicles into the most favorable position to repel and wipe out what remained of the enemy attack. And when we engage in offensive operations, the value of SOTAS becomes even more obvious.

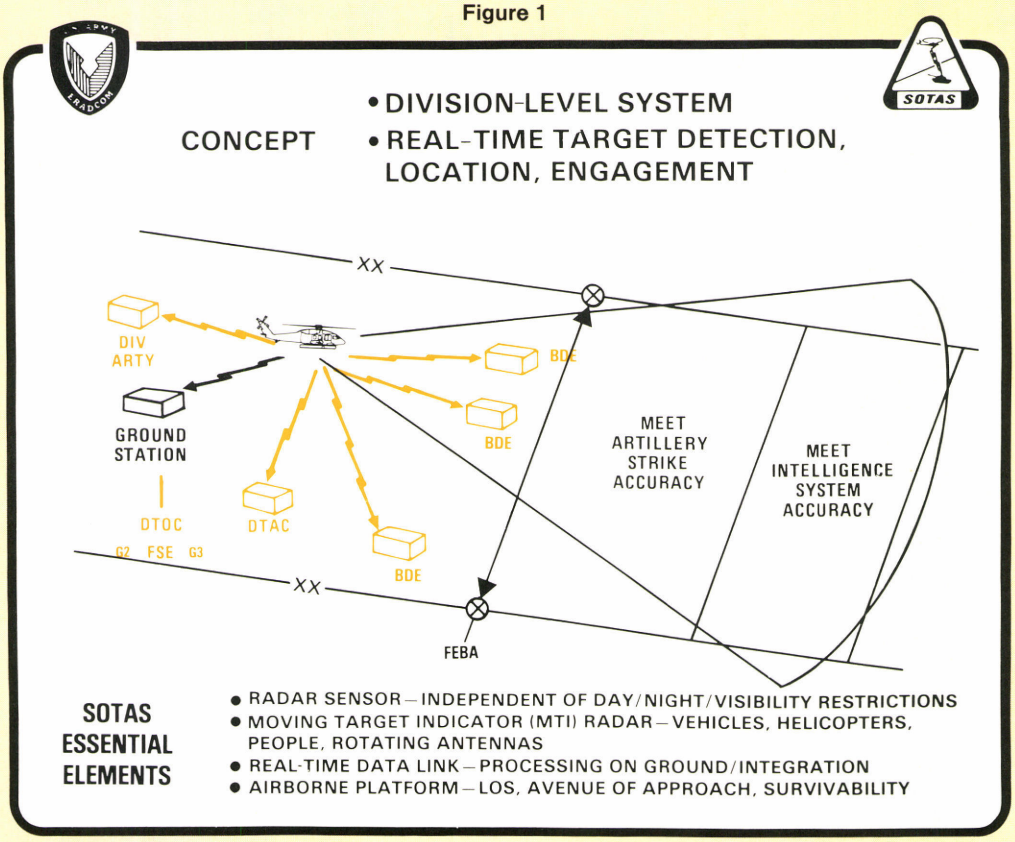
By now you have probably hit on the heart of SOTAS. All the firepower in the world will do the Army little good if it can't locate targets to use it on. You can call SOTAS a target acquisition system, an intelligence system, or whatever you choose; but, in the final analysis, it allows our combined arms team to do a much better job of putting iron on the target using our killer systems of the 1980s and beyond—during good or adverse weather, day or night, and with an asset owned by the division commander.

The Concept. The SOTAS concept is depicted by figure 1: a scanning, moving target indicator

Glossary

AAH	advanced attack helicopter
ALARM	Advanced Long-Range Airborne Moving Target Indicator
AVUM	aviation unit maintenance
CEWI	combat electronic warfare intelligence
CONUS	continental United States
DARCOM	Army Materiel Development and Readiness Command
divarty	division artillery
DMZ	demilitarized zone
ED	engineering development
FEBA	forward edge of the battle area
ISTA	intelligence, surveillance and target acquisition
MILPERCEN	Military Personnel Center
MOS	military occupational specialty
MTI	moving target indicator
NATO	North Atlantic Treaty Organization
O&O	operational and organizational
OT	operational test
PGS	primary ground station
PM	program manager
POI	program of instruction
Reforger	Return of Forces to Germany
ROC	required operational capability
RPV	remotely piloted vehicle
RTO	radio teletypewriter operator
SGS	secondary ground station
SOTAS	Standoff Target Acquisition System
STO	search track operators
TACFIRE	tactical fire direction system
TDY	temporary duty
TOC	tactical operations center
TRADOC	U.S. Army Training and Doctrine Command
TRASANA	TRADOC Systems Analysis Agency
TSM	TRADOC System Manager
TSS	tracking surveillance supervisor
USAREUR	United States Army, Europe

Figure 1

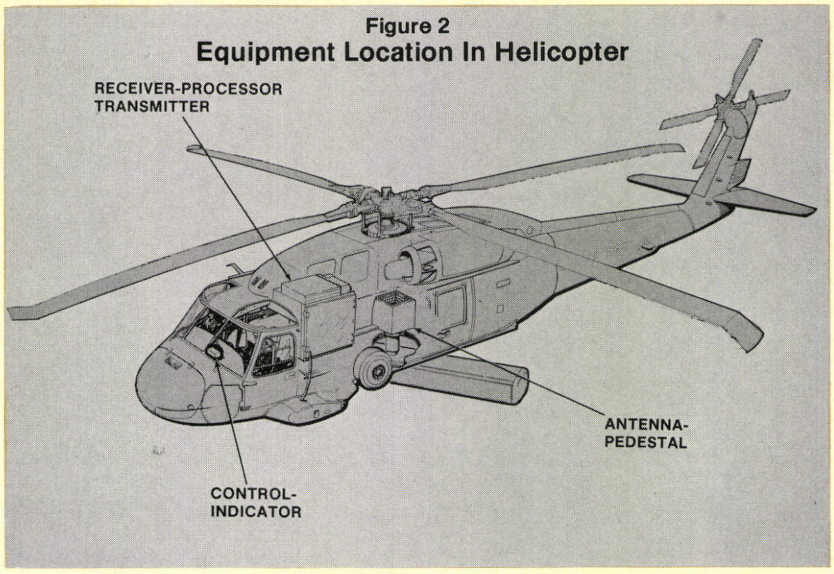


radar on an airborne platform which senses moving targets deep into enemy territory; processes that information by computer; "pipes" that information down an antijam data link to ground stations where it undergoes further computer processing. The data is presented, real time, on an electronic map display. Fundamental to the operational concept is survivability; the SOTAS helicopter flies far behind friendly lines and is, therefore, relatively safe from enemy air defenses.

Where We Are Today. SOTAS is a major weapons system undergoing full-scale engineering development, the last phase of development before moving into production. The SOTAS ED program has been accelerated so that the full-up SOTAS capability can be provided to our active duty divisions in the shortest possible time. Even before our first production systems reach the field, Interim SOTAS systems, using ED prototypes now being built, will be sent to our European divisions to provide a "full-up" system capability, but in fewer numbers.

Why the accelerated development effort? That can be answered best by citing a remark made by General Bernard W. Rogers, NATO commander and former Army Chief of Staff. Responding to a question asked by the House Armed Services Committee on the most important equipment needs for NATO, General Rogers said: "We need new air defense weapons and SOTAS. Tar-

Figure 2
Equipment Location In Helicopter



See Glossary Page 4

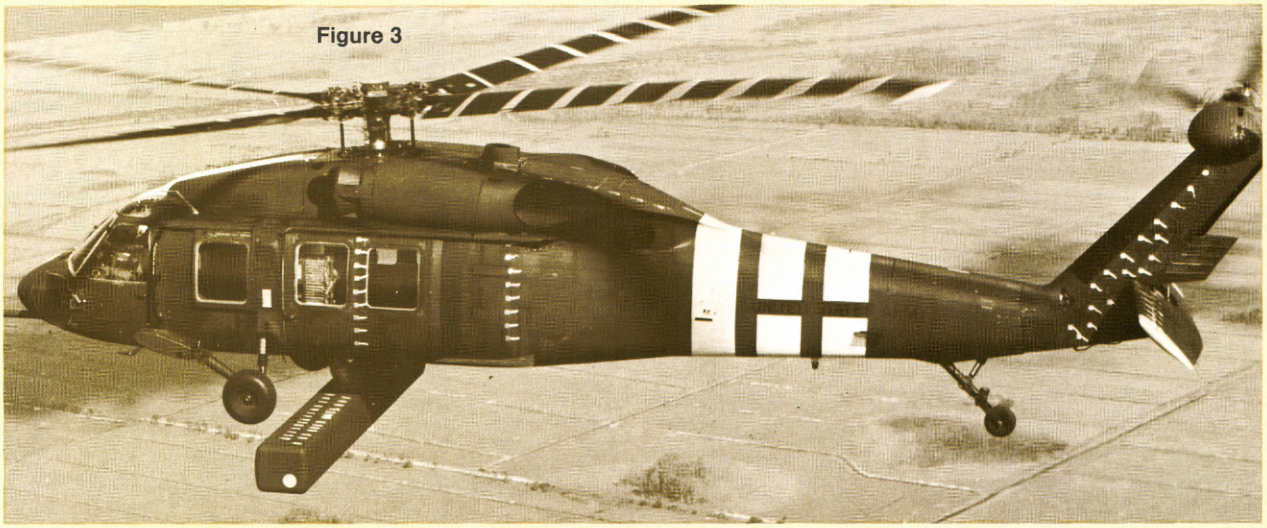


Figure 3

get acquisition is one of NATO's greatest weaknesses."

I want to briefly describe the equipment being developed to fill the target acquisition void to which General Rogers referred:

The Airborne Radar. The SOTAS radar will be the most advanced airborne radar capable of sensing ground moving targets. It is designed specifically to operate in the electronic countermeasures environment we anticipate the Soviets could be capable of throwing against us in the mid-1980s and beyond.

The Data Link. SOTAS will use an antijam data link that is being designed for use on the Army's RPV as well. It communicates the encrypted radar data from the helicopter to the ground station.

The Aircraft. The SOTAS aircraft is a modification of the Army's Black Hawk. We will build eight prototypes in the engineering development program. Designated the YEH-60B, the SOTAS prototypes will be used for flight qualification and integration and testing of all the airborne subsystems. The production model of the SOTAS helicopter will be designated the EH-60C.

The features that distinguish the two SOTAS aircraft from a basic Black Hawk are those modifications required for the radar antenna to rotate under the airframe and to operate in a slower airspeed range. They are shown, in part, in figure 2:

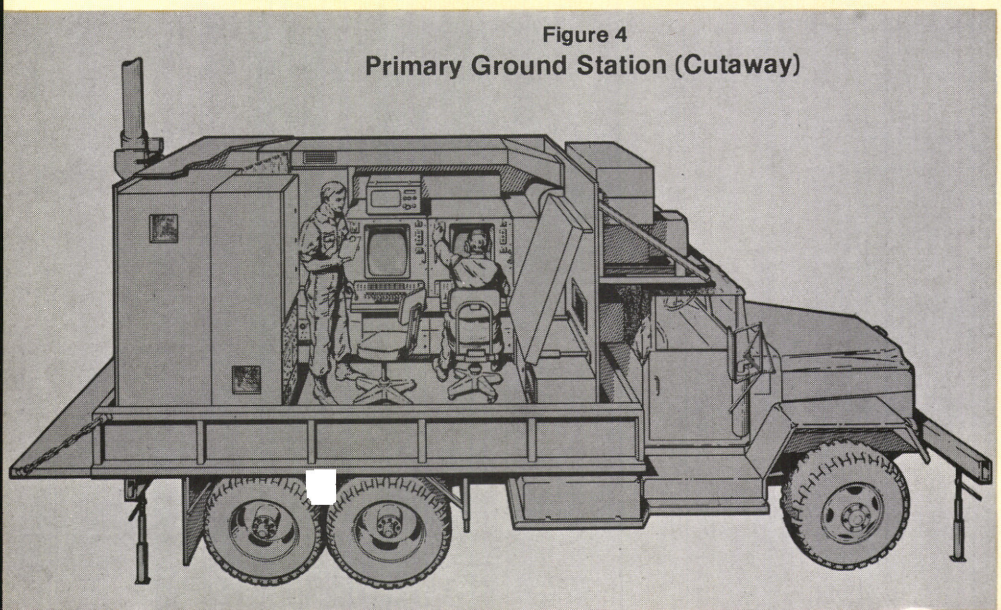
- Retractable landing gear.
- Relocation of avionics antennas.
- Automatic flight control system optimized for the SOTAS mission airspeed range of 50 to 80 knots.
- Installation provisions for a radar electronics rack in the cargo compartment.

Wind tunnel antenna jettison tests and preliminary experimental flight testing have been completed. Figure 3 is a photograph of the YEH-60B during one of the contractor's test flights. Results from these tests were used to refine the engineering design and to minimize technical risks. The SOTAS helicopter development effort is in a definite GO status, and we anticipate a "full-up" system first flight early next year.

The Ground Stations. The ground station (figure 4) is a very important element of the SOTAS system; it is where the radar information is processed for use by our commanders. It is presented in a tactically relevant form and is correlated easily with standard tactical maps. The SOTAS ground station is interoperable with TACFIRE and other information systems such as the future All Sources Analysis System. Further, the Army is working closely with the Air Force to ensure that our sister service can take advantage of the unique capabilities provided by SOTAS. The SOTAS ground station is the linking element in effecting enhanced Army and Air Force weapons systems' interfaces in the division commander's area of interest.

How Did We Get Where We Are

Figure 4
Primary Ground Station (Cutaway)



Today? The SOTAS program is in accelerated engineering development today because of successful early development and operational feasibility testing in the field with tactical units. Using existing military and commercial equipment, an advanced development SOTAS was built and field testing began in 1975. Using a modified UH-1H helicopter and elements of a vintage 1960 APS-94D radar (figure 5), and commercial computers and displays (figure 6), the system demonstrated its op-operational potential and generated wide acceptance and enthusiasm. Called the Interim-Interim, or I^2 SOTAS, this limited capability system was tested on the DMZ in Korea, participated in all Reforger Exercises since 1976, and recently completed participation in a NATO deployment and maneuver exercise in Norway, north of the Arctic Circle. Deployed from Germany by Air Force C-5s, the 3rd Armored Division's SOTAS Detachment worked as a part of NATO's Allied Command Europe Mobile Force, demonstrating its ability for rapid deployment and operational capability in cold weather.

Figure 5

The Army is fortunate in having I^2 to "go to school on." The lessons learned from I^2 SOTAS field testing have been invaluable, and have been incorporated into the design for the "full-up" SOTAS now being developed. Because of our experience with I^2, we will do a much better job of delivering the required SOTAS mission capability tailored for the American Soldier in the field.

The SOTAS picture has been painted: SOTAS is a catalyst in the optimum employment of the combined arms team, and Army Aviation is a valuable member of the team. A force multiplier—you bet!

The SOTAS perspective is summarized by LTG Donald R. Keith, Deputy Chief of Staff for Research, Development and Acquisition, responding during an interview (with ***Army RD&A*** magazine) to the following question:

Q: What broad technology areas do you see at this time as offering the greatest future military potentials? Do you see a number of smaller advances, in such areas say as sensor technology, improved communications, better armor, terminal homing weapons for the individual Soldier, etc.? Or do you see major breakthroughs looming in the future—exotic laser weapons?

A: . . . there are a lot of exciting things going on today that are difficult to prioritize, but I guess our ability to acquire and attack targets in depth is the generic area that I believe will have the greatest impact on warfare. We are now able to look well beyond the FEBA and in real time get that target intelligence processed in order to deliver accurate terminally guided munitions to the target. We've been dreaming of such a capability for many years; it is now becoming a reality. As we field this capability, and as we learn to use it, there is bound to be a change in the way we fight our own force. And it will also change the way the enemy fights us. I think it will cause one of the greatest revolutions in warfare that we have seen in many decades.

Figure 6

MONTHLY WRITING AWARD

ARMY AVIATIO
HELICOPTERS IN URBAN COMBA

I am not an aviator but an infantryman who has followed aviation developments since a tour with the First Air Cavalry Division in Vietnam. For the past few years I have been involved in various studies dealing with urban combat. This article is based on insights derived from those studies. It is by no means intended to be the last word on the subject; rather, I hope that it sparks some interest in urban combat among the community of aviators.

Captain (P) Adolf Carlson
Directorate of Doctrine and Literature
U.S. Army Infantry School
Fort Benning, GA

IN THE DECEMBER 1976 issue of this magazine, a friend of mine, Major Alexander Woods, published an article in which he asked, "Does the helicopter have a role in combat-in-cities?" (Also see, "MOBA," February 1976 *Aviation Digest*.) To date, there has been no satisfactory answer to that question. Some observers are decidedly skeptical. In his 1973 *Notes on Urban Warfare,* S.L.A. Marshall writes, "There is no reason to believe other than that the helicopter has a major role in built-up area warfare as the main transporter of men and supplies *up to* (emphasis added) the battle zone," but goes on to say that, "the helicopter will be little used for target spotting and marking, for command sensing and directing of the battle from overhead, (or) for turning enemy positions by landing troops in his rear," and, further, that, "the gunship and its kind look to be pretty much sideliners during the battle."

FM 90-10, "Military Operations on Urbanized Terrain," is less pessimistic but more superficial. The section on Army Aviation lists a number of aviation missions but says nothing about how to accomplish them, and only hints at the hazards of the built-up environment. Aviation-oriented field manuals say virtually nothing about urban operations.

The historical record, which I will review again later, is also little help. Hue in 1968, for example, was the most intensely disputed urban battlefield of the Vietnam War, including 3 weeks of block-by-block fighting. At one point, the NVA defense was so strong that two Marine battalions fought for 13 days to clear a seven-block area. But little use was made of helicopters because of both adverse weather and a dense array of enemy machine-guns.

Though these views are inconclusive, they certainly do not support the contention that the helicopter has a role in urban combat. It may be that a different approach, starting with a study of the nature of the environment, will yield a better appreciation for the helicopter's urban capabilities and limitations.

The Urban Environment As The Combat Aviator Sees It. Although there are exceptions, most of the world's cities conform to an urban model developed by Dr. Richard Ellefsen, San Jose State University. Dr. Ellefsen divides the city into a number of regions: the core, the core peri-

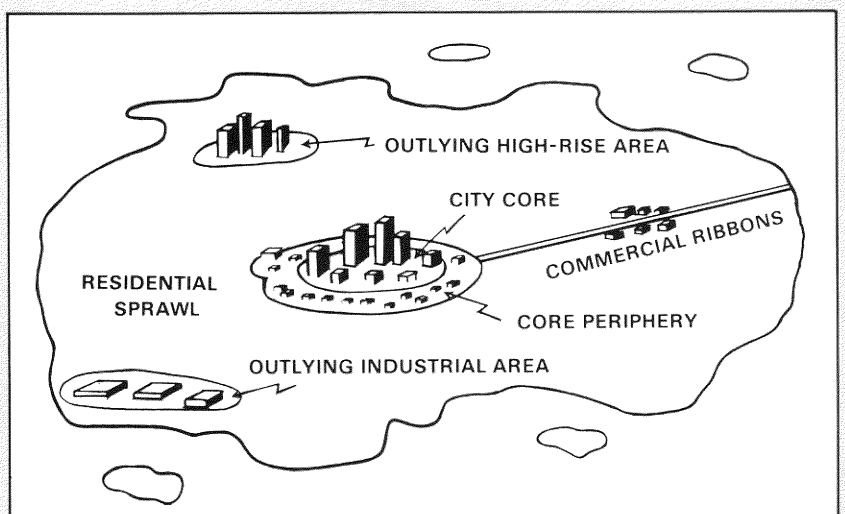


Figure 1: This model portrays the nature of urban terrain

phery, the residential sprawl, commercial ribbons, outlying high rise and outlying industrial areas (figure 1).

This portrayal is, of course, generalized. Variations exist owing to location, size and history. Small towns, for example, have lower buildings than large towns and may not have developed any outlying areas. Such variations are differences in degree, not in kind. In general, an observer flying over any city or town will notice a remarkable correlation with this urban model, especially if the area has undergone redevelopment in the last 30 years.

Figure 2: To the aviator, the core periphery raises the level of the ground

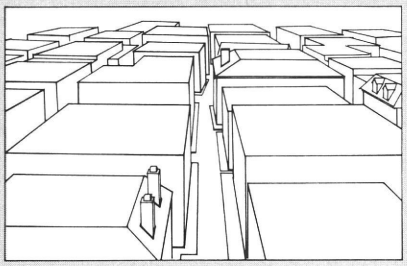


Figure 3: High-rise areas provide a great deal of cover for helicopters

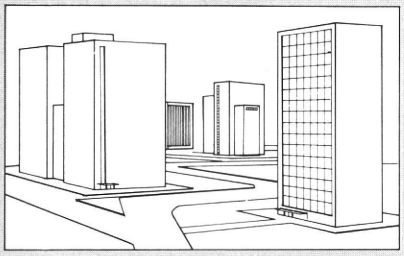
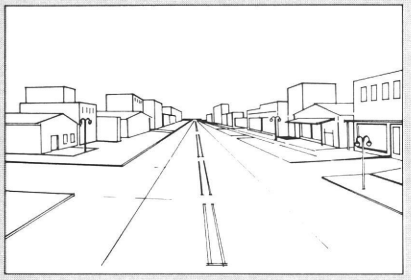


Figure 4: Commercial ribbons may provide helicopter corridors



Each of the model's regions has distinctive construction characteristics. Outlying industrial areas and residential sprawl, for example, consist of low buildings, one to three stories tall. The size, construction and spacing of buildings are usually such that these regions have the least effect on aerial operations (although they occasionally influence ground maneuver significantly).

The core periphery consists of narrow streets (12 to 20 meters) with continuous fronts of brick and heavy walled concrete buildings. The height is generally uniform—2 or 3 stories in small towns, 5 to 10 stories in larger cities.

The city core and outlying high-rise areas are the regions most commonly altered by modern construction. In most cities the core has undergone more recent development than the core periphery. As a result, the two regions are often quite different. Typical city cores of today are made up of high-rise buildings which vary greatly in height. Furthermore, modern urban planning allows much more open space between buildings than was the case in the past and is still the case in core peripheries. Outlying high-rise areas are dominated by this construction style to an even greater degree than city cores.

Commercial ribbons are rows of stores, businesses, etc., built along either side of major avenues (generally 25 meters or wider) through the built-up area. These buildings are uniformly 2 to 3 stories tall, about a story taller than the dwellings usually found behind them.

The military significance of this urban model derives from the fact that each of the urban regions has its own maneuverability, observation and protection characteristics. These properties affect aerial systems and ground systems differently.

Because the core periphery, for example, contains buildings of uniform height densely situated along narrow streets, this area severely limits the maneuver of ground systems but provides them a great deal of cover. To the aerial system, the effect is essentially to raise the level of the ground by a number of stories, with the result that aerial maneuver is not so canalized as ground maneuver. By the same token, however, since aerial systems cannot fly in the narrow spaces between buildings, they cannot seek cover among the buildings as can the ground systems (figure 2).

In the modern city core and outlying high-rise regions the situation is quite different, since buildings are more widely spaced and vary greatly in height. In a study conducted for the Marine Corps by Mr. Orvin Larson of

N & INFANTRY

AN UNANSWERED QUESTION

Figure 5: British Army helicopters at Bessbrook, Northern Ireland. Operations against the IRA make this Europe's busiest heliport

Figure 6: South Vietnamese soldiers with LAWs at An Loc. Together with U.S. helicopters, these troops defeated North Vietnamese tank forces

Figure 7: This North Vietnamese antiaircraft weapon, captured during the 1972 offensive, was typical of the air defense threat at An Loc

the Naval Personnel Research and Development Center, it was found that fixed wing aircraft cannot operate among high-rise buildings. Helicopters, however, may be ideal for such regions. They can maneuver between buildings, albeit at reduced speeds, and can therefore exploit urban cover. This contrasts with ground systems, which normally find maneuverability increased and protection reduced when they move from a core periphery to a high-rise region (figure 3).

Commercial ribbons present another possibility. Because they usually are built on major avenues, these regions are wide enough to permit helicopters to fly nap-of-the-earth covered and concealed on either side by buildings. Although there are often street lights and trees, these could be knocked down to form helicopter corridors (figure 4).

In addition to the buildings, another element of the urban combat arena which is important to the aviator is the antiair threat. Here the environment also has an impact. Because buildings tend to reduce the effective range of radars, low flying helicopters can use urban masking to protect themselves from those air defense systems which rely on radar for target acquisition or tracking. For that reason the greater part of the urban air defense threat is comprised of short-range systems which require targets visually, such as SA-7s, automatic weapons and small arms. Cities provide many places for these systems to hide from both visual and infrared detection, and make target acquisition easier because low flying aircraft must slow down to avoid obstacles.

The level of hazard in the urban environment is a function of the type and number of air defense systems present. It is not surprising, then, that the urban con-

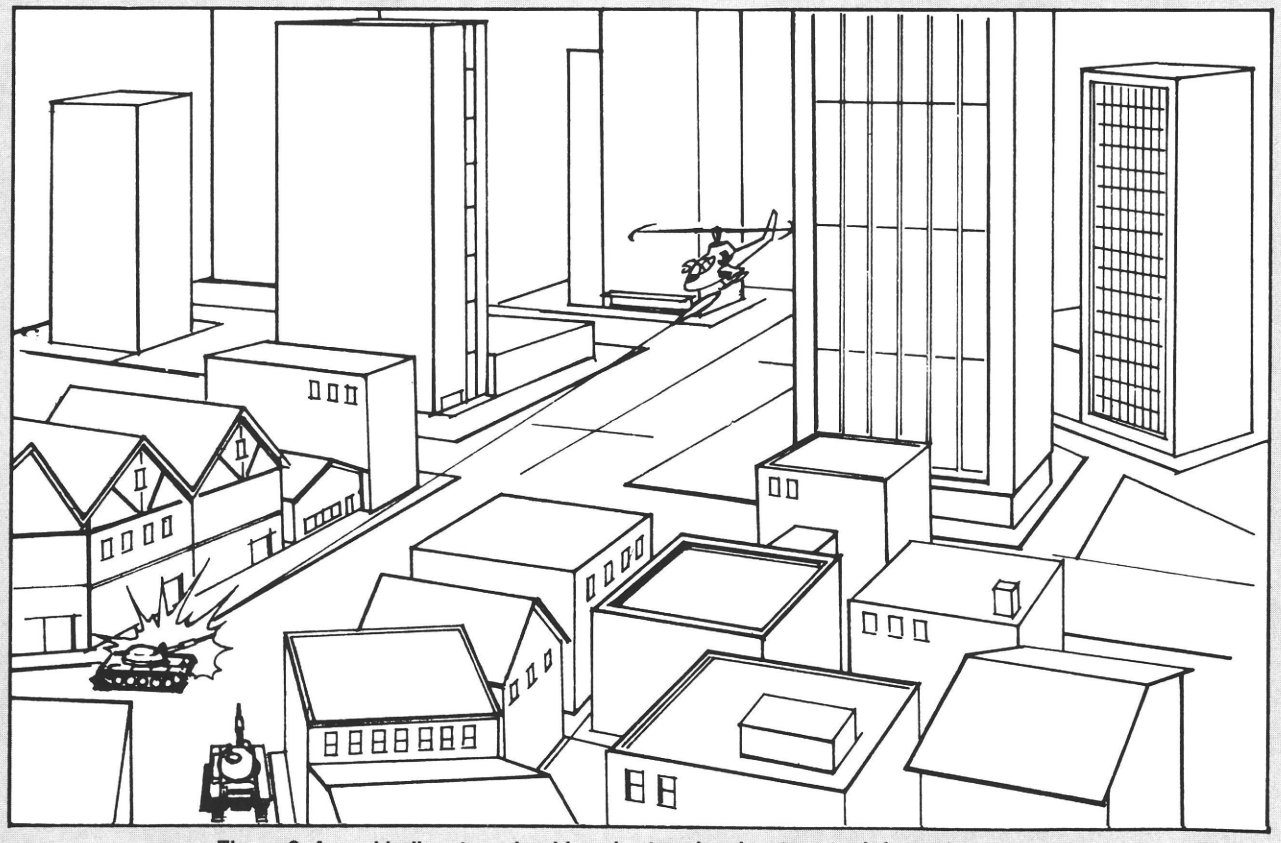


Figure 8: Armed helicopters should seek a terrain advantage to defeat urban targets

flicts in which helicopters have been used most successfully have been characterized by permissive air environments.

British forces in Ulster, for example, have found that the helicopter is the safest means to insert patrols because the roads from Army bases are often mined or ambushed. Helicopters are used extensively for troop movement, evacuation, and command and control. One technique developed in Northern Ireland is the use of heliborne searchlights to illuminate rooftops in support of antisniper operations. Searchlights also are used extensively at night in other urban and rural security situations. So are aircrew night vision goggles which have added a whole new dimension to both overt and covert night operations. There is little need to use terrain flight techniques since the air defense threat consists of sporadic rifle shots (although terrain flight is used on occasion to gain surprise). These tactics may require significant alteration when and if the first SA-7s fall into the hands of the Irish Republican Army (figure 5).

U.S. Forces in Santo Domingo in 1965 and 1966 operated in a similar environment. In order to bypass rebel snipers on the surface routes, the helicopter was for a time the primary means of movement for both Marines and paratroopers. In one account, a UH-1B Huey was used to lift a 106 mm recoilless rifle (the preferred antisniper weapon) to the roof of an 8-story flour mill. From this vantage point, fire could be directed at most rebel-held areas in the city.

These operations are interesting in that they demonstrate the flexibility of the helicopter in two urban conflicts, and it is certainly not beyond the realm of possibility that U.S. forces may someday become involved in similar actions. They offer little guidance for helicopter operations in mid-intensity urban combat. There is, however, one combat example which is worth looking at.

The Battle For An Loc—Cobras In Mid-Intensity Combat. The city of An Loc stands astride the northern route into Saigon. For that reason it was a priority objective of the North Vietnamese 1972 offensive. In April of that year North Vietnamese forces pounded the city with intense artillery, mortar and rocket fire. By 12 April all Army Republic of Vietnam (ARVN) artillery batteries had been silenced. All indications were that the city's defense was crumbling. North Vietnamese Army (NVA) com-

Figure 9: Rooftop insertions, such as the one practiced here by Soldiers of the Berlin Brigade, will not be common

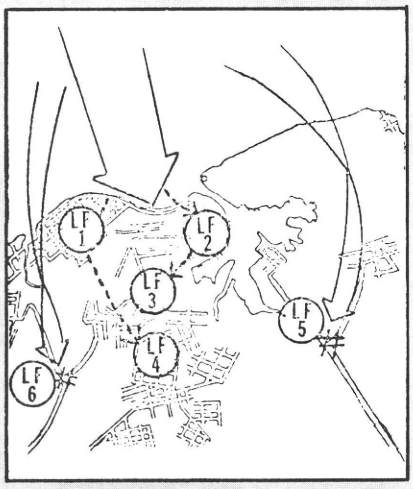


Figure 10: This drawing illustrates a Marine Corps concept of urban air assault

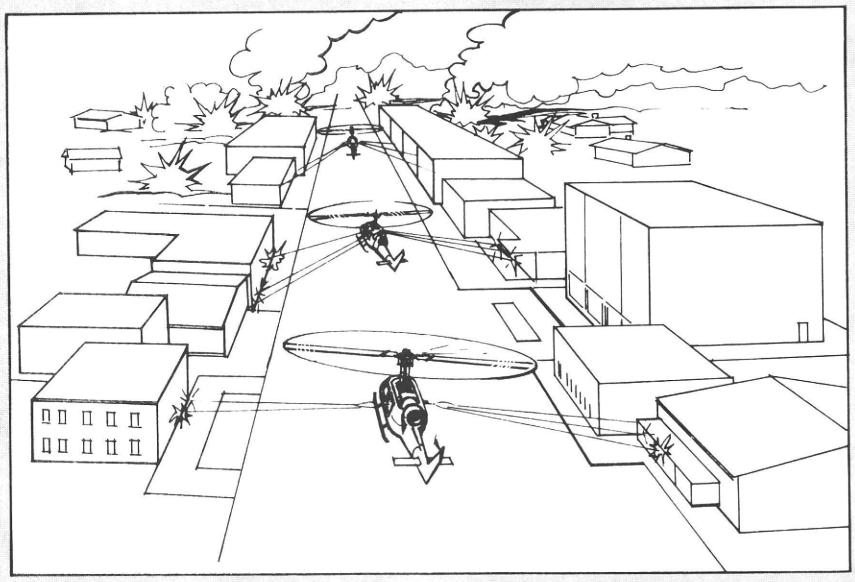


Figure 11: Surprise and suppression are requirements for urban air assault

manders estimated that a hasty attack, right into the heart of the city, would end the battle for An Loc and open the road to Saigon.

The communist spearhead was composed primarily of armor: PT-76s and T-54s. These forces had discovered the tanker's advantage of shock action, for wherever they had appeared, ARVN troops broke and ran—almost to a man. The NVA felt that they would be able to drive into the center of town without meeting any effective resistance. They were so confident that they had given the lead tank platoon leader a Viet Cong flag to raise at the city's headquarters. They were in for a nasty surprise.

When communist forces entered the city, U.S. AH-1 Cobras took them under fire, destroying the lead tanks with 2.75-inch rockets. The tankers reacted by driving into side streets where they hoped the buildings would cover them. But these proved to be no haven. ARVN troops in An Loc regained some of their confidence when they saw the first NVA tanks destroyed. They waited in side streets and alleys, armed with M-72 light antitank weapons (LAWs) (figure 6). As the North Vietnamese tanks tried to evade the helicopters, they drove into these LAW ambushes. After a severe drubbing, communist forces withdrew from the city and undertook a siege.

The North Vietnamese attacking An Loc were supported by one of the most powerful air defense arrays ever seen in South Vietnam, including 12.7 millimeter (mm) and 37 mm antiaircraft guns (figure 7), and SA-2 and SA-7 missiles. By using proper flight techniques U.S. Cobras were able to operate in the face of this threat until the air defense ring became so dense that it was impenetrable for helicopters. Fixed wing close air support and parachute resupply operations were able to continue.

Allied forces in An Loc held out until mid-June, when the siege was lifted and relief forces entered the town. Aerial operations were the major reason for the NVA defeat.

This example suggests that armed helicopters have significant potential in urban combat. Tanks seem to be most vulnerable where their maneuverability is most restricted. From what we now know about urban terrain, helicopters could exploit this vulnerability. A helicopter in a high-rise area engaging a tank along a street in a core periphery, for example, would have the advantage because it could mask itself before the target could, especially if side streets were mined or ambushed. Furthermore, if the buildings around the helicopter were secured by friendly infantry, the air defense threat would be reduced to practically nothing. Finally, if the

targets already had been located by ground forces, the helicopter's required time on station would be minimized, further increasing th odds for survival (figure 8).

Another potential use of armed helicopters is the engagement of targets located in buildings. This mission is normally carried out by systems such as tanks or tactical air (TACAIR), but it is conceivable that roads leading to urban targets will be blocked, and that tall buildings or the proximity of civilians will rule out the use of TACAIR. Cobras could be effective in this rule because of their ability to neutralize targets with pinpoint accuracy. Here, again, the use of infantry to secure the buildings around the helicopter would greatly increase survivability.

Urban Air Assault—A Reassessment. Of all the concepts of helicopter operations in urban combat, the one with the least historical basis is the assault onto rooftops. There are a number of reasons. Roofs are not normally strong enough for helicopter landings unless they were specifically designed for them or to support other heavy loads (such as is the case with a parking garage). Furthermore, many roofs are cluttered with obstacles, which would prevent even a hover-down. Finally, rooftops are dangerous because they are easy to reach with pinpoint fire. At one point in the fighting in Santo Domingo, a low intensity conflict, the majority of the 82d Airborne Division's casualties were incurred on rooftops (figure 9).

There may be occasions, of course, when it is necessary to assault onto the roof of a key building. Such was the case during the 1968 Battle for Saigon, when two platoons from the 101st Airborne Division assaulted onto the roof of the U.S. Embassy, which had been seized by Communist sappers. Success in this kind of an operation depends on minimum exposure and suppression of all enemy positions that could fire on the helicopter.

Federal Bureau of Investigation (FBI) Special Agent Roland Swanson has done an extensive analysis of heliborne insertion onto rooftops for counter-terrorist/sniper tactics. In his instruction at the FBI Academy in Quantico, VA, Agent Swanson teaches the helicopter rappel as the preferred technique. The rappel is more reliable than a landing and is safer for the troops than a jump from a low hover, especially at night. With practice (and the FBI recommends frequent periods of refresher training), insertion can be accomplished with only a few seconds of helicopter exposure.

For larger scale air assaults, however, rooftop landing zones are not practical; an open space within the urban area must be used. Perhaps history's largest urban air assault was the insertion in 1965 of the 6th Marine Expeditionary Unit into Santo Domingo. The initial assault echelon consisted of 526 heliborne Marines from the *USS Boxer.* Follow-up operations continued for 6 days, including 1,605 sorties which lifted 386 tons of supplies and 4,070 Marines ashore. The landing zone used in this operation was the polo field at the Hotel Embajador, on the western side of Santo Domingo.

Similar open spaces are common urban features. The number and size of open areas were among the subjects covered in Dr. Ellefsen's studies, mentioned earlier. Every city that Dr. Ellefsen analyzed contained a space large enough for heliborne operations within 2 kilometers of the city's center.

In a mid-intensity urban battle heliborne troop movement may become a significant requirement. Units engaged in house-to-house fighting suffer a more rapid rate of attrition than units fighting in open terrain, and must be replaced quickly with fresh troops. At the same time, roads are likely to be crowded with resupply and evacuation vehicles, and also may be blocked with craters or rubble. Helicopters could provide a responsive means to move troops by flying the nap down selected commercial ribbons already secured and cleared of obstacles. The aircraft could deliver the troops at the last covered position short of the fighting and then return without exposure to enemy fire. Aerial resupply and evacuation would involve similar flight techniques.

Air assaults into enemy-held territory present a more difficult predicament. In the USMC study entitled "Concepts of Operations for Landing Forces in Urban Environments" the Marines consider such operations, citing surprise and fire support as requirements for success (figure 10).

A viable technique might be to fly low, down a commercial ribbon, with gunships and door gunners suppressing buildings on either side supported by artillery fires scheduled to impact just prior to the helicopters' fly-by. Feints and demonstrations would help surprise (figure 11).

Unresolved Issues, Future Developments. In all of the combat examples mentioned in this article, helicopter forces operated with air supremacy. The degree to which the concepts proposed here would be degraded by enemy air is a matter for further analysis.

The field artillery hazard to helicopters also may be significant in cities. Most aviators do not consider field artillery to be very hazardous. To an aviator speeding a few feet above a narrow street, however, the sky may not look so big, nor the bullet so small.

Another hazard which requires

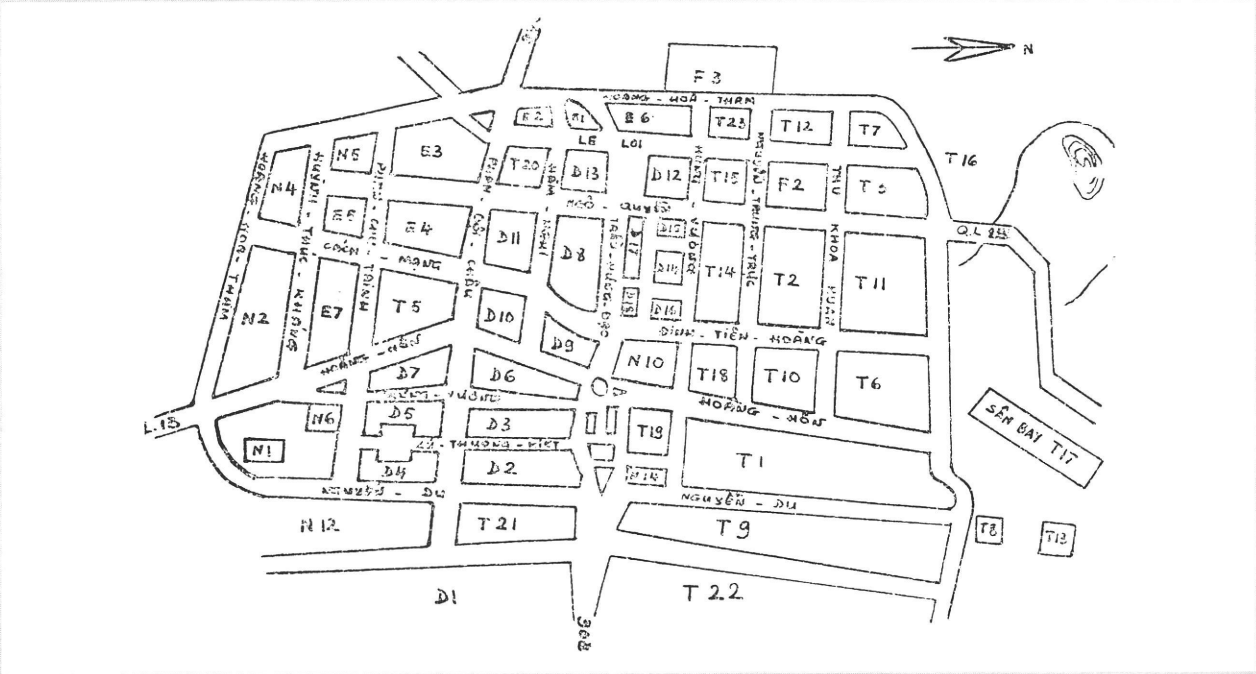
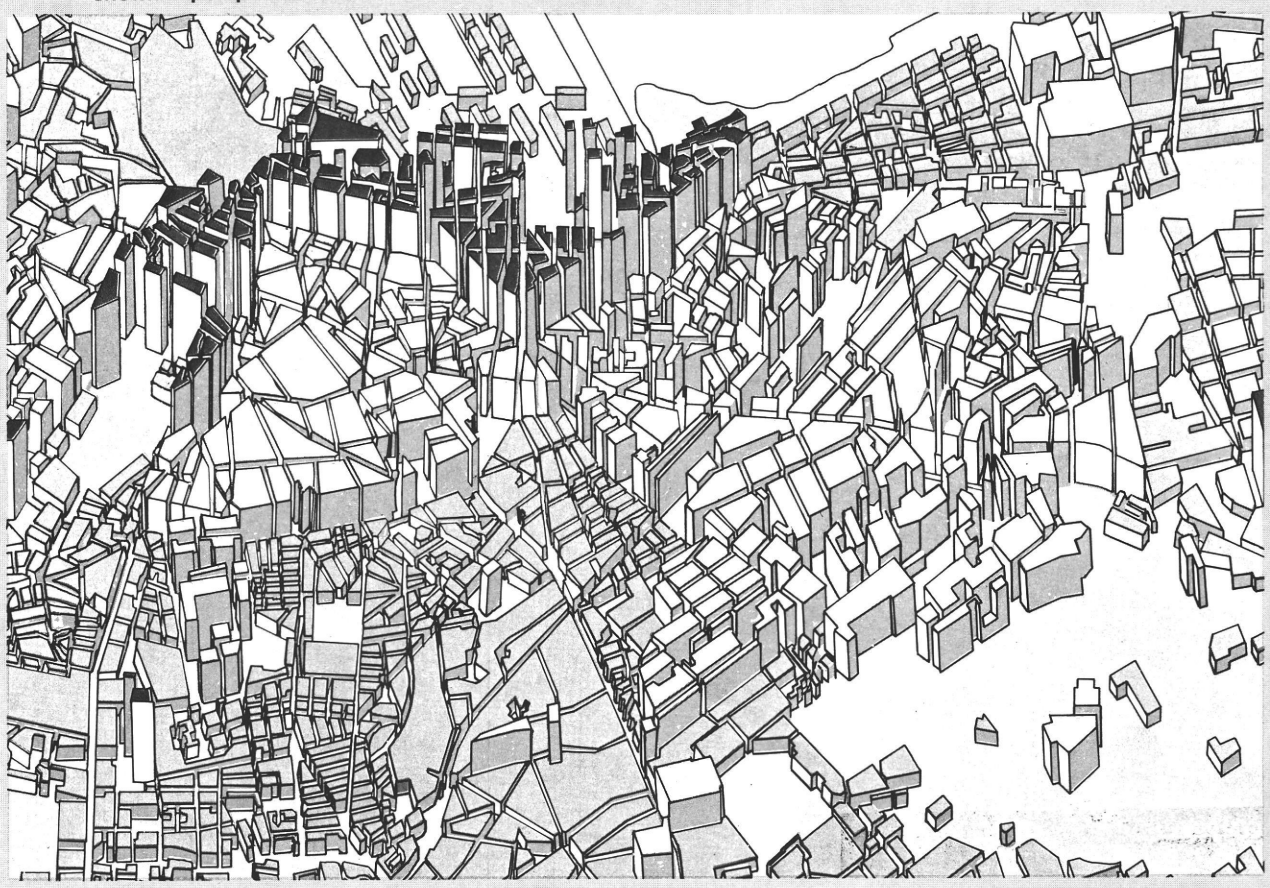


Figure 12: This sketch was used to coordinate air and ground operations at An Loc

Figure 13: This experimental map may help aviators planning urban operations. Note the building heights, shown in perspective



study is wind effect. A helicopter flying low along a 25-meter wide street does not have much clearance on either side of the rotor. Crosswinds along narrow side streets may create a venturi which might blow the aircraft into buildings. Also, helicopters flying among tall buildings might encounter dangerously irregular wind patterns. These effects require study to determine the operational limits of urban weather.

One way to reduce vulnerability to urban ground fire is to fly at night. The development of improved night vision equipment would certainly enhance the helicopter's capabilities in built-up areas. A related development would be improved surveillance means to detect gaps in enemy air defense. Visual, radar and infrared detection are severely limited in towns and cities, but a method of seeding city blocks with unattended ground sensors may provide the surveillance data that heliborne forces require.

Close coordination between air and ground units is a must for urban fighting. Although communications' means for such coordination exist, the Army needs to assess mapping requirements to ensure that air and ground elements are "on the same sheet of music." Helicopters must be able to locate targets "at the corner of Main and Elm." Forces at An Loc made-do with a hand drawn sketch (figure 12).

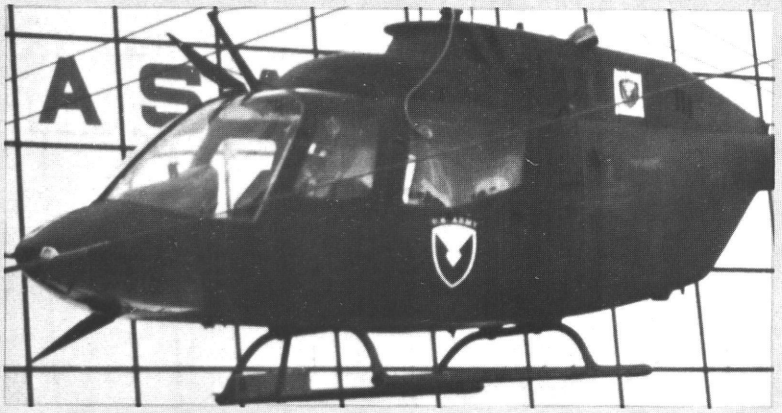
The Defense Mapping Agency and Engineer Topographic Laboratory are developing mapping concepts which may aid in air-ground coordination and help aviators visualize the city as they will actually see it (figure 13).

Helicopter weapons and ammunition required in urban areas may not be those most effective in other areas. Folding fin rockets, for example, may be superior to antitank guided missiles for urban targets. An armor piercing 20 mm round probably would increase the attack helicopter's ability to engage targets protected by structures. Testing of aerial weapons (similar to the antistructure testing of ground weapons being conducted at Aberdeen Proving Grounds, MD) would highlight their capabilities and identify their shortcomings in urban areas.

Finally, the urban obstacle that aviators seem to fear the most is wire. Wires are hard to see during the day and are almost invisible at night—even with night vision equipment. As Major Woods said in his article, "Wire never sleeps and is always on guard." To cope with the wire hazard, the Army is testing wire cutters for utility, scout and attack helicopters. Wire cutters will be life savers in urban operations (figure 14).

Conclusions. Although it is dangerous to draw conclusions from the meager historical analytical evidence that is available, there is at this point one principle which seems apparent—helicopters in urban combat will be most effective when used in conjunction with other members of the combined arms team. Throughout this article are many examples where a helicopter's urban capabilities were enhanced by the actions of other elements. We can pretty safely say, then, that if helicopters have a role in urban combat, it will not be characterized by the freedom of action that some aviators seem to prefer. But as an Infantryman, I want to encourage their quest for a piece of the urban action. Abraham Lincoln once said, "If a man can't skin, he must hold a leg while somebody else does." If there is a way for helicopters to help the Infantry "skin" the enemy in urban combat, I am confident that Army and Marine aviators will find it.

Figure 14: Wire cutters, similar to the ones shown, are being developed for scout, utility and attack helicopters



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"Black Hawk"

THE UH-1 HUEY has done an outstanding job for us during the last 20 years. It, however, was designed only to withstand the stress and strain of normal flight. As a product of the technology of the 1950s, it has some significant limitations in meeting today's requirements in both load carrying capability and survivability. Army planners, recognizing these limitations in 1966, wrote a requirement for a new utility helicopter. These visionary planners realized that the demands of future combat would require a helicopter that can rapidly transport a fully equipped infantry squad into combat, haul combat loads to forward elements and whisk casualties quickly to treatment areas. As everyone should be aware by now, the UH-60 Black Hawk is the answer to this requirement.

The UH-60 has superior overall performance. It has considerably more troop and cargo lift capability than the UH-1 over typical operating ranges as well as increased speed, endurance, maneuverability and survivability. The Black Hawk will lift 11 combat troops under hot day conditions and climb with this load at 700 feet per minute and cruise at 145 knots. It has a cargo capacity, at sea level on a hot day, of 8,300 pounds for a 50 kilometer mission. The UH-60 is virtually immune to small arms fire, has ballistically tolerant blades, fuel system, redundant flight controls and hydraulics, and a transmission capable of operating for 30 minutes without lubrication. Additionally, the Black Hawk is capable of being self-deployed to Europe and other mission areas when equipped with an extended range fuel kit.

The Black Hawk is indeed here. The 101st Airborne Division (Air Assault) has two combat support aviation companies fully equipped and more aircraft are on the way. Current plans call for a buy of 1,107 UH-60s. These will replace specified UH-1Hs in all active Army combat support aviation companies (CSAC), air cavalry, and aeromedical evacuation units. Under consideration is the issue of UH-60As to replace the UH-1 in attack helicopter, special forces, and Europe-based air support troop (armored cavalry regiments). The rate of replacement is 15 Black Hawks for 23 Hueys in CSACs, 7 for 8 in air cavalry troops, and 1 for 1 in aeromedical evacuation units.

What then happens to the UH-1? There are about 3,500 UH-1Hs in the Army inventory. After fielding 1,107 Black Hawks, there remains a requirement to retain about 2,700 UH-1Hs in the inventory. These aircraft will continue to perform the air assault, medevac, special electronics and general utility missions in Reserve Component units, as well as performing a variety of missions in the active Army.

For the UH-1 to continue to perform its mission, certain improvements of the aircraft are essential. The Infantry School at Ft. Benning, GA, and the Aviation Center at Ft. Rucker, AL, along with other users and members of the development community, conducted an extensive review of the UH-1 system to determine exactly what improvements are required. This review considered survivability, safety, and reliability, availability and maintainability (RAM) factors. As cost savings, consistent with safety and mission essential factors, were primary considerations, this effort to improve the UH-1 did not seek to increase the aircraft's performance capability.

To enhance the UH-1's survivability, an infrared (IR) suppressor will be installed to reduce the vulnerability of the aircraft to be detected and tracked by heat

ARMY AVIATIO

THE BLACK HAWK & THE HUEY

"Huey"

seeking missiles. The UH-1 also will be equipped with a radar warning receiver to provide warning of radar directed threats to allow appropriate evasive maneuvers and/or deployment of other countermeasures. Selected special mission aircraft will employ an IR jammer and a chaff dispenser to provide further countermeasures against heat seeking and radar guided weapons. Other operational improvements include improved nap-of-the-earth communications (VHF/FM/HF), painting and decaling of the cockpit to improve night vision compatibility with night vision goggles, and a self-contained navigation system which will probably be the lightweight doppler. Medical evacuation Hueys will be equipped with a radar altimeter, distance measuring equipment, and glide slope/marker beacon, all required to perform their peacetime mission.

RAM improvements include an improved tail rotor with a low maintenance hub and more aerodynamically efficient blades, built-in vibrex cables to reduce the time required to configure for tracking and balancing and an improved servo cylinder that incorporates improved seals and a modularized system to reduce troubleshooting time. Also included is improved oil filtration and a chip detector burn-off to provide finer filtration of engine and transmission oil which will reduce wear and the frequency of oil changes from 400 to 1,000 hours or more.

The chip detector burn-off feature also will provide a more reliable chip light to detect impending failures. Improved stabilizer bars will replace the existing stabilizer bars. These improved bars will increase corrosion protection of the tube interior and result in on-condition operation as opposed to the current 5-year retirement life. A composite main rotor blade will replace existing metal blades. This composite blade will increase field repairability and survivability as well as aerodynamic efficiency.

Safety improvements, most of which already are in the process of being applied to the UH-1, include a main rotor mast plug and several fuel system modifications. The main rotor mast plug strengthens the mast against bending loads. The fuel system improvements include: A fuel tank vent system designed to prevent the loss of fuel in the event of a crash where the helicopter comes to rest on its side or inverted, and a closed circuit refueling system designed to prevent spillage, contamination and fire from vapors, while also providing NATO compatibility for gravity refueling with nozzles up to 2½ inches in diameter. A crashworthy auxiliary fuel system is to be installed on those aircraft which require range extension capabilities.

The improvement programs arrived at, as a result of this review, have been approved by Headquarters Department of the Army and will compete for funds starting with the FY 1982 budget cycle. These programs will enable the UH-1 to continue as a viable member of the Army's utility helicopter fleet.

While we are gaining the requisite battlefield flexibility with the addition of the Black Hawk, the retention and improvement of the Huey will provide the Army with a combined utility helicopter fleet designed to meet the needs of future battlefield requirements. The Black Hawk and the Huey are truly partners in support for the ground commander.

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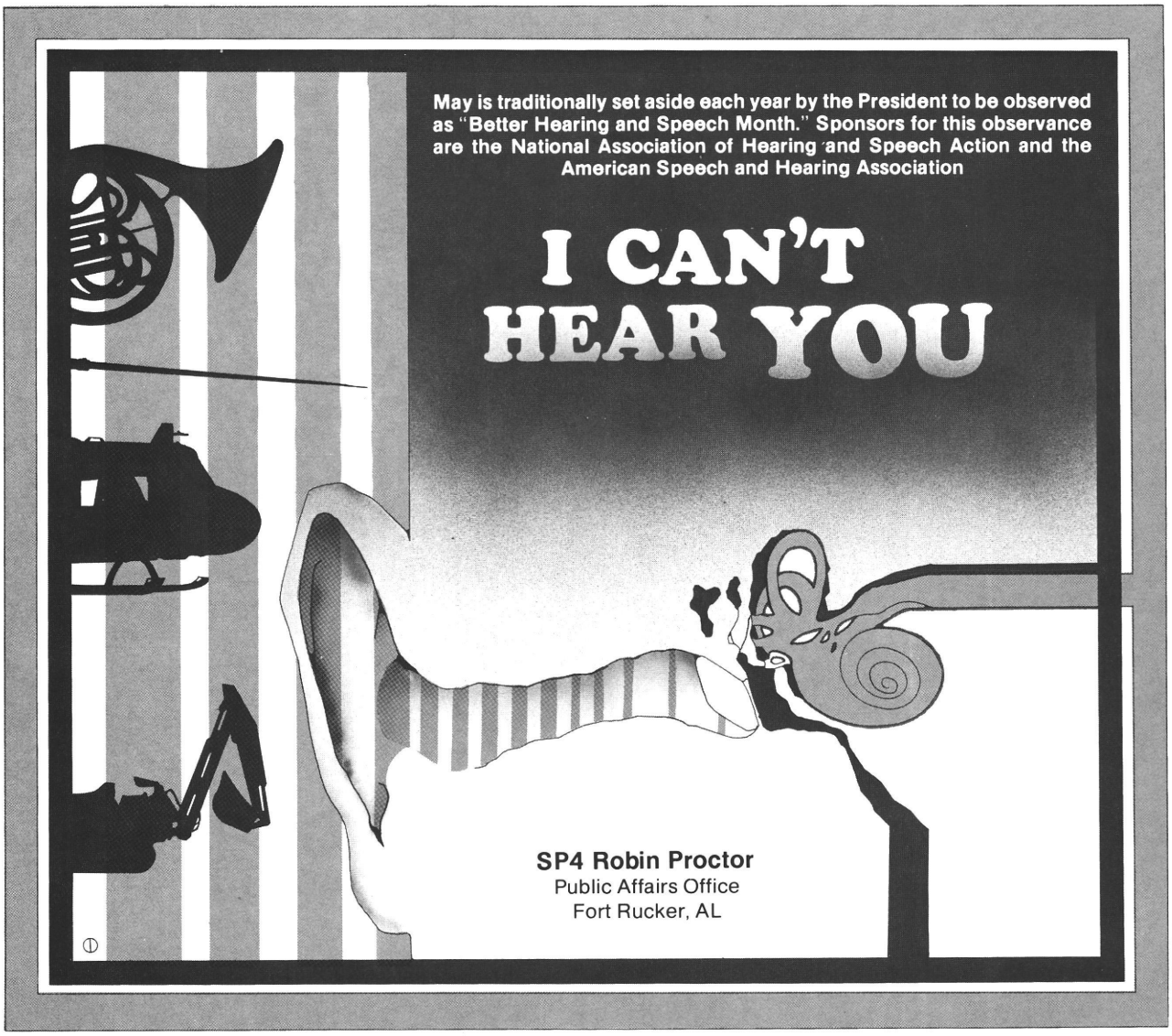
N & INFANTRY

PARTNERS IN TOTAL SUPPORT



THIS IS A STORY about a Soldier named Speak-up Johnson who has a problem which affects about 60 percent of all Army personnel: He has developed a noise induced hearing loss.

Speak-up is a Vietnam veteran, but his problem didn't stem from the war. In fact, it was a gradual process; and it took 12 years of driving 10-ton trucks, bulldozers, caterpillars and working around helicopter engines before he noticed any difference in his hearing.

He said, "It really became evident one night when my wife and I were coming from a concert. My ears were ringing and my hearing seemed fuzzy. A few days later my supervisor walked into my area. It wasn't until he was going out the door that I realized he had been talking to me. The guys at work were always kidding me about having selective hearing, but now I began to take them seriously."

A major symptom of hearing loss is difficulty in understanding people, especially when talking on the telephone or if there are television or other background noises present. Also, the person with the hearing loss misses certain words in conversation and may speak loudly to other people. The last symptom is annoying, and someone will eventually bring it to his or her attention.

CPT Susan M. Liff, audiologist at Lyster Army Hospital, Ft. Rucker, offered some insight into the functions of the ear:

"The delicate organ has three parts, the outer, the middle and the inner. The outer ear directs the sound to the middle ear and protects the inner ear parts. The middle ear sends sound to and protects the inner ear. It also equalizes pressure on the eardrum. The inner ear changes the sound energy to nerve energy and transmits it to the brain.

"If the outer and middle ear are damaged from any cause, they usually are medically treatable; but there

Continued on page 35

Wire strikes and high airspeed . . . a deadly combination

Army aircraft have been involved in a wire strike mishap on an average of once every 2 weeks for the past 9 years. Thirty people have been killed and 46 more injured in wire strike mishaps over the past 5 years. So far this fiscal year, four lives have been lost in wire strike mishaps.

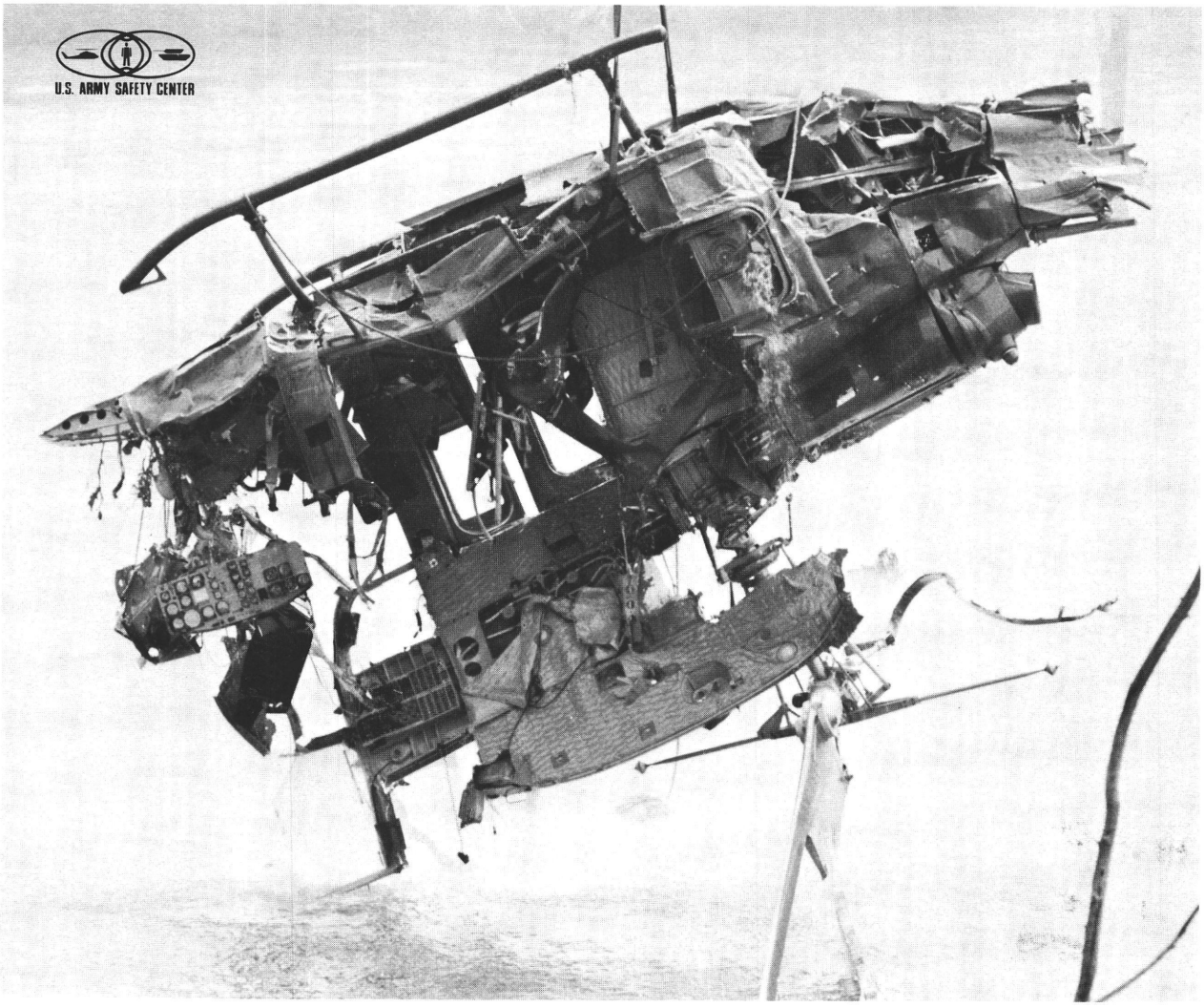
Let's review once again what we know about wires and wire strikes.

• **Human error is almost always involved in wire strikes.** Those rare mishaps that happen after some in-flight materiel-related emergency are the exception rather than the rule.

• Most wire strikes happen during cruise flight. **Most fatal wire strikes occur at airspeeds above 60 knots.** The one cause factor common to the vast majority of fatal wire strike mishaps is flying at cruise airspeed at low altitude.

• Slower airspeed not only makes wire detection and avoidance easier but also reduces the severity of injuries and aircraft damage if wires are hit.

• **Most wire strikes occur below 50 feet agl,** with few occurring above 150 feet.



The pilot of this Huey was killed when his aircraft hit powerlines 50 feet above a lake.

Wire strikes

• **Pilots in units with strong command supervision to enforce SOPs dealing with flight discipline are less likely to become involved in wire strike mishaps.**

• An aerial reconnaissance over unfamiliar terrain is only partly effective in locating wires strung in the area. For all practical purposes, it is virtually impossible to insure all wires are noted during such a reconnaissance.

• Wire strikes seldom occur at takeoff and landing points when surrounding wires are marked.

• Even though wires may not be seen, their presence should be expected across rivers; along roads and railroad tracks; between hills, poles, structures; and between any pole and a structure. Even when only a single pole or building in open country is spotted, the possibility of wires exists.

• The position of the sun, types of wires, time of day, and existing atmospheric conditions can drastically affect the pilot's ability to detect wires. A change in one or more of these variables can be a deciding factor as to whether wires can be readily spotted, seen with difficulty, or not seen at all. Even large powerlines suspended by towers can sometimes be difficult to see even on a perfectly clear day.

• Some types of wires such as those associated with missiles are almost impossible to see during flight. The danger posed by these is greatest during terrain flight over firing ranges and over trees and other foliage adjacent to such ranges.

• The more crewmembers actively engaged in spotting wire hazards on any given flight, the less the risk of wire strikes. Conversely, the possibility of a wire strike is greatest when lack of crew coordination diverts the pilot's attention from visually searching for wires.

How can wire strikes be prevented?

Through team effort, and the team must include the following people:

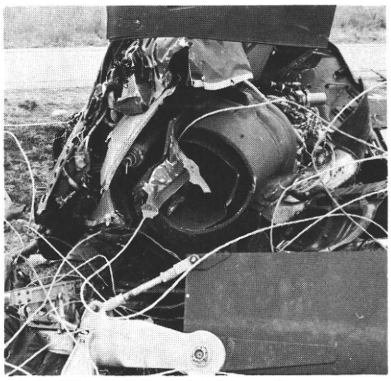
• **The commander** must continually enforce SOPs dealing with flight discipline. Breaches of flight discipline must meet with positive command action. Unit operating procedures for the types of missions to be flown must be clearly spelled out in the SOP, and these procedures should be reinforced regularly at aviation safety meetings.

OH-58 crashed nose-low after hitting several telephone wires strung across a river. The area had not been reconned for hazards, and the wires were not marked on the hazards map.

• **The operations officer** must schedule aircrews who are compatible and who have attained the desired state of training as weighed against the complexity of the mission. The operations officer must provide hazard maps and brief aviators on wire hazards.

• **The unit aviation safety officer** must contribute to a wire avoidance climate in the unit by promoting prevention awareness in safety meetings; by closely monitoring flight crew scheduling, briefings/debriefings, posting, use of, and availability of wire hazard maps; and, in the absence of a flight surgeon, by being aware of the psychological/physiological states of the aviators in the unit.

• **Unit instructor pilots** must practice, teach, and reinforce wire



This UH-1, flying VFR under lowering ceilings at night, hit wires and crashed on highway. The pilot was killed.

strike prevention criteria and commonsense rules for detecting wires. IPs must place emphasis on slowing down when poor visibility conditions (flying into sun, rain, etc.) are encountered and stopping to reorient when disoriented.

• **Copilots and crew chiefs** must be assigned specific cockpit tasks and duties. Open lines of communication must exist between the pilot at the controls and those navigating and/or clearing the aircraft in all quadrants. A callout such as "wires (level, low, high) at (o'clock position)" should be used by aircrewmembers in the interest of brevity.

• **The aviator** must, as the "final authority," consistently and successfully combat the temptation to take shortcuts that may lead to a wire strike. Every Army helicopter pilot who flies in the wire environment (and that's just about everyone) must remain conscious of basic wire strike prevention measures and **think** wires constantly while flying in the terrain flight mode.

Everyone on the team shares the responsibility for wire strike mishaps, but final responsibility still belongs to the people in the cockpit. If every pilot on every terrain flight mission would plan properly, then fly the aircraft slower as he goes lower, the number of wire strikes as well as the number of lives lost would be reduced.

Remember, speed is still the main killer in wire strikes. Slow down and live. ■

Portions of this article were adapted from USAREUR Flight Safety Kit.

All on board were killed when pilot's attention was diverted and the Huey, flying at 90 knots, hit wires and crashed.

Seven steps for wire strike prevention

• Make certain unit SOPs cover terrain flight and clearly establish safe procedures for the types of missions to be flown.

• Insure that pilots adhere to established procedures, and commanders must take immediate and positive action regarding **any** violation of flight discipline.

• Make certain that thorough wire hazard and obstacle briefings are conducted before every terrain flight mission.

• Mark wires in the areas where you normally operate.

• Avoid contour flight unless required by the mission. Contour is the terrain flight mode where most wire strikes occur.

• Insure maximum crew coordination in searching for and calling out wires during terrain flights.

• Above all else, go slow when you go low.

Reporting Final

Late News From Army Aviation Activities

FROM FORT RUCKER

Flight Training Eligibility. Army officer and enlisted personnel, as well as civilians or other service members, may be eligible to request flight training.

United States citizens who have been graduated from high school; are between 17 and 46 years old; and who are 64 to 76 inches in height may be eligible as long as they:

- Are not under investigation by civil or military authorities;
- Were not previously eliminated from flight training;
- Were not previously denied a secret security clearance;
- Have no court convictions or were adjudged as a juvenile offender (this criteria may be waived).

Civilian or other service personnel requirements are:

- Enlistment in the Army;
- A score of 270 or more on the Flight Aptitude Selection Test-Warrant Officer Candidate Battery (FAST-WOCB);
- Meeting of appointment criteria as delineated in Army Regulation 135-100;
- Volunteering to accept appointment in the Army Reserve;
- Serving on active duty for at least 48 months;
- Recommendation by a board of officers.

Active officers must hold the rank of first or second lieutenant, captain or warrant officer with less than 61 months active commissioned or warrant officer service. Officers also are required to attain a score of at least 155 on the Flight Aptitude Selection Test-Officer Battery (FAST-OB) test; incur a 4-year service obligation; may not be alerted for overseas assignment; and may not be pending action under Army Regulation 600-31.

Enlisted Army personnel must have completed basic military training, have 2 years remaining until separation, not be on stabilized assignment and not be alerted for overseas assignment. Other requirements include:

- A General Technical (GT) score of 110;
- No action pending under Army Regulation 600-31;
- A score of 270 or more on the FAST-WOCB test;
- Meeting the appointment criteria set forth in Army Regulation 135-100;
- Volunteering for appointment in the Army Reserve;
- Active service of 48 months commitment;
- Being recommended by unit commander and a field grade officer.

The 42-week flight training program is conducted at the U.S. Army Aviation Center at Ft. Rucker, AL. Upon the start of class candidates are promoted to the rank of sergeant (unless already holding a higher grade) and receive pay and allowances accordingly.

Candidates begin drawing flight pay upon completion of the 6-week Warrant Office Military Development Course.

Entry into the flight training program by civilian or other service personnel is accomplished *only after entry into the Army.* Army recruiters may enlist personnel specifically for the flight training enlistment option.

Other service personnel must be separated from their parent service before enlisting in the Army or attending the flight program.

Commissioned, warrant and enlisted personnel serving on active duty in the Army are authorized to apply for flight training to their unit commander. After eligibility for attendance is determined, applications are processed through the normal chain of command to the Department of the Army for approval.

Editor's note: If you do not qualify for the Army's flight program, but know someone who may be interested, we urge you to clip out the above information and send it to them.

(USAAVNC-PAO)

Recruiting and Retaining Soldiers. Major General Maxwell R. Thurman, a recent guest speaker at a graduation ceremony of the officer and warrant officer rotary wing aviator classes at the Aviation Center, challenged the newest aviators in the Army and Air Force to help in recruiting and retention of active duty personnel.

General Thurman, commander of the U.S. Army Recruiting Command. Ft. Sheridan, IL, is responsible for filling active and reserve Army recruiting quotas. He said that volunteer enlistments are 22,000 ahead of last year's figures. The Army fell short of last year's quota by 16,000, so the current figures project real hope of filling the recruiting requirements for this year, he pointed out.

"A good recruiter enlists four people a month (which means) it takes a week of hard work to recruit just one Soldier," said General Thurman. He then challenged the graduating classes to help improve retention of active service personnel by helping to create a positive atmosphere within the active ranks.

He also reminded the aviators that for every person who elects not to reenlist or who is discharged from the Army, a recruiter must work 2 weeks to fill that position. This is because only 50 percent of persons enlisted remain in the service. Thus the aviators ". . . have a vested interest in helping us keep good people in," he said. He brought up the fact that "The Army is never the same 2 days in a row." Due to retirements, discharges and people deciding to leave the service, the Army must actively recruit to maintain its operating capabilities.

General Thurman said that the graduating aviators can and will be called upon to assist local recruiters in demonstrations at high schools and vocational-technical schools near their duty stations. "You'll have to tell those students why you joined the Army," he said. He stressed the importance of recruiting high school graduates by saying, "We're striving to take more than half (of Soldiers recruited into combat arms) as high school graduates. A total of 45,000 people are needed to fill the Army quota for combined combat arms recruiting." He said that the graduates, like all members of the Army team, should be active recruiters at all times. He also stated that 280 recruits were needed this year to meet the Army's requirement for aviators.

Preserving the Past. **A monument erected in 1966 by a class of warrant officer candidates was scheduled for destruction along with some old buildings at the Aviation Center, Ft. Rucker, until Soldiers of the 43rd Company, 4th Battalion, 1st Aviation Brigade decided to preserve the stone and plaque in their company area. First Sergeant Lewis E. Rowan, below left, had the idea of salvaging this memorial and, with the wings designed and constructed by SSG Edward R. Richardson, below center, this reminder of the past stands proudly in a new setting. The commander of the 43rd, CPT Thomas J. Rini, looks on in approval.**

FROM TENNESSEE

Maintenance Convention. The Ninth Annual Convention of the Professional Aviation Maintenance Association, Inc., will be held in Music City U.S.A., on 22 and 23 August 1980, in Nashville, TN.

The business meeting and banquet will be held at the Radisson Plaza Hotel, Two Commerce Place, Nashville.

PAMA 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. Paul Wooten, Convention Chairman, 202 Gracey Avenue, Smyrna, TN 37167.

(PAMA)

FROM FORT CAMPBELL

To The Rescue—Soldiers from the 507th Transportation Aircraft Maintenance Company, 5th Transportation Battalion, 101st Airborne Division

Reporting Final continued on page 47

(U.S. Army photo by SP5 Phil Tegtmeier)

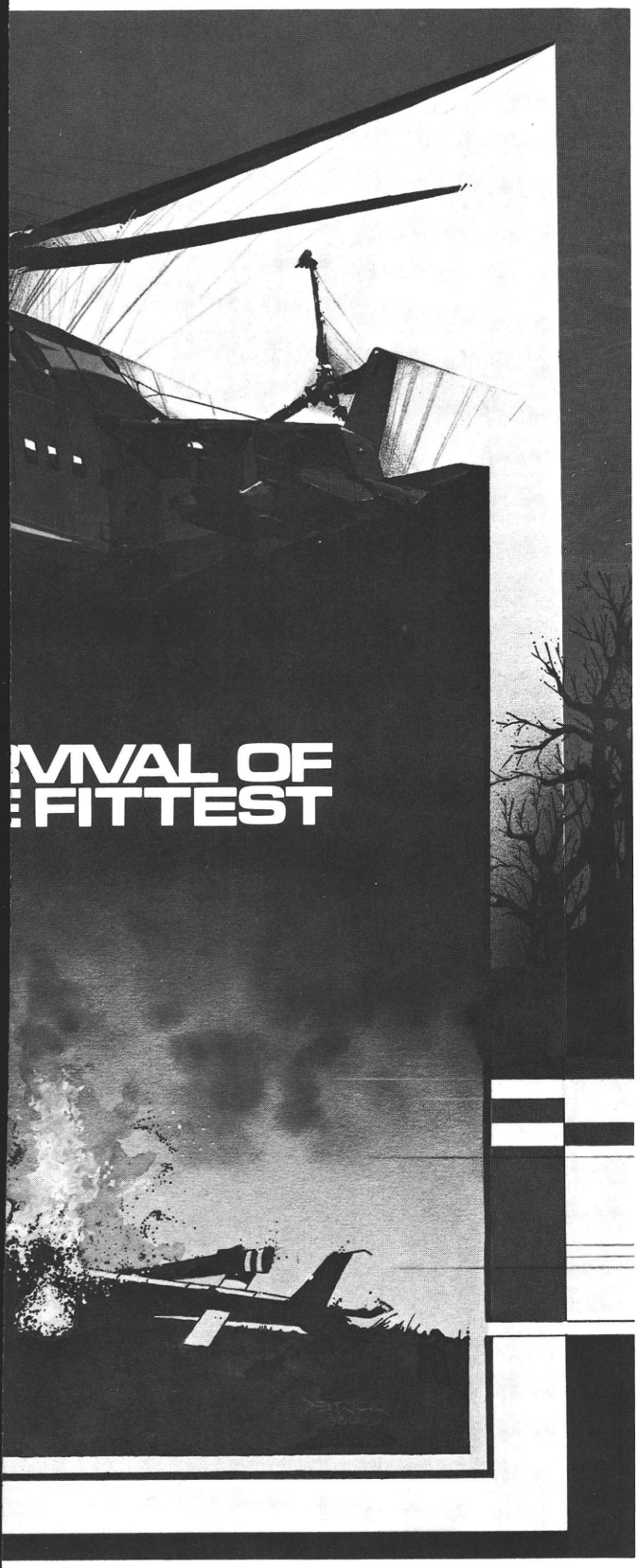
ANTIHELICOPTER OPERATIONS

CW3 CAMPBELL carefully hovered the OH-58C scout aircraft over the field so that the open valley beyond the sparse treeline could be reconnoitered by CPT Brownfield, the attack helicopter platoon commander. Coordination between the attack team and the ground force commander already had been made. It was now CPT Brownfield's job to act as battlefield coordinator, a mission he never really believed that he'd perform "for real." His other scouts of the attack helicopter team already had located their battle positions and were busy leading attack helicopters into firing positions. It was obvious that the time of reckoning was near.

In the distance, just beyond the smoke and dust, loomed hundreds of dark figures moving rapidly across the valley floor. Soon, outlines of tanks began to appear, almost shoulder to shoulder, giving the appearance of one, not hundreds of charging armored beasts. Prearranged friendly artillery fires created eruptions within the formation causing the tank crews to "button up." A pair of A-10s made a low pass, spitting explosions within the tight formation, destroying tanks and suppressing the enemy air defense artillery weapons.

CW3 Campbell hovered down below the treeline, carefully picking his way back to his own area of responsibility. He would be working with the attack birds on the west flank and would provide artillery adjustment for the defending forces. Additionally, he would move to screen the Cobras' flank when the attack aircraft unmasked to fire their deadly missiles. As CW3 Campbell continued towards their position to fire there was an uneasiness in his stomach, just a gut feeling that something wasn't quite right. Their actions and techniques had been practiced dozens of times before; it was the same kind of sour feeling he had gotten on search and destroy missions in Vietnam.

Major Frank E. Babiasz
and
Captain Carl E. Daschke
Threat Branch
Directorate of Combat Developments
Fort Rucker, AL



Soon they were passing behind the attack helicopters' firing position, knowing that shortly the "firewords" would begin. CW3 Campbell came to a low hover, made a right pedal turn back towards the enemy thrust, and observed the attack birds preparing to unleash all hell on the enemy tanks. Seemingly ready, he started again, low and slow, up the draw, to take up an observation point about 500 meters to the left flank of the attack aircraft. The uneasiness he felt earlier still hadn't left. This was different though; for some unknown reason, just different.

He painstakingly selected a position allowing good observation to the flanks and the battle area. Steadying the aircraft just above the trees, he looked back for a fleeting second to see the attack aircraft slowly, deliberately, start climbing to their firing position. Suddenly, without warning, rockets screamed past the front of the scout as explosions violently erupted around the attacking Cobras, causing utter chaos among the crews. Radios suddenly became cluttered with broken transmissions, aircraft began turning and twisting out of position as rockets continued to devastate the area. Caught totally unprepared, CW3 Campbell quickly pushed in left pedal accelerating down the slope of the ridge, when out of the corner of his eye, he saw something that was totally unexpected. They looked like two giant dragons spewing fire and smoke as they approached just above the trees. Only 1,000 meters away the fire spewed again as the first of the rounds shattered the canopy, sending bits of plexiglass all over the cockpit. The top of the instrument panel disintegrated in a spray of electrical sparks, just before the rounds began pouncing into the armored seat and the limp body of CW3 Campbell.

CPT Brownfield, the battlefield coordinator, desperately lunged forward in an effort to reach the controls but the 12.7 millimeter (mm) rounds held the same fate for him. The scout aircraft impacted, whirled violently and literally broke apart. The remaining Cobras, realizing what was happening, left their firing positions to seek the safety of another woodline.

The two HINDS did not bother to chase their prey, for their mission was not one of dedicated antihelicopter. Remaining low, silhouetted against the trees, they reversed course to continue their mission of screening the advancing armor attack. In the small open field below lay the smoldering wreckage of an unarmed scout helicopter that was not equipped to meet the ***threat.***

As our simple scenario clearly illustrates, the likelihood of an air-to-air encounter is a very real problem and will severely hamper our tactical aviation operations. We feel that any future conflict with the Soviets will inevitably place the Soviet attack helicopter and the U.S. attack and scout helicopters in direct opposition to one another. This particular belief is predicated

upon the fact that the HIND was designed, and is employed, as an offensive weapon. The aircraft's mission of close air fire support places it in an environment where it will routinely encounter U.S. helicopters. Based upon this, we are only fooling ourselves if we fail to recognize that chance encounter situations, helicopter versus helicopter, will occur on any future battlefield.

The first point, which we would like to establish, is that the U.S. helicopter will seldom be concerned with air-to-air engagements. The phrase air-to-air immediately conjures in one's mind the image of two helicopters locked in the classic "dog fight" type of scenario. The idea of two helicopters performing loops, rolls, climbs and dives to either evade or engage another helicopter is as ridiculous as it sounds. In reality, the scout and attack helicopters performing their normal tactical roles, can be more accurately described as "ground targets." We believe that the low, slow and intermittent stationary requirements of nap-of-the-earth flight, coupled with the extensive use of laager areas, firing and observation positions, dictate that the scout/attack helicopter be viewed as a highly mobile GROUND TARGET. After all, it is of little concern to the attacker that the aircraft is hovering at 20 feet of altitude rather than sitting on the ground. In either instance the target, weapon selection and method of engagement will be identical. Therefore, to preclude any misunderstanding, the term air-to-air should, in fact, be changed to antihelicopter when describing a helicopter versus helicopter situation.

Is there really an antihelicopter threat? *Yes!* This fact of life, regardless of what some believe, is borne out by several undisputable facts:

- The Soviets have fielded a very versatile attack helicopter fleet. The backbone, of course, is the Mi-24 HIND series attack helicopter. In an effort to supplement and expand their attack fleet, the Soviets have modified one other helicopter. Both aircraft are equipped with effective air-to-ground weapon systems in the form of rockets, antitank guided missiles (ATGM), and either Gatling guns or machineguns.

SOVIET ATTACK HELICOPTER ARMAMENT
HIND
12.7 mm Gatlin Gun
128 × 57 mm Rockets
4 × ATGM

The Soviet attack helicopter is armed with a variety of weapons which can be employed effectively in an antihelicopter situation. The Soviet pilots' selection of weapon or weapons in an antihelicopter situation will be range dependent. It is not unreasonable to assume, particularly in Central Europe, that most antihelicopter engagements will occur at ranges between 1,000 and 2,000 meters, with the average falling closer to 1,000 meters. The terrain, predominate weather and U.S. helicopter tactical doctrine will severely limit engagement ranges to about 1,000 meters. Based on these factors we can realistically conclude that the 57 mm rocket and 12.7 Gatling gun are the most effective antihelicopter weapons presently fielded on Soviet attack helicopters.

This position has been somewhat supported by Soviet open source literature which has alluded to the fact that the cannon (20 to 30 mm) may be the most effective antihelicopter weapon. Additionally, Soviet articles also have indicated that the speed, maneuverability and firepower of the attack helicopter may well establish it as the most effective antihelicopter weapon.

As mentioned earlier, the primary mission of the HIND is that of close air fire support (CAFS), restricting the normal employment of the HIND to the forward edge of the battle area (FEBA) and close to FEBA areas. It is not unreasonable to surmise that, with the AH-1 and scout, routinely employed well forward in support of the ground forces, encounters with the HIND will be a frequent occurrence.

It would seem appropriate at this time to point out that the Soviet attack helicopter is not normally employed in the same manner in which we use our helicopters. The HIND is an aggressive aircraft that will probably fly at faster airspeeds and at slightly higher altitudes than our attack helicopter. The HIND can be expected to aggressively seek targets within its area of operations. The Cobra, on the other hand, relies on the use of firing positions and is primarily antiarmor oriented; therefore, its employment is not as aggressive as the HIND's.

You now have a situation where one aircraft (HIND) is employed in an area type situation, while the U.S. aircraft (Cobra) will be employed in a less aggressive, fairly stationary, single target, mode. To accomplish its mission, the Cobra and even the advanced attack helicopter (AAH) must be employed in close proximity to the *attacking forces*—where is the HIND?, with or preceding the *attacking forces.* Again, you can see the probability of frequent antihelicopter situations.

We recognize that the subject of arming the aeroscout and possibly including a more sophisticated defensive weapon on the attack helicopter is an extremely volatile issue—guaranteed to start an argument on most any occasion. Therefore, several factors must be addressed in order to establish some very basic points:

- The arming of the scout helicopter would be for defensive purposes. It is not our contention that the aeroscout be given the mission, direct or implied, of offensively seeking out opposing attack helicopters. Much the same as the point man for a recon patrol,

the mission of the scout is very clearly defined as "an information collector" with a secondary mission of acquiring targets for both the attack helicopter and indirect fire systems. Nothing should be expected of the scout which will detract from its mission; this includes expecting the aircrews to perform their mission in an extremely hostile environment unarmed. After all, "You don't send the point man out on a recon patrol without a rifle."

- The often expressed argument that the helicopter pilot is basically a frustrated fighter jock "who harbors a deep-seated desire to become an aviation ace" is just not valid. The hard fact of life is that the scout helicopter is no match for a Soviet high-performance fighter or even an attack helicopter. It would be an extremely foolhardy approach for the scout pilot to assume that his offensive capability is a viable match against either aircraft.
- The idea of an offensively oriented scout may have abounded during the Vietnam conflict; but one must consider that Vietnam was fought under a completely different set of rules. Any future conflicts could well be in a different "ball park" and will require a new set of rules due to lack of air superiority and the sophistication of the opponent's weapons.

Fire control, or fire integrity, will basically be a matter of leadership and education. The aeroscout, armed with a minigun, missile or cannon, which "goes forth to seek and engage" the enemy will no doubt meet the same fate as the unarmed aircraft. The aircrew must be trained to use their defensive weapon only to suppress fire and break contact.

There are, however, some mission scenarios which may dictate employment of the armed scout or attack helicopter in other roles. The first which comes to mind is an aerial effort launched to counter a rear area intrusion by Soviet attack and assault helicopters. Unfortunately, the forward employment scheme of Europe's active defense leaves the division and corps commander with a limited number of troops and equipment which could be committed to counter rear area assaults. A likely candidate is the divisional or corps attack helicopter assets which could be employed to defend the rear areas' vulnerability to Soviet air assaults. The most effective means of countering air assaults is not after the troops have landed but rather while they are en route. For the assault, while still in the air, is most vulnerable to our interdiction. To accomplish this mission, we need armed aircraft—aircraft that are armed with effective antihelicopter weapons.

In summary, the Soviets consider the attack helicopter to be a viable antihelicopter system. Therefore, we MUST address the total Soviet threat which includes armed helicopters which are capable of engaging tactical helicopters. If we expect our aircrews to survive, let alone accomplish their missions in this extremely hostile environment, we must provide them with equipment which is designed to support their mission—this includes defensive weapons. We do not suggest that helicopters inherit the air-to-air combat mission which has been historically associated with the Air Force, but rather we suggest arming the helicopter to deal with antihelicopter situations—in short, survival.

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The Vital Link
The Aviation Liaison Officer

First Lieutenant Keith E. Sims
Company A, 7th Aviation Battalion
Fort Ord, CA

WHERE DO NEWLY assigned aviation liaison officers go to learn about their jobs? To a more experienced aviator? To 10 or 12 different field manuals? Or do they just "wing it" on their own "vast knowledge"?

Since there is not a single reference from which to find the answer, most aviators probably use a combination of the three choices given above. This article discusses liaison duties and special considerations with which aviation liaison officers must be aware. A sample checklist also is presented to provide assistance in organizing the mass of information liaison officers must have to effectively perform their duties.

Aviation liaison officers are a vital communication link between supporting aviation units and supported maneuver elements. They assist in the tactical planning by advising commanders and operations officers of the supported unit on the supporting unit's capabilities, limitations, tactical employment and the operational status of existing aviation assets. Since the liaisons are located at the supported units' tactical operation centers, they also must keep the supporting units abreast of tactical situations and the front line trace.

Effective liaison performance begins with a constant knowledge of the tactical situation. The advice to the supported element and the information passed to the supporting unit must be based on the most current intelligence. Failure to advise on this basis could result in faulty planning, and as a consequence, a needless loss of lives and aircraft. Thus, staying on top of the tactical situation is the foundation of the job.

Total job performance also demands knowledge of the capabilities and limitations of the aviation assets. Aircraft considerations should include but are not limited to: operational status, weather conditions, altitude, outside ambient temperature, maximum cargo, maximum troop load, terrain conditions, refuel capability and security. Supporting unit considerations include: crew rest, reaction time, maintenance time, resupply and critical personnel status. Most maneuver commanders and operation officers are not familiar with the specific practices and technical aspects of aviation units. Therefore this information should be retained and applied as the opportunity arises, to keep the tactical plan within the limitations while employing aviation to its full capacity.

Professional appreciation of the missions and tasks of the supported unit serves to increase liaison efficiency. Supported unit considerations include: type missions, organic weapons, equipment, mobility, security capability and reaction time. This professional appreciation of the supported unit will allow the liaison to plan ahead and to react quicker and more positively to contingencies.

When tasked with a mission, the aviation liaison officer informs the supporting unit, and provides the following information at a minimum:

- type mission;
- points of contact;
- point of contact's location, frequency and call sign;
- enemy situation;
- special equipment needed;

Aviation Liaison Officer's Checklist

1. Supported Unit:
2. Contact Officer:
   (a) Location and Call Sign:
   (b) Loading Time:
3. Type of Mission:
4. Situation:
   (a) Enemy (Antiaircraft and Armor):
   (b) Friendly:
5. Ground Tactical Plan of Lifted Unit:
6. Execution:
   (a) Time in Load Area:
   (b) Suggested Routes:
   (c) Altitudes:
   (d) Initial Points, Air Control Points, Release Points:
   (e) Air Movement Control:
   (f) Spare Aircraft and How Obtained:
7. Loading Area:
   (a) Coordinates and Description:
   (b) Marking:
   (c) Control Frequencies and Call Signs:
   (d) Officer in Charge:
   (e) Loading Plan:
      (1) Overall Loading Plan:
      (2) Priorities:
      (3) Aircraft Marking Procedures, if used:

• pick-up zone and landing zone locations; and,

• any pertinent frequencies and remarks.

Time permitting, the liaison officer meets with the airmission commander and the maneuver commander to obtain the specific mission information. This information serves to further advise the supported unit at the tactical operation center, should any contingencies arise during the conduct of the mission.

So where does an aviation liaison officer go to learn about his job? The combination of the three choices given in the introduction seems to be a viable solution. However, a liaison officer can hardly take the chance of ever "winging" anything. The liaison's total job performance directly affects the efficient use of aviation assets and timely mission accomplishment. Properly prepared and organized, the aviation liaison officer can be an invaluable asset to both the supported and supporting units.

(4) Manifesting:
(5) Formation for Landing:

8. Landing Zone:
   (a) Coordinates and Description:
   (b) Markings:
   (c) Frequencies and Call Signs of Pathfinders or Marking Aircraft:
   (d) Landing Sequence and Times:
9. Refueling:
   (a) Locations:
   (b) Capabilities at Sites:
10. Supporting Fires:
   (a) Artillery (location, altitude, time, control frequencies):
   (b) Tactical Air Force (type aircraft station time, ordnance, frequencies):
   (c) Armed/Attack Helicopters (number available, call signs, frequencies):
11. Contingency Plans:
   (a) Weather Abort (minimums and delay period):
   (b) Mechanical Abort (procedures and replacements):
   (c) Lost Communications:
   (d) Enemy Action:
12. Weather and Intelligence Briefing:
13. Rehearsals if Planned:

Checklist extracted from
U.S. Army Correspondence Course, Aviation Subcourse 702

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THREAT

REC means electronic warfare . . . and much more

REC – An Integral Part Of Soviet Doctrine

Major Forrest D. Williams
Threat Manager
Directorate of Combat Developments
U.S. Army Aviation Center
Fort Rucker, AL

THEY HAD BEEN in attack positions for several minutes now, waiting for the final order to commence firing on the advancing enemy tanks. CW3 Tubbs, pilot in the scout aircraft, was growing impatient. He had informed his platoon leader via radio that blue team was ready and in position. This, in turn, had been transmitted to him by each of the two attack aircraft he was supporting. Only another minute or two now, he hoped, and they would begin firing.

Across the valley, a few miles away, green team was setting up. All seemed to be in order, but CW3 Bos felt uneasy as he maneuvered the Cobra into its final firing position. He especially did not like the fact that his firing position grid coordinates had been inadvertently passed in the clear over the radio several minutes before as they were approaching the battle area. After all, he had been the training officer prior to the outbreak of hostilities and was well-versed in the Soviet electronic warfare capabilities. "Oh well," he thought, "In another minute or two, we'll fire our missiles and move to our next positions." "Green team ready," radioed CW3 Dunkin, the LOH pilot and team leader, as he observed the final Cobra closing on its firing position.

LT Clater heard the call and knew that his platoon was ready. He had been directed to remain in the supported battalion's rear area with his attached third team to react to any heavy engagements.

He reached down and put his radio on FM to notify the battalion commander, LTC Willis, that his platoon was ready to initiate the attack, per the operations plan. An instant before keying the mike, he heard an unfamiliar noise through his helmet earphones. He made the call, thinking as he did, that he must be cracking up—he had thought he heard *bagpipes!* He let up on the switch and sure enough, it did sound like bagpipes. Further, his call had not been acknowledged. LT Clater began to feel uneasy—he knew he was being jammed. He attempted several more calls, turning his volume up each time, prior to switching to alternate frequency. Nowhere was the battalion commander to be found. It seemed that some units were on the alternate "push" and some weren't. Confusion reigned as the moments passed by.

All of a sudden he heard blue team leader calling that he was under fire from artillery and that he was pulling out of position! Almost simultaneously, green team leader was screaming he and one Cobra were hit and going down! LT Clater attempted contact with both teams on all frequencies, but to no avail. Even without the increased jamming, he wouldn't have reached them. They no longer existed.

"What had happened?" he thought. "The attack had failed before it began." But deep down he knew; he had learned about it in flight school. The attack had fallen prey to Soviet radioelectronic combat.

Radioelectronic combat (or REC) is the term used by the Soviets to describe how they would deny an adversary his command, control and communications (CCC) in combat. Simply stated, REC involves the integration of signals intelligence, direction finding, intensive jamming and suppressive fires to destroy an enemy's CCC. In essence, REC is electronic warfare . . . but much more. It involves the use of physical destruction of an enemy's control facilities.

Such a doctrinal concept is unique among the armies of the world. However, so basic is this to the Soviets, that REC planning goes from *front* level down to the divisional warfare plan. A goal of the Soviets for REC is to physically destroy one-third of our communications facilities, degrade another one-third by jamming, and leave the remaining one-third open for surveillance/intelligence-gathering purposes.

Signals Intelligence (SIGINT): SIGINT actually has two major elements—communications intelligence (COMINT) and electronic intelligence (ELINT), the latter producing technical data on U.S. emitters. From COMINT, threat forces perform traffic analysis to determine force structure, composition, condition and intentions. In the above scenario, when green team's firing grid was passed in the clear, it was intercepted and passed to artillery planners for targeting. Such a fact is quite possible.

As aviators we must constantly be aware that our radio transmissions are being monitored. Further, we should be aware of the several simple defensive tactics to defeat an enemy's SIGINT operations:

- Operate FM radio in secure

voice communication mode.

- Use correct communications procedures.
- Limit transmissions to only those essential; use minimum transmission time, figure 1 below.
- Use CEOI (Communications and Electronics Operating Instructions)/brevity codes, when applicable.
- Use low power, if possible.

Direction Finding (DF) Operations: Another important part of REC, DF allows an adversary to determine an emitting antenna location (such as blue team's radio antennas in figure 2). He does this by using special equipment which tells him the direction of the antenna from the DF equipment. Normally, three separate locations (and therefore three azimuths) are necessary to "fix" an antenna. By map-plotting the locations of the DF sites and azimuths, a triangle normally will be formed, the area of which would contain the emitter. Obviously, the more accurate the azimuths, the smaller the triangle, and the more accurate the fix.

DF operations serve a multitude of intelligence purposes to include:

- Location of transmitters.
- Intelligence data for planning future operations.
- Planning data for jamming operations.
- Targeting data for suppressive fires.

In the overall context of REC the last two points are most significant; they form the basis for disruption/destruction of our CCC capability.

Again, there are very simple countermeasures against DF. In addition, to the above countermeasures to SIGINT operations, we should also:

- Relocate positions frequently (this could have saved blue team).
- Remote antennas, if possible.
- Mask antennas and beacons.
- Never refer to your location with ground reference points.

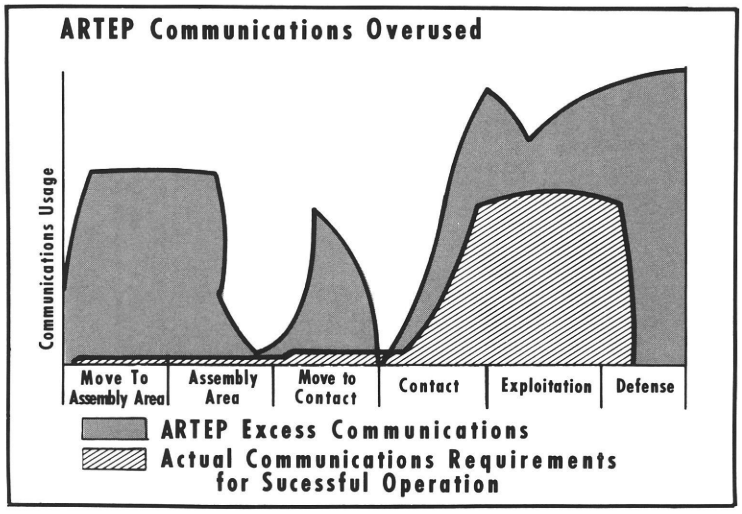
Jamming: As previously stated the Soviets would hope to degrade one-third of our CCC capability by jamming. There are basically three ways in which we could be jammed — *barrage, spot and sweep.*

Barrage jamming is that which is done across a broad frequency band. As such, it covers several frequencies, to include their own, with minimum power.

Spot jamming, on the other hand, covers a very narrow frequency with maximum power. The uses and advantages of each type are obvious.

Sweep jamming is a combination of the two in that it rapidly changes frequencies within a wide band. Thus, maximum power is concentrated on a single frequency for a brief period, and a wide frequency band is covered.

Figure 1



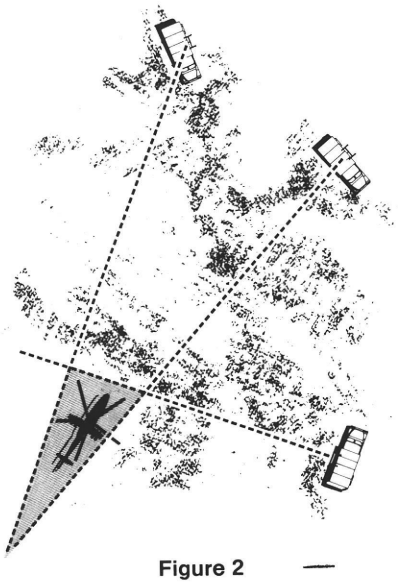


Figure 2

If you determine that you are being jammed, there are set procedures to follow:

- Keep operating without letting the enemy know he is being effective.
- Mask your antenna, if possible.
- Return your radio to a frequency slightly off the main frequency.
- Switch to High Power, if available.
- Use other radios.
- Change to alternate frequency, only as a last resort.

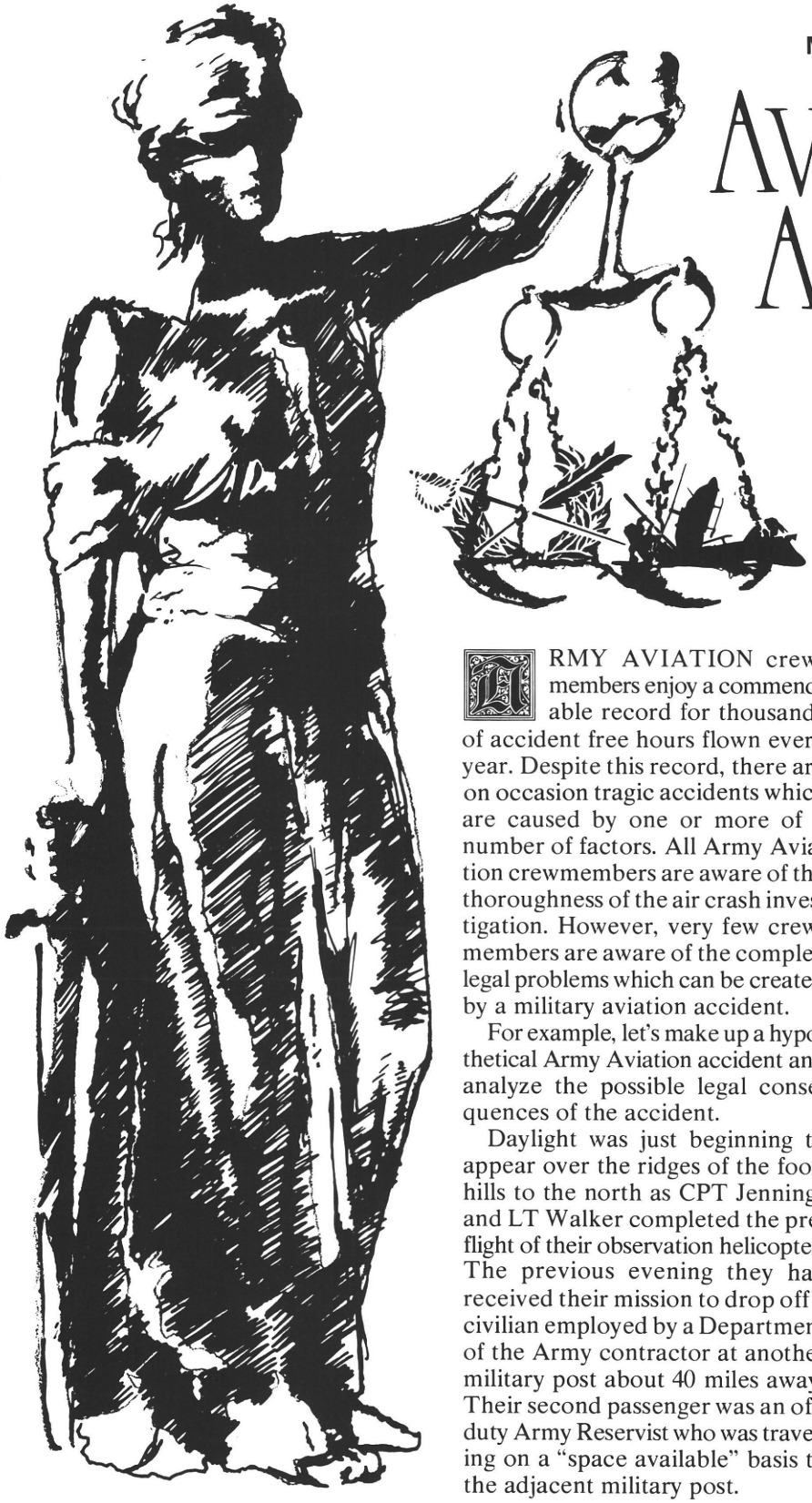
We must all be familiar with the above concept and countermeasures. Radioelectronic combat certainly will be used by the Soviets in all combat situations. It is part of their basic doctrine to try to disrupt and destroy our control elements. Most important then, we must train to be effective against REC. Failing to do this could result in the situation intially depicted in this article—and the loss of the battle.

Questions or comments concerning this article should be addressed to Threat Branch, Directorate of Combat Developments, ATTN: ATZQ-D-CT, Ft. Rucker, AL 36362; or AUTOVON 558-5671/3506.

Major David E. Prewitt

AVIATION ACCIDENT LAW

The Legal Anatomy of a Military Air Crash



ARMY AVIATION crewmembers enjoy a commendable record for thousands of accident free hours flown every year. Despite this record, there are on occasion tragic accidents which are caused by one or more of a number of factors. All Army Aviation crewmembers are aware of the thoroughness of the air crash investigation. However, very few crewmembers are aware of the complex legal problems which can be created by a military aviation accident.

For example, let's make up a hypothetical Army Aviation accident and analyze the possible legal consequences of the accident.

Daylight was just beginning to appear over the ridges of the foothills to the north as CPT Jennings and LT Walker completed the preflight of their observation helicopter. The previous evening they had received their mission to drop off a civilian employed by a Department of the Army contractor at another military post about 40 miles away. Their second passenger was an off-duty Army Reservist who was traveling on a "space available" basis to the adjacent military post.

When CPT Jennings and LT Walker arrived at the airfield the assigned crewchief had advised them that the helicopter had just come out of a periodic inspection the evening before and was in an excellent mechanical condition. Their preflight failed to reveal any discrepancies which might affect airworthiness. About 10 minutes after the completion of the preflight both the civilian and the Army Reservist arrived at the airfield and boarded the helicopter. The mission took off on schedule.

The flight proceeded en route uneventfully, and in about 30 minutes CPT Jennings and LT Walker had the heliport at the destination military post in sight. Contact was made with the tower, and they were cleared for a landing. They began their descent from 1,000 feet above ground level (AGL) 2 miles out, when the aircraft suddenly went into a high rate of descent and crashed into an unoccupied off-post trailer home of an Army master sergeant. All occupants received fatal injuries, and the trailer home was demolished.

Shortly after the crash an accident

investigation team was dispatched to the site. After a thorough investigation the accident board determined that the crash had been caused by a fatigue fracture in a blade retention strap. Further, the board found that the maintenance crew had performed an inadequate periodic inspection. Had the inspection been properly performed, the defect should have been discovered and the accident prevented. Based on these facts, what are some of the potential legal rights of the surviving families of CPT Jennings, LT Walker, the civilian employee of the DA contractor and the off-duty Army Reservist, as well as the Army master sergeant who owned the trailer home?

The civilian employee of the DA contractor might have a cause of action against the United States for the failure of the maintenance crew to conduct a proper periodic inspection. The Federal Tort Claims Act permits the United States to be sued under certain circumstances for the negligence or wrongful acts of Government employees acting within their official duties.[1] Thus a non-government employed passenger in a military aircraft can make a recovery against the Government if it is proven that his* injuries or death was caused, at least in part, by the fault of employees or agents of the military.[2]

On the other hand, the survivors of the military flight crew may not bring an action against the United States under the Federal Tort Act for the negligence or wrongful acts of service personnel or civilian personnel of the Government when the injuries to the serviceman arose out of an activity incident to his military service.[3] The reason servicemen are prohibited from recovering against the Government is because the serviceman or his survivors will be compensated by statutory military benefits and because of the special relationship between the Soldier and his superiors which necessitates a degree of military discipline.

Generally, the only time military personnel are permitted to bring an action against the United States under the Federal Tort Claims Act is when they are injured or killed by careless or wrongful acts of Government employees at the time when the injured serviceman is on furlough or private business off the military reservation and away from military control.[4] In other words, the duty status of the injured serviceman controls. This means that the Army master sergeant may be permitted to bring a suit under the Federal Tort Claims Act for the property damages sustained to his off-post trailer home, since the use of his property was not incident to his military service.[5] However, since both CPT Jennings and LT Walker were in a duty status at the time of the accident, their survivors can make no claim against the United States for the improper inspection by the maintenance crew.

The difficult question is whether the off-duty Army Reservist may bring an action against the United States under the Federal Tort Claims Act. It has been determiend that duty status members of the Reserve and National Guard, who receive injuries arising out of an activity incident to their Federal military service, may not bring an action under the Federal Tort Claims Act.[6] Accordingly, the question is whether the off-duty Army Reservist traveling on a "space available" basis is engaged in an activity incident to his military service. This issue was resolved in the case of *Harreman v. United States*, 476 F 2nd 234 (7th Cir. 1973) wherein the court determined that a National Guardsman on a nonduty status riding "space available" in a military aircraft for a purely social purpose was engaged in an activity incident to his military service, and thus was barred from recovering against the United,States under the Federal Tort Claims Act. The court reasoned that the National Guardsman could not have been aboard the aircraft except for his military status, and while onboard the aircraft he was subject to military discipline.

The other possible avenue of recovery for all parties might be an action against the manufacturer of the blade retention strap for injuries or damages caused by either an inadequate design of the component or an actual defect in the manufacture or assembly of the component. Under a theory of law known as Strict Liability in Tort, which has been adopted by a majority of the states, one who sells a product in a defective condition which is unreasonably dangerous to the user

*The masculine pronoun is intended to reflect both genders.

1. 28 USC § 2671-2680.

2. In the case of *O'Conner v. U.S.* 251 F2d (2nd Cir. 1958) a civilian technician employed by a Government contractor was killed while riding as a passenger in a military aircraft. A recovery was made against the Government for the negligence of the aircrew.

3. *Feres v. U.S.* 340 U.S. 135 (1950). This doctrine was applied in a case where Marines on the way to Vietnam were killed in the crash of an Air Force aircraft. Suit was brought on the basis that the negligence of FAA controllers caused the accident. Recovery was denied on the basis of the duty status of the Marines. *U.S. v. Lee*, 400 F2d 558 (9th Cir. 1968).

4. *U.S. v. Brown* 348 U.S. 110 (1954).

5. Recovery has been permitted against the Government when a military aircraft struck the off-post house of an off-duty serviceman *Snyder v. U.S.* 350 U.S. 906 (1955). However, when a military aircraft crashed into military housing on-post, no recovery was permitted by the serviceman. *Orken v. U.S.* 239 F2d 850 (6th Cir. 1956).

6. In *Layne v. U.S.* 295 F2d 433 (7th Cir. 1961), a member of the National Guard was killed while undergoing an additional flight training period. Suit was brought contending that the accident was caused by the negligence of civilian employees of the Government operating the control tower. It was held that there could be no recovery against the Government because of the duty status of the pilot.

of the product is liable to the user of the product who was injured by the product if he is engaged in the business of selling the product and the product reaches the user without substantial change in the condition in which it is sold.[7] Accordingly, if it can be established in the hypothetical case that the fatigue fracture in the blade retention strap was either an inadequate manufacturing design or was caused by an actual defect in the component itself, a cause of action might be stated against the manufacturer. The mere fact that the aircraft crewmembers and the Army Reservist were engaged in an activity incident to their military service at the time of the accident would have no effect on such a claim against the manufacturer. Indeed, similar type claims brought on behalf of servicemen against product manufacturers have been recognized by the courts.[8]

Although at first glance, it might appear that the best avenue for the survivors of all the occupants would be to make a claim against the manufacturer, the issue is not so simple. As is the case of most military aircraft in service, there probably would have been a substantial amount of maintenance and a number of overhauls between the time of manufacture and the accident. Accordingly, it is often very difficult to establish that a defect which might have existed at the time of the accident was a defect which existed at the time of the original manufacture. Naturally, if there is a defect in a brand new aircraft, it is less difficult to prove that the defect existed in the product at the time of manufacture, and some claims have succeeded against the manufacturer under those circumstances.[9] However, in the case of an old aircraft which has undergone considerable maintenance and several overhauls, the courts have not been as favorable to such claims.[10] Indeed, in that situation, a compelling amount of evidence needs to be assembled to prove that a manufacturing defect caused the accident. This usually requires a very extensive and costly pretrial discovery process including the retaining of expensive expert assistance with no guarantee of favorable results.

If all of the interested parties were to bring legal actions against the manufacturer of the blade retention strap for its inadequate design or defective manufacture, the manufacturer would not be permitted to join the United States into those legal actions brought by the survivors of the military aircrew or the Army Reservist. The reasoning is that since the serviceman was injured in an activity incident to his military service and could not have brought a direct action against the United States, the manufacturer should not be permitted to do indirectly what could not have been done directly on behalf of the serviceman.[11] However, there is no such prohibition to joining the United States into the other suits.

As can be seen, the legal analysis of a military air crash often can be far more complex than the actual postcrash investigation. From the point of view of the serviceman, the question is whether, at the time of the accident, he was engaged in an activity incident to his military service. If the serviceman is off-post, off-duty and not subject to military discipline, then he may bring an action against the United States under the Federal Tort Claims Act.

If a military accident is caused by a defect in the aircraft itself, then an analysis must be made whether the defect existed in the aircraft at the time of the original manufacture, taking into consideration the maintenance and overhaul history of the aircraft. In the usual situation when an accident occurs with an aircraft which has had a considerable service history, proof of a defectively manufactured component is extremely difficult and requires the best expertise available. There is never a guarantee of successful results in the complex field of aviation accident law.

7. 402A Restatement of Torts, Second.

8. In the case of *Whittaker v. Harvell-Kilgore* 418 F2d 1010 (5th Cir. 1969) a hand grenade used by a serviceman exploded prematurely, and an action was permitted against the manufacturer of the grenade and fuse.

9. *North American v. Hughes* 247, F2d 517 (9th Cir. 1957) (a military pilot was flying a new aircraft from the manufacturer's facility when it suddenly exploded.) *Bell v. Anderson,* 12 Avi 17, 401 (Tex 1972) (Crash of a new helicopter caused by mast bumping initiated by failure of the wire drive in the servo mechanism).

10. For example, in the case of *Ulmer v. Hartford Accident,* 380 F2d 549 (5th Cir. 1967) a helicopter crash occurred with a 6-year-old helicopter owned and maintained by the military. It had undergone several overhauls over the intervening years. The court would not permit a suit to go forward against the manufacturer due to lack of specific proof of a manufacturing defect.

11. In the case of *Stencil Areo Eng Co. v. U.S.* 431 US 666 (1977). A National Guard pilot sustained injuries due to the malfunction of an ejection seat manufactured by Stencil. Stencil attempted to join the United States into the suit, and the Court determined that the *Feres* doctrine prevented the joinder.

Major David E. Prewitt is a Philadelphia lawyer and serves as a legal officer in the 358th Civil Affairs Brigade of the U.S. Army Reserves. He is a member of the American, Florida, Kentucky, Pennsylvania and Lawyer-Pilots Bar Associations and is a Senior Army Aviator

Continued from page 18

I CAN'T HEAR YOU

is no known cure for the noise induced hearing loss in the inner ear."

She went on to explain that such a loss raises the degree of loudness at which a person first begins to hear some frequencies. She said decibels (dB) are the measurement of sound pressure, and the average person can endure up to 85 dB without fear of inner ear injury.

Some examples of the hearing threshold are: rustling leaves, 20 dB; a whisper, 34 dB; and conversation, 60 dB. On the other hand, an M-16 rifle sound measures 156 dB; a CH-47 Chinook helicopter, 110 dB; and a caterpillar grader, 107 dB, all of which are too much noise for the ear.

CPT Liff explained about temporary and permanent loss of hearing. She said if a person is exposed to a loud noise for a short period of time, like a band or loud music at a disco, then he or she may experience a temporary loss of hearing. About 16 hours after the exposure the hearing should come back. A person loses his hearing gradually after long exposures or repeated short exposures.

She said there are no outward signs. There is no pain, and each ear is normal in appearance. The early symptoms are ringing in the ear and slight muffling of sounds. Noise induced hearing loss is progressive and permanent; but it is also preventable if hearing protectors, such as earmuffs and earplugs, are worn.

The plugs are effective for most noise levels if they are medically fitted and properly inserted, CPT Liff said. A guide for proper insertion, she noted, is that the wearer will hear his or her voice as muffled or low toned, like talking in a barrel.

The audiologist cautioned that earplugs must be kept clean with soap and water and be dry before they are stored in their case.

CPT Liff said the Army has a hearing evaluation program for people who work in high intensity noise areas such as an engineer battalion and in aviation related jobs.

But there are people like Speak-up Johnson who discover they do have a hearing problem, and they still won't wear any protection.

Some of the excuses the audiologist said she hears from patients are: hearing protectors make it harder to hear instructions and warning signals; the protectors cut down noise fom the engines they work on, so how would they tell if the engine is running properly; and after years of not wearing anything, why start wearing protectors now?

As answers to those excuses, CPT Liff said protectors cut down distracting noise so it usually is easier to hear speech and warning signals. A person can adjust to the change of a familiar sound and then be guided by a different characteristic of a new sound. If used properly, hearing protectors will prevent a noise induced hearing problem; but if it is too late for that, they will help to save any hearing ability which remains.

Speak-up did go to the audiologist to get a hearing check. It was determined that he needed a hearing aid, and he was referred to the Walter Reed Audiology and Speech Center in Washington, DC.

He wasn't too thrilled at first about wearing a hearing aid. But he overcame his vanity and reported to the center. There he received an 8-day rehabilitation class which included a complete examination, information about what caused his hearing loss, evaluation and fitting, and instruction on how to listen again.

As long as Speak-up keeps his batteries running, he can hear a great deal better. Now he's taking the time to tell other young Soldiers about protecting their ears from noise so their hearing won't depend on such means.

USE HEARING PROTECTORS TODAY; AVOID A HEARING AID TOMORROW!

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, 4300 Goodfellow Blvd., St. Louis, MO 63120

Key Personnel

The DARCOM Project Office for Aviation Life Support Equipment (DRCPO-ALSE) is a part of the U.S. Army Troop Support and Aviation Materiel Readiness Command (TSARCOM) located at 4300 Goodfellow Blvd., St. Louis, MO 63120. The ALSE office is composed of eight people who are responsible for coordinating efforts, directing actions, solving problems and answering questions pertaining to ALSE for the entire U.S. Army Aviation community worldwide. It's a big job and we thought it would be a good idea to let you know "who's who" in this office and what their responsibilities are.

Mr. A. B. C. Davis Jr. is the project officer and he is responsible for the overall operation of the office and representing the Army at ALSE meetings/conferences with the other services.

CPT George Ishee is a program management specialist and the deputy project officer and assists Mr. Davis.

Mr. Rainy Bell is a logistics management specialist and is action officer for the aircrew environmental subsystem (aircrew protective armor; aircraft seats, cushions and belts; crew restraints and harnesses; environmental controls; flash protective equipment; ejection seats; accessories and equipment, such as sunglasses, goggles, headsets and ear protectors).

Mr. Tommy Vaughn is a logistics management specialist and is action officer for the aircrew escape/descent subsystem (oxygen systems and masks; personnel parachutes and lowering devices; crash rescue axes and equipment; CBR and smoke masks; aircrew protective clothing and helmet; crashworthy fuel systems).

Mr. Edward Daughety is a logistics management specialist and is action officer for the Survival/Recovery Subsystem (survival radios; signal devices and flares; floatation equipment; survival kits and vests; food packets, first aid kits; survival weapons).

Mr. John Chubway is our technical publications writer/editor and is responsible for PEARL and TSARCOM Materiel Readiness Information Bulletin articles as well as ALSE pamphlets, newsletters, SOPs, inspection checklists and changes to ALSE publications.

Miss Christine Elgert is our secretary and is responsible for general secretarial duties.

Miss Doris Slawson is our clerk/typist and is responsible for general clerical duties.

When you have the occasion to contact this office, either telephonically (AUTOVON 693-3307/3308) or in writing (see first paragraph), please try to direct your questions to the individual responsible for your area of concern. This will help both to expedite answering your questions and ensure that you communicate with the individual most knowledgeable in that particular area.

Two-Piece Or Not Two-Piece

That is the question. Believe it or not, we are still receiving some inquiries from the field as to whether or not the two-piece flight suit has been replaced by the CWU-27/P one-piece fire protective flyers coverall. In order to assure you that it has, we furnish the following information:

- The one-piece flight suit is recorded as standard "A" for the Army and is the *only* flight suit authorized for issue to personnel on flying status. This item is listed as such in CTA 50-900 and SB 700-20 under LIN F32055. The only factor which should preclude this item from being issued and used in lieu of the two-piece flight suit is a lack of availability at the local level.
- The two-piece flight suit is no longer authorized for issue to flying personnel. CTA 50-900 authorizes this item (composed of shirt, LIN T03002 and trousers, LIN X35980) for issue only to combat vehicle crewmembers and gunners. In addition, SB 700-20 has deleted the "flyers" nomenclature for the two-piece suit and now lists the component items as shirt, hot

Anne Arsenault

Photo by Dave Polewski

weather and trousers, hot weather, respectively.

Questions & Answers

With the new issue of Nomex flight jackets replacing the older leather flight jackets in the Coast Guard and Navy, a new problem area may have been introduced. According to many "old timers" the old rayon flight jackets which seem to be almost identical to the new Nomex ones, except for material used, were a very bad electrostatic hazard. My question is just how dangerous are the new Nomex jackets, especially in the cold and dry winter months of Alaska? Should any special precautions be taken with them, as around refueling operations? (LCDR V.P. Primeaux, U.S. Coast Guard Air Station, Kodiak, AK)

According to the U.S. Army Natick Research and Development Command (NARADCOM), a potential electrostatic problem could exist with Nomex clothing, especially in a cold and dry environment such as experienced in Alaska. However, NARADCOM further stated that tests conducted indicate that no real hazard exists and that electrostatic problems can be minimized by ensuring that the proper clothing ensemble (leather boots or safety shoes, Nomex clothing and gloves) is worn and kept intact during refueling operations. As long as no item of apparel, such as the jacket, is removed during refueling, no electrostatic hazard should exist. NARADCOM also recommended the use of a commercial-type fabric softener during laundering of Nomex items to further reduce any buildup of static electricity. In addition, if concern about a possible hazard still exists, NARADCOM recommended the use of leg stats. These items are worn over the boots to dissipate any electrostatic buildup and do not in any way hamper normal operations. Leg stats are available "off-line" from the USAF, NSN 4240-00-941-1342, source of supply S9G, and cost $18.50 per pair.

What is the criteria for repair of the one-piece flight suit? What is the stock number for the thread used for repair? What is the stock number for all the zippers? (CPT James Klina, Hq 9th Inf Div, Ft. Lewis, WA)

The Army has not yet published a TM specifically on the maintenance of the CWU-27/P one-piece flight suit. However, USAF TO 14P3-1-112 (Maintenance Instructions, Nomex Flight Gear, Coveralls, Type CWU-27/P and CWU-28/P and Gloves, Type GS/FRP-2) gives you all the information needed for inspection, care and repair of Nomex. Section IV of this reference tells you that repair of the coveralls is restricted to stitching or patching open seams, holes or tears (not in excess of four inches), replacement of hook and pile fasteners and replacement of slide fasteners. The thread specified is MIL-T-83193, FSN 8310-405-2252 (color-sage green). Table 4-2 lists all the NSNs for the slide fasteners, depending on the size of the individual garment.

What is the correct adhesive to use for installing a new liner in the SPH-4 helmet? I ordered adhesive under the NSN listed in the TM and got a two-part epoxy, which does not appear to be the same as what was used in the original installation. (SGM Luther Baethge, Aviation Advisor, Stewart USAR ASF, Newburgh, NY)

Para 4-8 of TM 10-8415-206-13 tells you to install the new liner using synthetic adhesive, FSN 8040-753-4800. When ordered (Source of Supply GO, $.50 per kit) this does in fact come as a two-part epoxy and bears little resemblance to what was used at the factory for the original installation of the liner. However, this *is* the correct adhesive to use and each kit contains a sufficient amount to install one liner in one helmet. As an alternate, you might try NSN 8040-00-754-2685, available from GO at a cost of $5.60 per gallon. This is what the USAF uses to install liners in their helmets. (Thanks to SSG Gerald Johnson, USAARL, Ft. Rucker, AL for this info.)

The breakout knife for the Cobra was removed by an MWO. Can we reinstall this item and does it require another MWO to do so? (CW2 Wayne Morgan, C Trp, 3d Sqdn, 5th Cav, Ft. Lewis, WA)

Information provided by the Engineering Section, Cobra Project Manager's Office, TSARCOM, indicates that the breakout knife was removed by MWO in conjunction with the installation of the explosive canopy system. However due to many requests from the field, that office is allowing reinstallation of the breakout knife at the discretion of the unit commander. Neither recession of the original MWO nor issuance of a new one is necessary.

Buried Alive

During a routine 100-hour airplane inspection an ELT battery was tested, found to be without vital signs, and discarded in a *hangar trash can.* The next day someone spotted smoke in the hangar and discovered fire smoldering among oily rags in the waste can. An empty metal drink container had shorted the apparently dead battery's terminals, causing overheating and a potential hazard to some pretty expensive airplanes. Batteries of any kind should be discarded in a special plastic container kept free of metal objects that can short even a partially discharged battery. (Reprinted from ***FAA General Aviation News,*** Jan-Feb 1980, published by the Federal Aviation Administration.)

These "words to the wise" also can be of consequence to those of us working in the ALSE field. For example, the batteries used in our survival radios could cause a similar problem if not disposed of properly. We recommend keeping the original boxes and packing material and using them to turn in unserviceable batteries to PDO for mercury reclamation IAW the pertinent TM and local PDO instructions.

Where Do You Stand In Army Aviation?

Major William B. Leonard III
Chief, Aviation Plans/ Programs Branch
U.S. Army Military Personnel Center
Alexandria, VA

IN THE PAST 5 or 6 years significant changes have occurred in the management of Army aviators. Consider them!

• **1974**—*The Officer Personnel Management System (OPMS) is adopted—Aviation excluded as a specialty and defined as a skill that relates to certain specialty areas; the "ground duty" and "branch qualification" requirements continue.*

• **1974**—*Congress passes the Aviation Career Incentive Act (ACIA) linking flight pay to a career incentive system (versus the old hazardous duty concept) and indirectly stipulating that aviators were to be assigned to operational flying positions a minimum of 50 percent of the time.*

• **1975**—*Personnel managers realize the near impossibility of meeting the provisions of the ACIA by requiring aviators to have two specialties plus aviation. Specialty code (SC) 15 (Aviation), added to the OPMS specialty list as an advanced entry specialty, authorized for award at the officer's eighth year of service. Shortly thereafter it is approved for designation as soon as an officer completed flight training. Again, ground duty and branch qualification requirements continue.*

• **1979**—*SC 15 becomes a combat arms entry specialty under OPMS. Ground duty and branch requirements eliminated. Professional development oriented toward an aviation career field and training toward the role of aviation as a full member of the combined arms team. MILPERCEN charged with the responsibility to implement the new career pattern.*

Although the latest developments in the aviation program have been put into practice by both personnel planners and assigners, the various regulation, circular and pamphlet changes are just beginning to be completed and entered into the system. Even though we have tried to keep everyone up to date through articles, messages, field trips and individual conversation, we know that you would like to see the "official word" in print. It is on the way! DA PAM 600-3, "Officer Professional Development and Utilization," is in final rewrite. AR 600-106 and 600-107 are being combined to incorporate the ACIA and new aviation service policies that will replace the current "flight status" system; that regulation is in final draft and close to going to the printer. The implementing circular for change 9 to AR 611-101 is out with information on aviation position reclassifications. A new AR 570-1 containing the operational flying position criteria is also soon to be published. Others will follow as progress continues in ironing out the wrinkles of a new system.

While all of these eventually will answer many questions, we need to ensure everyone understands the rules of our new ballgame. It is exciting to know that there are people out there willing to provide suggestions on how to explain those rules. Major Don Cumbie, who works in the Directorate of Training Developments at the Army Aviation Center at Ft. Rucker, AL, designed the flow chart depicted on page 41. This chart is an excellent presentation of the requirements to be met by all Army

aviators depending on their "gate" status, assignment and pilot status code. If you are wondering what you have to do to meet the provisions of the ACIA and our new regulation, this is the place to begin.

Here are some guidelines in reading the chart:

(a) Have you reached your 12- or 18-year gate? The 12-year gate occurs exactly 12 years following your aviation service entry date (ASED) no matter what your status was during that time. This date can be obtained from your leave and earnings statement (LES) (Block 45), your Officer Record Brief or DA Circular 600-16. The 18-year gate occurs exactly 18 years from your ASED.

(b) Did you pass your 12- or 18-year gate? All aviators are notified on their LES whether they passed or failed their gates. To pass the 12-year gate, you must accumulate at least 72 months of operational flying duty credit (TOFDC) within 12 years following your ASED. To pass the 18-year gate, you must, within 18 years following your ASED, accumulate at least 108 months of TOFDC to qualify for continuous incentive pay through 22 years of *officer service.* To remain eligible through 25 years you must accumulate at least 132 months during that same period. For those of you who pass the 18-year gate, by adding 22 or 25 years to the date in block 46 on your LES, you will know when your continuous pay will terminate.

(c) Are you in an operational flying position? If your position is coded on the MTOE/MTDA with an aviation specialty and does not have an "IX" in the ASI or LIC column, you are in an operational position. However, a good doublecheck is to compare your position requirements against those listed in AR 570-1. Follow the chart until you arrive at the point that describes your particular situation. Then refer to the appropriate "action" block that describes your responsibilities as an Army aviator. Remember, even if you don't have an aviation specialty code, you are still responsible for the actions applicable to your "gate" status and assignment. So long as you have an active pilot status code (PSC=1), which means you are not medically (PSC=2) or nonmedically disqualified for aviation service, this chart applies to you. We hope it will be beneficial in helping to increase individual understanding of our aviation program.

Postscript: This will be my last OPMS Corner as chief of the Aviation Plans/Programs Branch since I will be leaving for Korea next month. LTC Dave Carothers from ODCSPER will be taking my place and should be on board very soon.

Editor's note: In behalf of our readers, and our staff, we thank you Major Leonard for the outstanding contributions you have made to this column during your tour at MILPERCEN.

ACTION 1

Do not fly; Take annual flight physical*; Turn in flight records to appropriate custodian (in accordance with AR 95-1); Draw continuous Aviation Career Incentive Pay (ACIP); Verify ASED, TFOS, TOFDC entries on LES, ORB and DA Circular 600-16**.

ACTION 2

Meet prescribed aircrew training manual (ATM) flying requirements; Take annual flight physical; Take annual written examination*; Turn in flight records to appropriate custodian (in accordance with AR 95-1); Draw continuous ACIP; Verify ASED, TFOS, TOFDC entries on LES, ORB an DA Circular 600-16**.

ACTION 3

Meet prescribed aircrew training manual (ATM) flying requirements; Take annual flight physical; Take annual written examination*; Turn in flight records to appropriate custodian (in accordance with AR 95-1); Draw monthly ACIP instead of continuous (pay rate is the same).

ACTION 4

Ensure MILPO forwards authorization for monthly ACIP to your finance office.

ACTION 5

Do not fly; Do not draw continuous or monthly ACIP; Take annual flight physical*; Turn in flight records to appropriate custodian (in accordance with AR 95-1); Verify ASED, TFOS, TOFDC entries on LES, ORB and DA Circular 600-16**.

*Physicals and written examinations must be completed within 90 days preceding the last day of the aviator's birth month.

**ASED=Aviation Service Entry Date
TFOS=Total Federal Officer Service (expressed as a date)
TOFDC=Total Operational Flying Duty Credit (expressed as months)
LES=Leave and Earning Statement
ORB=Officer Record Brief

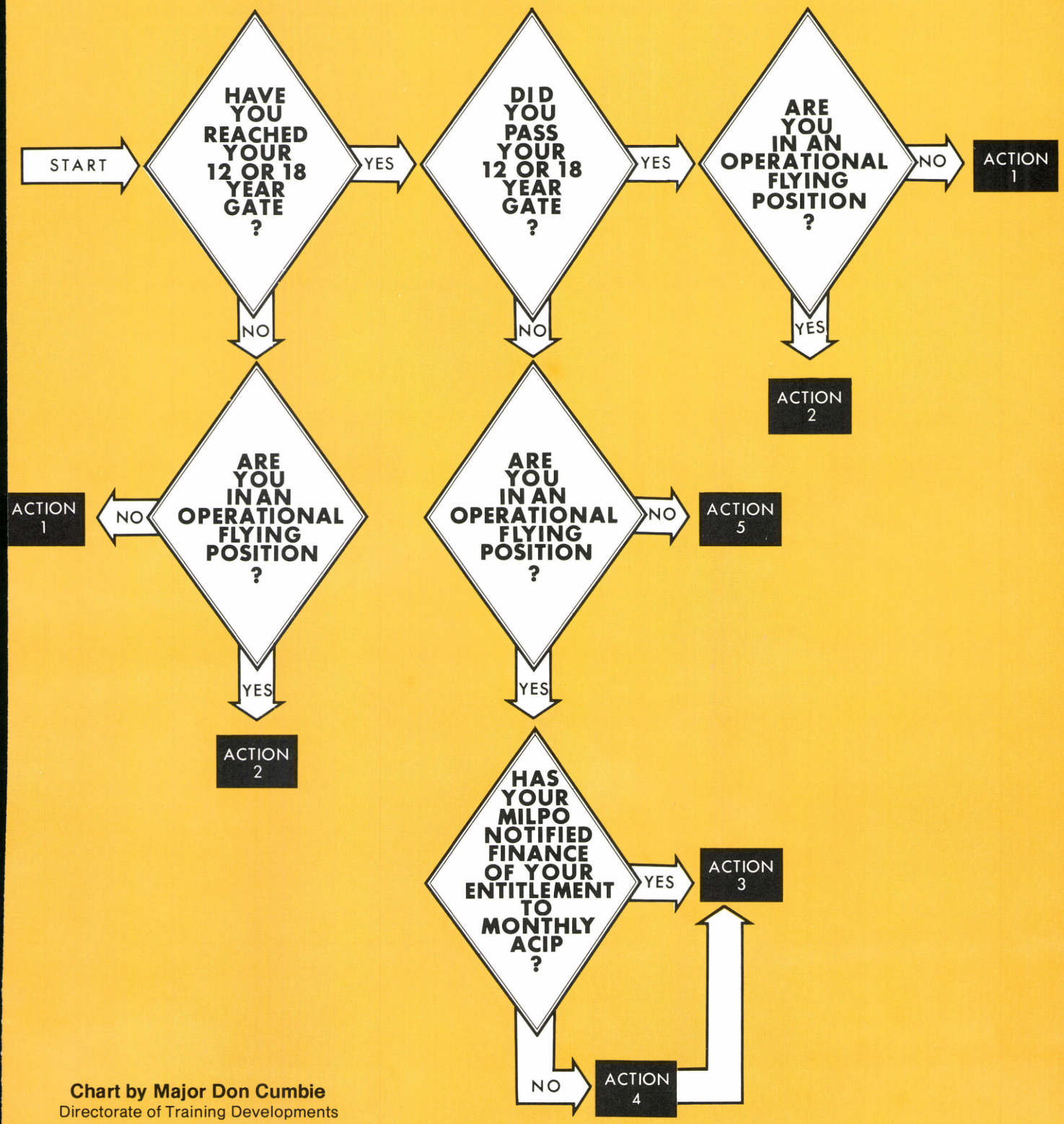


Chart by Major Don Cumbie
Directorate of Training Developments
U.S. Army Aviation Center
Fort Rucker, AL

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

Analysis of Army Aviation Accidents FY 79

THE DIRECTORATE of Evaluation and Standardization has completed its analysis of fiscal year (FY) 79 Army Aviation accidents. In an effort to zero in on deficiencies within the flight standardization program, accidents were categorized as being pilot (P) related, instructor pilot (IP) related or other.

There were 75 Army aircraft accidents and 18 fatalities in FY 79. The accident rate was 5.2 per 100,000 flying hours, the lowest in the history of Army Aviation. Accidents and fatalities were classified as shown in figure 1. As usual, the majority of aviation accidents have been the result of actions of the pilot or the IP. During FY 79 their actions accounted for 73 percent of all aviation accidents.

Figure 2 contains a list of the frequency of accidents and fatalities by aircraft type.

Pilot Related

There were 31 pilot-related accidents which produced 10 fatalities. This represents 41 percent of all Army aircraft accidents and 56 percent of all fatalities.

Figure 1

	Accidents	Percent Of Total	Fatalities	Percent Of Total
P related	31	41%	10	56%
IP related	24	32%	2	11%
Other	23	31%	6	33%
Total(note)	78	104%	18	100%

NOTE: Three accidents have been attributed to multiple causes (pilot related and other). This affects the total accident (column 1) and percent of accident (column 2) figures, however, it does not affect the fatality figures.

These accidents are preventable! Given the proper mix of supervision, training, preplanning and good judgment, these accidents would not have occurred.

Here are some examples of the more glaring pilot-related accidents:

- Five collisions with the ground including one due to IMC. A little more training and preplanning sure would have helped there.
- Two aviators, in two separate accidents, tangled with parachutes (one flare and one cargo parachute) on the ground. These accidents involved an OH-58 and a CH-47. Both aircraft were destroyed; fortunately, no one was seriously injured.
- Then, there was the sloppy-slope operation that was beyond the aviator's capability (not his mission, either) which destroyed another aircraft, but luckily left the crew intact.

There were four wire strikes and two tree strikes by pilots operating in the terrain flight environment. These accidents resulted in five fatalities. The four wire strikes and two tree strikes account for only 8 percent of Army aircraft accidents, yet they were responsible for 28 percent of the fatalities.

It appears that the efforts of the aviation accident prevention program to play the spotlight on the danger of indiscriminate and unauthorized terrain flight is finally taking effect. Of the six accidents that occurred in the terrain flight mode only one was the result of unauthorized low level flight. Poor judgment and deviation from prescribed methods for conducting terrain flight were factors in the other five accidents.

Flying experience and age of aviators involved in pilot-related accidents:

- 2,438.5 hours—average flight time.
- 31.7 years—average age.

Instructor Pilot Related

There were 24 accidents and 2 fatalities involving instructor pilots. This represents 32 percent of all Army aircraft accidents and 11 percent of all fatalities.

The majority of the IP-related accidents were due to hard landings. These accidents included 13 improperly performed autorotations (54 percent of all IP accidents). The average for IP-related autorotational mishaps over the previous 5 years was 69 percent. While FY 79 produced a significant reduction in the percentage of IP accidents caused by improperly executed autorotations, this maneuver is responsible for the majority of IP-related accidents.

Other IP-related accidents included three improperly performed nap-of-the-earth (NOE) decelerations. This is a relatively new, but increasing source of aviation accidents.

Flying experience and age of aviators involved in IP-related accidents:

- 3,624 hours—average flight time.
- 34.6 years—average age.

Other Accidents

There were 23 "other" accidents and 6 fatalities. The majority were due to engine and materiel failures.

Engine failures were responsible for 11 accidents—9 major and 2 minor. There were no fatalities caused by engine-failure accidents.

Materiel failures were responsible for six accidents—five major and one minor. There were six fatalities. There were two tail rotor separations; one main rotor separation (four fatalities); two other materiel failures (two fatalities); and one nose gear failure.

A variety of causes were responsible for six "other" accidents.

Conclusions

In general, the Army Aviation accident prevention program is making progress. FY 79 generated the lowest accident rate in the history of Army Aviation. There was at least one surprise revealed by the data.

Figure 2

Aircraft	Accidents	Fatalities
Rotary Wing		
UH-1 (D/H&C/M)	32	7
T/AH-1 (G/S)	12	2
OH-58	12	
TH-55	7	
CH-47	5	3
CH-54	1	4
Total	69	16
Fixed Wing		
O/RV-1 (D/C)	3	2
U-21	1	
T-42	1	
C-7A	1	
Total	6	2

NOTE: Half of the fixed wing accidents and the two fixed wing fatalities occurred in O/RV-1 (D/C) series aircraft. The statistics could have been worse; one of these accidents was a mid-air collision involving two OV-1 aircraft. The OV-1s were in close formation so the crews could take photos of one another. The four occupants involved in the collision ejected successfully from both damaged and uncontrollable aircraft. Two other crewmembers of another OV-1 aircraft ejected successfully when their craft developed engine trouble. There were six successful ejections out of six attempts—a creditable record for the OV-1 ejection mechanism.

Army aviators have performed in a most creditable manner when confronted with emergency situations

Contrary to most prognoses, it has not been the young inexperienced aviator or IP who caused the majority of accidents. The average aviator involved in an accident was 32.5 years old and had 2,747.1 flying hours. The age and flying hour experience of five aviators was not available for this analysis. However, it is not unreasonable to assume that if the data were available, the resultant age and flying hour averages would not be altered significantly.

With the increased emphasis on terrain flight, pilot performance in this environment will continue to be an area of concern to the accident prevention program. Terrain flight accidents generally produce a disproportionate number of fatalities when compared to the number of mishaps.

The performance of IPs when conducting autorotations and NOE deceleration training is another area of concern. Accidents occurring as a result of improperly executed autorotations and NOE decelerations represent 67 percent of all IP related accidents!

Materiel failures, particularly engine failures, played a significant part in the aviation picture for FY 79. Army aviators have performed in a most creditable manner when confronted with emergency situations. For example, aviators were involved in 11 accidents caused by engine failure, yet these engine failures produced no fatalities. On the other hand, materiel failures that caused two accidents were responsible for six fatalities.

Recommendations

1. That commanders, aviation safety officers (ASOs) and IPs emphasize the importance of proper planning and performance when conducting terrain flight. A strong awareness of the risks of operating in this environment (especially in the night hawk and night vision goggle mode) is necessary in order to hold down mishaps while conducting this training. That supervisors continue to discourage the performance of indiscriminate, unauthorized, high speed, low level flight.

2. That commanders, ASOs and IPs emphasize strict compliance with the four conditions necessary for a successfully executed autorotation during training. The four conditions at 100 feet AGL (above ground level) are:

- Be in position to make the intended landing area.
- Have a normal rate of descent.
- Have the rotor "in the green."
- Have the proper airspeed.

3. That supervisors, ASOs and IPs emphasize the proper method of performing NOE decelerations. (Check your appropriate ATM and FLIGHTFAX, Volume 8, Number 8, 21 Nov 79).

4. That maintenance supervisors and personnel be reminded of the importance of their contribution to the aviation accident prevention program and emphasize the necessity for "by the book" performance.

Looking Ahead

Fiscal year 1980 should show the effects of the assimilation of many more younger and less experienced personnel into the aviation force. It appears that the age and flying hour experience level of those aviators involved in aircraft accidents will show a decline from FY 79.

The younger and less experienced personnel will be an increasing factor (in the near term) in the aviation accident record because:

- They constitute an ever-increasing number of the aviation force, while the complexities of mission, tactics and operational procedures are changing at an equally accelerated pace. The current emphasis on night hawk and night vision goggle training is an example of the increasing demands on the abilities of today's Army aviator.
- They are assuming an ever-increasing supervisory role, often with minimal basic aviation experience, and too often with insufficient supervisory experience.
- They are being integrated into the instructional force.

The performance of the instructor pilot force, one of the key members of the accident prevention team will not, however, be drastically different from past years. It is expected that about 3 of every 10 aviation accidents will be IP related. This ratio could be lowered if our IPs operated within their capabilities and within the parameters of the maneuvers as prescribed in the aircrew training manuals.

Recognizing the challenge that confronts the changing nature of Army Aviation, successful commanders must be alert to search out the best talent among their resources. One of their best managerial devices can be a safety conscious flight standardization program. It is the yardstick that they can apply to measure the performance of their personnel.

Supervisors at all levels (including those supervising the supervisors) must not tolerate nonstandard or unprofessional performance, if the aviation accident prevention program is to have a measure of success.

VIEWS FROM READERS

Editor:

I had an opportunity to read a letter recently sent to ***Army*** magazine in reference to 71P flight operations MOS. I would like to take this opportunity to expound on the subject and with the permission of SP4 Encarnacion sent it to the ***Aviation Digest*** (see next letter.)

I have been in MOS 71P for 20 years. I have seen the positions from E5 through E9 change so much that it makes you wonder if this really is a good career field. It seems that everyone is interested in downgrading the MTOE (Modification Table of Organization and Equipment) rank structure until the positions from E5 to E9 are very limited now to almost nonexistent.

What has prompted the downgrading of the MTOE? The aviation battalion S-3 (operations) NCO used to be an E8 position, with an E6, E5 and E4 authorized in the operations section. Now in most aviation battalion size units, this has been reduced to an E8 and one E4. This leaves the E8 being in charge of the training program to include the SQT training, etc., for the battalion and this in itself being a full time job, leaves little time for handling even the routine 'operations' aspects of the section, i.e., monitoring mission and aircraft utilization, flying hour programs, etc. The aviation company operations had an E7, E5 and two E4s. Now, they have in most aviation companies an E7, two E4s and two E3s.

With virtually no E5, E6 positions and very few E8/9 positions, where do these 71Ps go in the career progression? Almost all of the aviation company first sergeant positions are designated as 67Z50 positions. Why not some 71P50? The 71Ps have worked around aviation enough to be familiar with the problems that are encountered in the different sections, i.e., maintenance, POL, airfield service, etc., and are probably more familiar with the administrative type functions than the maintenance personnel. Now under the system, E8 93E MOSs (Meteorological Observer) are cross trained for grade progression to fill E9 71P positions. With so few E9 71P slots available, adding personnel from another field (completely unrelated), where can you hope to go in the career progression process?

No wonder that the Army is losing so many outstanding E4 personnel and senior NCOs in this valuable career field of flight operations. Your *above* average individuals, especially E4 personnel looking to the future, are either switching to other fields, or leaving the Army, as they feel that career progression in the 71P field is almost now nonexistent.

With the added emphasis on aviation in the Army today, we can ill afford to lose these personnel and still keep up with the ever changing, expanding situation. Revamping of the 71P field, from company level through Army level is needed if the 71P field is not to keep on degenerating to the point that it becomes nonexistent as a career field. What do we have to do to get commanders to start recognizing the situation they have created, and start doing something about it?

SFC William R. Hardy
Opns NCO, 352d Avn. Co.
APO Miami 34002

Editor:

During past and even recent conversations with DA personnel in the 71P flight operation branch the question has been asked "Why has the rank structure changed so drastically for E5 and E6 positions?" The answer: "Paperwork has been sent out to United States Army Forces Command and Training and Doctrine Command to notify their aviation units to upgrade the TOE positions. This word went out over a year ago, and as of yet, nothing seems to have been accomplished.

The current MTOE structure for a battalion size aviation unit such as the 210th Aviation Battalion does not have one E5 authorized. This is typical of most battalion size aviation units. They are authorized one E8, two E7s, six E4s and three E3s. The E8 is the aviation battalion operations noncommissioned officer working at the S-3 level. The two E7s are assigned to company level operations NCO positions. This leaves no NCO position to help take charge of company operations, or battalion operations if the E8/7s are on ordinary leave, emergency leave, TDY or other type absence. During the last 3½ years I have filled an E7 slot for about 7 months. Never have I had the opportunity to be slotted against an E5 slot, as such positions are almost completely nonexistent. Even E6 slots are few and far between. An example, our MEDDAC (medical department activity) Detachment 193rd Brigade, is authorized an E6 71P, but does not supervise anyone, being the only 71P authorized in the unit.

In a career field like 71P, which is a self-developing MOS up to E9, our structure has a lot to be desired. E4s are over strength, E5 through E7 balanced, E8 and E9 shortage. (Not many MTOE positions.) A review of the complete structure is needed, from the field commander on down the line.

Another point that needs mentioning is that the promotion points for E4 to E5 (801) have not dropped in 3½years. This has forced many E4s to change fields, or in some instances, even forced them out of the Army. It is not an easy task to get that many points, but when you consider other MOSs with cut-off scores that drop repeatedly to less than 650 points, our morale and sense of

being needed in today's Army is decreasing, not to mention our desire to serve and stay in. 71Ps never seem to get the recognition that we deserve. Most of us work around the clock schedules as flight dispatchers, flight records clerks and operations NCOs. Our work is very interesting and self-rewarding, especially when you know that you have arranged, coordinated and scheduled all the various missions for the next day; when you complete the IG and ARMS Team inspections with no deficiencies; and even when you tell a pilot that he looks too tired and should be seen by the flight surgeon prior to continuing to fly.

I am not looking at this with purely a personal point of view. I'm one of the lucky ones who made the 801 cut-off. But what are we going to do about the others that follow, the ones that are coming into the Army now and find out that you have to be way above the average dedicated Soldier to make E5 or E6.

This goes back to a basic statement, which in today's Army seems to be all but forgotten. "Help us and we'll help you" to keep and have a better, modern, Army.

SFC Hardy has my permission to send this letter to Editor, ***U.S. Army Aviation Digest***, Ft. Rucker, AL.

SP4 Carlos M. Encarnacion

Editor:

My first reaction to COL Waldron's letter concerning the high incident of IP/SIP involvement in accidents (February 1980, ***U.S. Army Aviation Digest)*** was a degree of anger. I thought, "sure, the IP/SIPs are involved in a lot of accidents. But look at the environment where we must work—autorotation, anti-torque's, single engine, etc." Then, after I cooled off a bit, I reread the letter and had to admit we have a problem in this area.

I believe there are a number of reasons for this situation and a number of solutions:

• There are those cases where an excellent IP just has a moment of bad luck and prangs an aircraft. So long as we teach emergency procedures (to enable our aviators and their passengers to survive a real emergency) we will have some of these "prangs" but, hopefully, few.

• We have sent a number of people through an IP course for a variety of reasons, other than being IP material. For some, their branch thought it would enhance their career. Others wanted to become an IP because of the thrill, prestige or any number of other reasons. There is a need for a screening process to determine if an individual is *suitable* for IP training. What motivates him/her? What about maturity (not necessarily age or number of flight hours)? Judgment? Attitude? In fact, we should go further and continually review those presently serving as IPs. If commanders, SIPs, safety officers and operations officers would listen and observe carefully, it would be fairly easy to identify IPs with potential problems. Aviators, who are shown some flaky maneuvers, will talk about it. I recall when I was going through the CH-47 transition course at Ft. Rucker, one of my fellow students mentioned that his IP gave the simulated single engine procedure by turning off the main fuel in the traffic pattern! I advised the flight commander and he took immediate corrective action. I have received complaints about IPs from a number of sources—ground observers, tower personnel, students, etc. We should be "above board" and fair in each case but there will be cases where firm action is required.

• There is a gross lack of consistency in Army Aviation operations. Can you imagine driving down the road at a speed of 70 m p h (oops—make it 55!) and suddenly slamming the car in reverse? Yet, as Army aviators (not just IPs) we are required to "shift gears" in the same fashion. Often, we are required to go from the super safe into the super stupid to the super safe and back again all in the same day! How? An IP goes out and preflights an aircraft (with his copilot diligently following with his finger on the printed word) and finds that the pilot's seat has been in service for 25 months. So he grounds that aircraft, goes to another, preflights it, then removes all the passenger seats and belts for a troop lift! Sure, it's a violation of AR 95-1, but his commander has ordered him to do it! On returning from the troop lift, the IP gives his copilot a simulated forced landing, with power recovery well above 200 feet, just like the book says. Then his next mission is STABD which is not only a complete waste of aircraft time but it puts the crew and participants in a position where it is impossible to handle many possible emergencies!

CW4 Carl Hess
Standardization Instructor Pilot
114th Avn Co
APO Miami 34002

Editor:

The Air Transport Association of America and the Stanford Air Transport Programs are jointly sponsoring the "1980 Air Transport Planning Seminar" 17 to 23 August at Palo Alto, CA.

If there are any inquiries please contact:

Patrick Lau
Assistant Director
P.O. Box 9910
Stanford University
Stanford, CA 94305

Editor:

A friend and I were discussing our National Guard unit getting Cobras to replace our antique UH-1Ms. SGT Freeman served on helicopters (Cobras, UH-1C, D, H and M) in Vietnam. I have been a crewchief for only 1 year; I was prior Air Force. But, as a civilian I have worked on many military contracts in the redesign and rebuilding of Bell helicopters.

We may not be the best source of information but I felt we should voice our opinions and views.

In Vietnam the Cobra proved to be a valuable asset for the time. It was fast and maneuverable. Running fire was excellent and accurate. Now that new or revived NOE firing is to be the prime source of attack new systems need to be implemented. The prime aggression against the Cobra is the sniper, the man on point, or the advanced listening point.

We feel that a UH-1H with a TOW system along with crewchief and doorgunner would prove to be an extra safety factor. Twelve eyes are better than eight. How many times in Vietnam did the crewchief or doorgunner notice aggression from below that the PIC and CP missed, the tree beside the tail rotor, etc.

SGT Randall B. White
SGT Ronald E. Freeman
149th Attack Co D
Okla Army Natl Guard
Tulsa, OK

Reporting Final continued from page 23

(Air Assault), recently recovered a downed Navy plane near Auburn, KY. The Navy T-44 which crashed in a remote field 3½ miles southwest of Auburn, was slingloaded back to Fort Campbell by a CH-47 Chinook. According to the recovery team, special rigging techniques had to be used because a plane is not an "everyday" item for a Chinook to carry. Despite winds and impending darkness the rescue team was able to rig the 15,000 pound plane safely to the Chinook in minimal time. The T-44's four crewmembers were not injured.

FROM ST. LOUIS

Amendments To TM 38-750. Requirements for an equipment improvement recommendation (EIR) on Army aircraft discrepancies are being changed by amendments to TM 38-750 by the Troop Support and Aviation Materiel Readiness Command.

In section 3, paragraph 3-28, an additional subparagraph and two notes are being added which will give the originator the opportunity to submit an EIR "against only those items which he believes appreciably detract from the serviceability, durability and/or reliability of the system. Conditions resulting from normal wear, prolonged exposure to extreme environmental conditions, or problems which appear insignificant do not in themselves warrant submission of a category II EIR."

This change will give field units a greater input into the decision of the benefit of submitting an EIR and also will enable TSARCOM to deal with more maintenance significant recommendations.

As in the past, EIRs are to be routed to DRSTS-MEM(1) at TSARCOM.

To The Rescue—A rescue team from 507th Transportation Aircraft Maintenance Company, 5th Transportation Battalion, of the 101st Airborne Division (Air Assault), Ft. Campbell, KY attaches a Navy T-44 to a CH-47 helicopter to be slingloaded back to post.

(U.S. Army photo by Roger Hoeller)

FROM WASHINGTON

Approved Humanitarian Service Medal (HSM) Operations. According to MILPERCEN message 171604Z Mar 80 personnel who directly participated in disaster relief operations in the following locations during the periods indicated are eligible for award of the HSM:

- Dominica, for the period 31 August 1979 to 30 November 1979.
- Dominican Republic, for the period 1 September 1979 to 26 October 1979.

Further information may be obtained by contacting the Personnel Actions Section, Adjutant General Division, extension 5215/3318.

(MILPERCEN)

The 51st Shock and Vibration Symposium. The Symposium will be held 21 to 23 October 1980 at San Diego, CA. The Naval Ocean Systems Center is host.

This meeting will be held at the Holiday Inn at the Embarcadero. Contributed papers relating to the many aspects of the mechanical shock and vibration technology are solicited. Limited distribution and classified papers up to and including secret are encouraged. No specific session topics have been chosen; however, plans are being formed and suggestions for topics would be welcome.

Further information may be obtained from:
The Shock and Vibration Information Center
Code 5804, Naval Research Laboratory
Washington, DC 20375
Telephone 202-767-2220 (AUTOVON 297-2220)

(AD)

An OER System Progress Report. Reports prepared under the new officer evaluation reporting (OER) system (DA Form 67-8) have begun to arrive at MILPERCEN. Initial trends indicate a conscious effort by rating officials to fulfill evaluation responsibilities and improve the quality of performance and potential information recorded on OERs.

Duty Descriptions

One of the most encouraging improvements noted is the writing of *duty descriptions.* Most reports contain a detailed summary of the rated officer's most important duties and responsibilities; emphasize specific functions required of the rated officer; and note conditions peculiar to the assignment. This is especially noteworthy in view of the important role the duty description plays in communicating to selection boards and career managers *clear and complete information concerning the scope and breadth of an officer's duties and responsibilities.* The support form and objective setting process appear to have been significant

factors in this improvement. For specific examples of duty descriptions, see DA Pamphlet 623-105.

Performance Narratives

Another area of improvement is the rater's narrative evaluation of the rated officer's performance (Part Vc, DA Form 67-8). In most reports the rater's comments in the performance narrative have focused on specific aspects of the rated officer's performance including results achieved and the manner and degree of achievement. (What the officer did and how it was done.) Use of the support form to establish this focus is a fundamental aspect of the evaluation process. Should this trend continue, the new system will go a long way toward providing the type of narrative that DA selection boards have been requesting.

A few reports have been returned for correction or improvement of the performance narratives. They fall into two categories:

- Those which include comments on potential. Separation of potential comments from the performance narrative (para 4-14c(3), AR 623-105) was intended to provide more structured narratives and an increased focus on performance.
- Those which do not address the specifics of performance. An example of this type narrative which does not provide DA with meaningful performance information and does the rated officer a disservice is:

A superb performance by an outstanding young professional—CPT _____ has proven conclusively that he is capable of handling command in a most demanding environment. He established clear objectives and met each of them.

For an example of a better performance narrative, see DA Pamphlet 623-105.

Senior Rater

Since senior raters are measured against their tendencies rather than a fixed score or standard, the system does not have measures such as average ratings or mean scores. However, the majority of senior raters appear to have adopted a philosophy of providing realistic and credible evaluations.

Outstanding Performance Reports

Paragraph 5-24, AR 623-105, indicates special requirements for the submission of these reports. They were established in view of longstanding selection board concern for unwarranted submission under this paragraph. A few reports have been submitted without the senior rater certification required by paragraph 5-24b. These reports have been returned. This certification is necessary to ensure that in each case the senior rater is aware the report is an "outstanding report" with more stringent requirements than the normal change of rater or duty reports.

Narrative Gimmicks

Several reports which used narrative gimmicks were returned. Gimmicks, which include excessive capitalization, underlining, double and triple spacing, trite comments, and brief, unqualified superlatives or phrases, are prohibited by paragraph 4-19, AR 623-105. The prohibition of gimmicks was originally made during the 67-7 system, as the result of selection board complaints. The use of gimmicks promotes form over substance and is an obvious attempt to give the rated officer some advantage which is not based on his performance or potential.

Intermediate Rater

Only a few reports contained an intermediate rater's evaluation. This indicates that most organizations are properly designating rating chains and including intermediate raters only when there is an intermediate level of supervision between the rater and senior rater.

Rated Officer's Signature

On a few reports the rated officer signed after the rating chain or not at all. Although each case was justified because of the lack of availability of the rated officer, the senior raters in these cases failed to explain the problem in their narratives. These reports had to be returned for the appropriate senior rater entries.

(MILPERCEN—FOCUS)

FROM GERMANY

More Than A Million Miles In A Helicopter Without An Accident. An Army helicopter pilot has flown the equivalent of nearly 41 times around the world without an accident. CW4 Norris M. Woodruff, Air Troop, 11th Armored Cavalry Regiment, finished flying 10,000 accident free hours this month. His feat, based on an average flying speed of 90 knots per hour, translates into more than one million accident free miles. To accomplish this feat in a single flight, a pilot would have to be strapped in a helicopter seat for nearly 14 consecutive months, 24 hours a day.

☆ ☆ ☆

Puerto Rico Guard Honored. Congratulations to the Puerto Rico National Guard Army Aviation Support Facility of the 92d Infantry Brigade for being selected as the Outstanding Army Aviation Reserve Component Unit of the Year for 1979 by the Army Aviation Association of America

ATC ACTION LINE
UNITED STATES ARMY COMMUNICATIONS COMMAND

Where did the system break down? This hypothetical case shows how misunderstandings can occur when incorrect phraseology and procedures are used

SEVEN MILES EAST AT 1,500 FEET, REQUESTING FOUR GCAs

IT WAS A SLOW afternoon at Black Knight ground controlled approach (GCA) facility. The field was VFR (visual flight rules) and there had been only a couple of calls for practice GCAs all day.

Then came the welcome but unexpected call from Army 640. The controller recognized the tail number as one of the local lift company's CH-47 Chinooks.

640 Pilot: Black Knight GCA, Army 640.

Controller: Army 640, Black Knight GCA, go ahead.

640 Pilot: Roger, we are 7 miles east at 1,500 feet heading 330 requesting four GCAs.

Controller: 640, GCA is showing negative target. Request you climb to 2,000 feet to facilitate radar pickup.

Pilot: Roger, leaving 1,500 for 2,000.

Controller: 640, turn right heading 360 for radar ID.

Pilot: Right, 360.

Controller: 640, radar contact, 6 miles southeast of airfield. Turn left heading 300 for downwind vectors.

Pilot: Roger, left 300 maintain 2,000.

Controller: 640, this will be a precision approach to runway 14. After completing your low approach make a climbing right turn to 2,000 heading 290, remain on frequency.

Pilot: This is 640, roger. Can you keep us down to 1,700? We are intermittently in and out of IFR and we only have one generator.

Controller: 640, would you like some short approaches?

Pilot: Roger, we will take short approaches.

Controller: 640, traffic 11 o'clock, 2 miles east northeast bound.

Controller: 640, traffic now 1½ miles.

Pilot: Tallyho.

Controller: 640, is the traffic going to be any factor?

Pilot: Negative, he is passing below and clear.

Pilot: GCA! This is 640! Did you see that aircraft pass less than 200 feet over us?

Controller: 640, that was the traffic I was giving you. You said, "Tallyho" and I asked you if it was a factor.

Pilot: Roger, we had another aircraft going below us. We had a misunderstanding.

Controller: 640, turn right heading 335.

Pilot: Roger 335.

Controller: 640, what was your altitude when that aircraft passed over you?

Pilot: 1,700 at the point we saw it then we immediately descended to 1,500.

Controller: 640, turn left heading 320 downwind.

Pilot: GCA this is 640. We would like to have 1,200 feet. At 1,500 we are mostly IFR.

Controller: 640 approved.

Pilot: 640.

The above is a hypothetical case. But a similar case did happen. Both aircraft were under radar control with operating transponders. Army 640 was on Code 1,200 and the other aircraft that flew over 640 at less than 200 feet was on IFR Code. Even at 100 K+ approach speeds neither aircraft saw the other until they had passed. Army 640 was a VFR flight on a practice approach vector from the aerodrome GCA. The other aircraft was an IFR flight on a clearance from the approach control facility: both aircraft were in the approach control area. Where did the system break down? Here is an analysis of system deviations.

The Pilot of Aircraft 640. The 640 pilot was flying VFR in intermittent IFR weather and unable to maintain VFR conditions. Technicaly the 640 pilot's request for four GCAs cannot be construed as a request for an IFR clearance. The GCA response, while it may have inferred an IFR clearance, definitely was not. It appears that the 640 pilot fell into the "Radar Contact Trap" and erroneously believed he had been issued an IFR clearance.

Black Knight GCA. The GCA was vectoring the VFR aircraft in the approach control's airspace without coordination, in violation of FAA Handbook 7110.65A, paragraph 680, which states two controllers may not operate in the same airspace unless they have coordinated with each other. The GCA did not instruct 640 to maintain VFR conditions nor did it inform the approach control facility of 640's presence.

The GCA used nonstandard phraseology. "Request you climb to 2,000 to facilitate radar identification" may have erroneously led the pilot of 640 to believe he had been issued an IFR clearance.

During the course of being vectored for the first GCA approach the pilot of 640 requested 1,700 feet because he was encountering instrument meteorological conditions (IMC). This should have alerted the controller to instruct the pilot to remain under visual meteorological conditions (VMC) or coordinate with the approach control facility for an IFR clearance.

Metropolitan Approach Control Facility. The existing Letter of Agreement between the GCA and approach control facility governs the conduct of IFR PAR approaches but does not contain provisions for VFR approaches at the GCA's aerodrome.

No one can usurp the pilot's responsibility to maintain his own separation from other aircraft when he is flying under visual flight rules.

Will the next near-miss report bear your name?

Readers are encouraged to address matters concerning air traffic control to:

Director
USAATCA Aeronautical Services Office
Cameron Station
Alexandria, VA 22314

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Changes In Aviator Selection And Training Program

SEVERAL IMPORTANT changes in the Army aviator selection and training program recently have been announced by Military Personnel Center (MILPERCEN) and the U.S. Army Aviation Center, Ft. Rucker, AL. Collectively, they represent many new Army Aviation initiatives of significant interest to the Soldier. The following key points were identified:

- The number of active Army warrant officer aviators trained per year at Ft. Rucker has been increased from 420 trained in fiscal year 1979 to 632 in fiscal year 1980. There are 808 projected for training in fiscal year 1981 and beyond. At the same time commissioned officer training rates have increased from 365 in fiscal year 1979 to 465 in fiscal year 1980 with 598 per year projected for the out years.
- In order to respond to the increased demand for warrant officer candidates for flight training, MILPERCEN has announced that 30 percent (up from 15 percent) of the new warrant officer candidates will be provided by the U.S. Army Recruiting Command with the balance of 70 percent coming from inservice applicants.
- A short term change to provide a larger pool of warrant officer candidate applicants was the temporary change on the cutoff score for the FAST (Flight Aptitude Selection Test) from 300 to 270. As contained in AR 611-110 and 611-85 the other primary prerequisites for flight training have not changed, for example:

✓ GT score of 110 or greater;
✓ Class I flight physcial;
✓ Educational requirements, etc.

It should be noted that a lower cutoff score of 250 was used from 1966 through 1972.

- A new FAST was developed by the Army Research Institute Ft. Rucker Field Unit and currently is being phased into the aviator selection program. The cutoff score for the new FAST is 90 (out of 200) for all applicants. There is no longer a different test for officer/warrant officer, enlisted or civilian applicants. The new FAST is shorter, easier to score and is more oriented toward rotary wing aviation. It is available in accordance with DA Circular 611-77 and is already operational at some test sites.
- The earlier FAST test was a one time pass/fail examination with no retests permitted; but, as is traditional with the introduction of a new version, a one time retest of the new version is authorized. A one time test of the new version is authorized for personnel who previously tested and failed to attain a passing score of 270 (FAST-WOCB) or 155 (FAST-OB). Under no circumstances may any individual be tested a total of three times. In addition, one time retests also will be allowed on the new FAST, no sooner than 6 months after initial testing. The retest provision is a temporary action pending the development of an alternate form of the new FAST. The alternate form of the new FAST will offer a permanent retest capability.
- New developments expected during the fiscal year 1981 to 1982 timeframe include the use of a sequential testing concept which will have as a component a job sample test in the UH-1 flight simulator. The sequential testing concept involves initial screening of flight applicants using inexpensive tests such as the new FAST. For those applicants who are successful on the FAST, a second stage of testing will be initiated on the UH-1 flight simulator. The flight simulator testing is labeled PASS, or Performance-based Aviator Selection System, and entails five 1-hour blocks of automated instruction and evaluation in the performance of basic flight maneuvers. Applicants who are successful in PASS and meet all other requirements will be eligible for consideration for selection for the flight training program.

The goal of the U.S. Army Aviation Center is to produce rotary wing aviators that are second to none in their ability and training. These changes in the selection program along with the high standards for graduation, will guarantee the accomplishment of that goal.

For further information on this program contact Major Jeremiah O'Fihelly, Chief Aviation Plans/Programs Branch, U.S. Army Military Personnel Center, 200 Stovall Street, Alexandria, VA 22332; or call AUTOVON 221-0727/0794 or commercial 202-325-0727/0794.