UNITED STATES ARMY

SEPTEMBER 1978

AVIATION DIGEST

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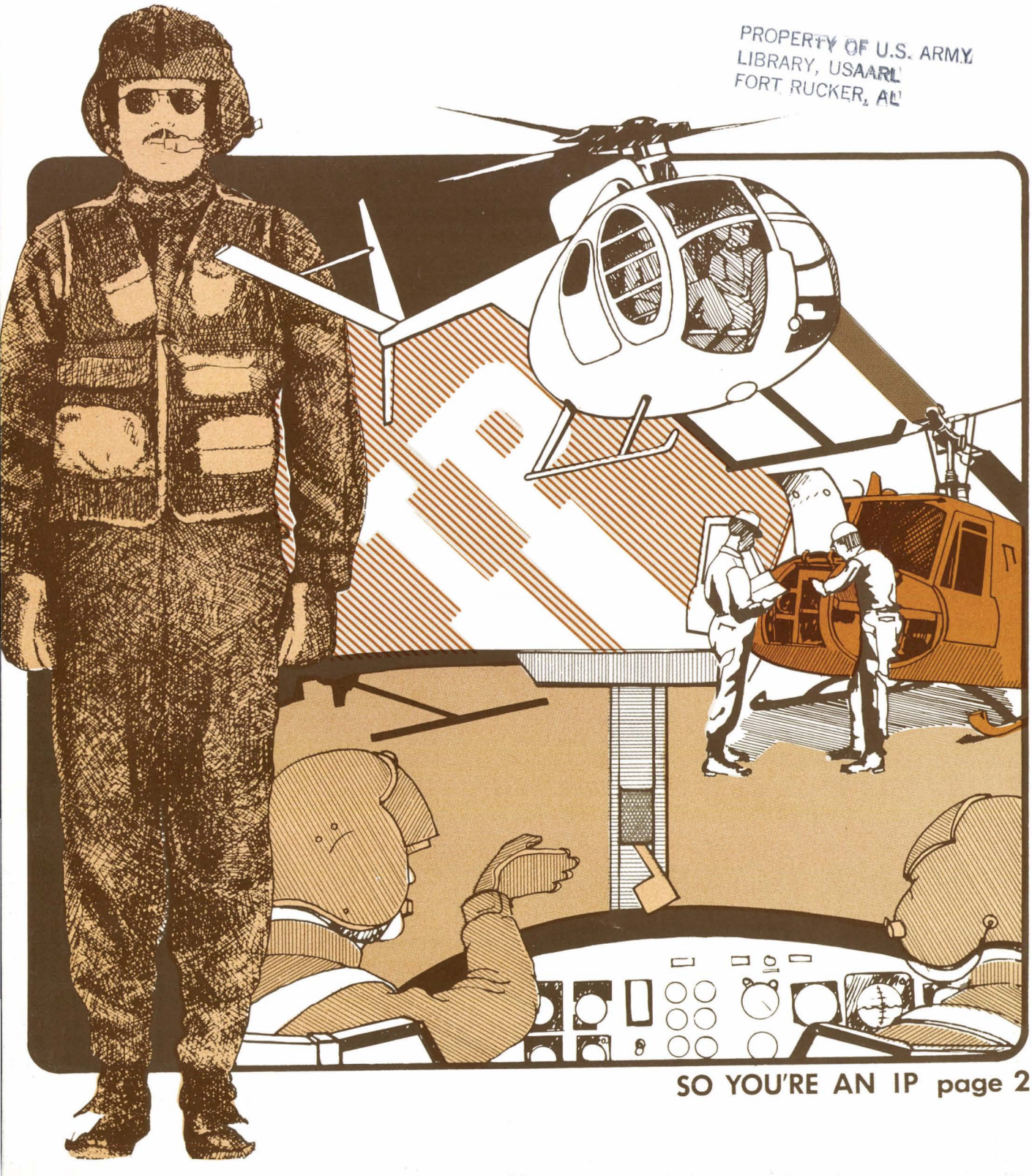

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AVIATION DIGEST

VOLUME 24 NUMBER 9

★

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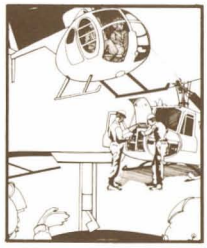

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Richard K. Tierney
Editor

ABOUT THE COVER

How do you stack up as an IP? To find out, see article beginning on page 2.

The mission of the *U.S. Army Aviation Digest* 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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THE NEED FOR INSTRUMENT TRAINING FOR ARMY AVIATORS

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This article discusses the Army's need for instrument rated aviators and the training program which supports this requirement. It examines why there is a requirement for Army aviators who possess instrument capabilities, the background of the instrument training program and the current instrument training —to include equipment and cost

ON TODAY'S battlefield, Army aviators will not only face those obstacles posed by the threat and the terrain, but they also must be equipped and qualified to operate day and night under marginal weather conditions. When Army aviation's marginal weather capability is coupled with its mobility and firepower, this element of the combined arms team is recognizably an invaluable asset to commanders in accomplishment of their missions.

The threat is the most important factor affecting mission requirements. FM 90-1 "Employment of Army Aviation Units In A High Threat Environment," states: *"In the future, Army aviation units will fight as a part of the combined arms team in a high threat environment. This foundation doctrine sets forth concepts of employment for Army aviation units against a sophisticated enemy who will confront us with highly advanced air defense and electronic warfare threats."*

It has been said of computer war games that the balance of combat power in the European scenario may well be the attack helicopter. It is essential that Army aviation elements be able to provide for movement of troops, logistical support and reconnaissance and surveillance for the ground tactical elements at all times. *This includes marginal weather, day and night.*

Tactical situations may require commanders at any level to use their aviation assets within the threat environment without limiting their consideration of use to fair weather. A typical combat mission profile will look like this (figure 1, page 32). The threat will require aviators to fly below acquisition altitudes of the enemy's air defense weapons while terrain obstacles dictate the minimum altitude when marginal weather is encountered. The aviators then must resort to instrument flying, either standard or tactical. Aviators

Continued on page 32

SO YOU'RE AN IP

INTENTIONALLY or unintentionally, we all influence others, and they, in turn, influence us. A student aviator will develop safe habits and attitudes while in flight school based on his experiences there and the kind of influence exerted upon him. And the individual who will influence him the most is the IP.

For the most part, the IP's role in a formal school environment appears to be cut and dried. All facets of training are organized and all activities planned and supervised from start to finish. In performing his job, he follows an established curriculum sequentially from one phase to the next. This, coupled with by-the-book regimentation, leaves the student little chance to acquire unsafe habits. Yet, despite these safeguards, unsafe habits can be transmitted to the student and done so by the least likely of all individuals—the IP himself.

Looking back over the years, we find numerous examples. In one instance, the IP involved was a young, robust individual. During a training flight in a tandem fixed wing aircraft, he told his student to begin a series of climbing turns. Promptly afterwards, the instructor passed out. When he regained consciousness, the altimeter needle was crossing the 12,000-foot mark. Unaware his instructor had passed out, the student was dutifully performing climbing turns, pending further instructions.

On reporting to the flight surgeon, the IP was admitted to a hospital where, after undergoing a battery of tests, he was found to be suffering from exhaustion. A bachelor,he had eased into the habit of staying up late, frequenting night clubs where he drank moderately but regularly, and smoking excessively. Over a period of time even his strong youthful body could not cope with the stresses imposed on it. A change of habits soon had him back in shape and he had no further problems.

Nevertheless, what effect did his former lifestyle have on those students aware of his personal habits? How did they relate his actions with the lectures they received concerning physiological factors and safety? While no one can say with certainty, we can be sure the impression transmitted was not one harmonious with safety.

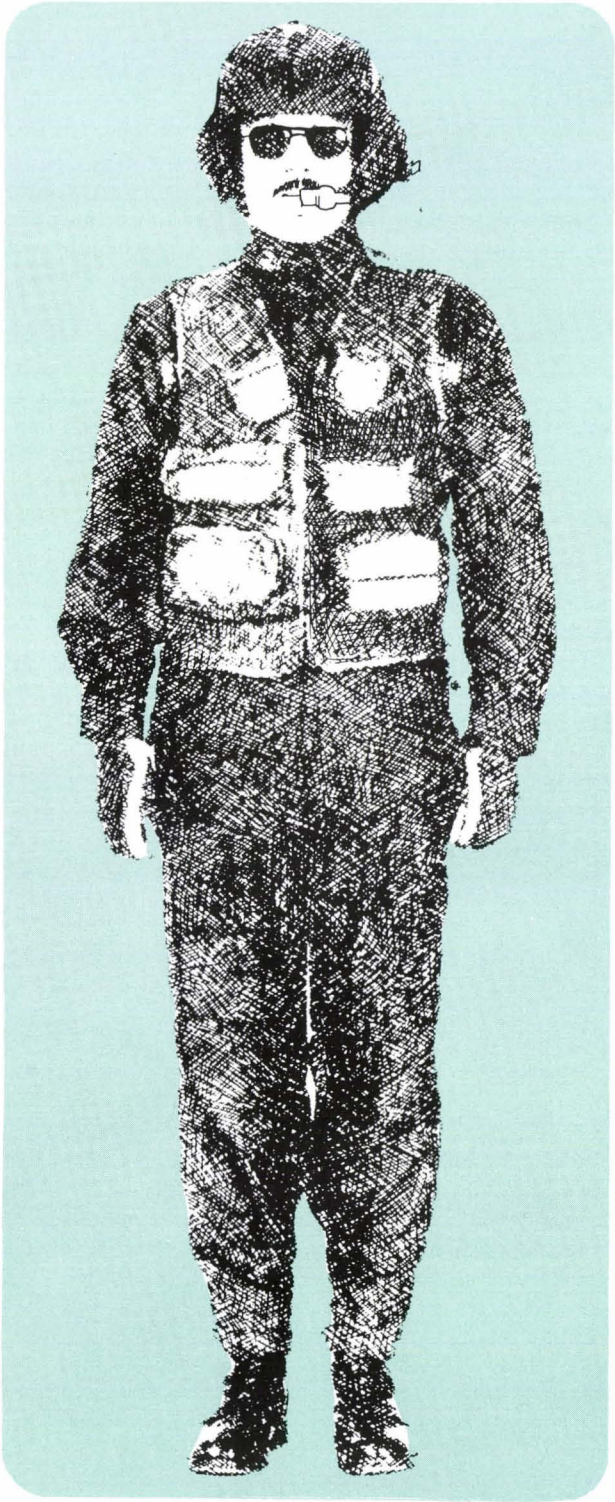
In another instance, following numerous reports of students buzzing local lake and land areas, spotter planes were dispatched to identify violators. Embarrassingly, the first to be caught was an IP on a proficiency flight. No, he wasn't doing it for thrills. He was an avid fisherman who, by his own admission, often used the aircraft as a means for checking the conditions of area lakes. But despite his intentions, not only were his actions in violation of regulations but they also served to entice others to follow suit.

Sometimes, even the best intentions can backfire where safety is concerned. One such case involved an IP who, in an effort to promote safety consciousness among his students, embarked on a procedure that almost produced the opposite results. It all started when a student questioned him intently as to the turbulence associated with thunderclouds and its severity. After describing the hazardous winds associated with thunderclouds as well as he could, he proceeded to skirt around the edges of a relatively small, billowy cloud. His intent was to implant in the student's mind that if the amount of turbulence they encountered could be found outside a small inactive cloud, the student might well imagine the devastating forces present within a towering cumulonimbus.

The demonstration proved so effective the IP unofficially adopted it as a part of the curriculum. And all went well until one day, while rounding a cloud in a similar demonstration, he met a solo student skirting the same cloud from the opposite direction. Needless to say, the near miss put a stop to this practice. However, this experience does point out how fast word can travel and the vast amount of influence that rests in the hands of IPs.

JUDGMENTAL ERRORS

Unfortunately, IPs are sometimes guilty of initiating unsafe acts by exercising poor judgment. Basically, it involves "taking chances," especially with respect to inclement weather. It usually works this way. The IP and his student are operating out of an auxiliary field away from their home station when the weather begins to deteriorate. Suddenly, the IP must make a decision to either land and remain at the auxiliary site until the weather conditions improve or head for home. If he elects to land, it may mean a delay of several hours before flight can be safely resumed. Consequently, the decision "to get home" is commonly made. All too often this results in their encountering weather more severe than anticipated, and sometimes, in an accident. But even when the flight terminates safely, as is more often the case, what effect does such a decision have on the student? Someday, will he be enticed into making a similar choice—and maybe guess wrong?



Such judgmental type errors are the predominant causes of mishaps involving IPs. Recently, an IP on a cross-country flight got in a hurry. Nevertheless, he performed all inspections and checks of his fixed wing aircraft by the book, omitting nothing. After landing at his destination, he again performed all checks required. But because of his anxiety to return home, he elected not to take the time needed to refuel. Having visually inspected his fuel tanks, he estimated the fuel supply to be more than adequate. He was wrong. It wasn't.

SPECIAL SET OF PROBLEMS

We can readily see the impact the IP has on aviation safety. As a matter of fact, he is probably in a better position to enhance safety than any other individual. But unlike the IP in a formal school environment, the unit IP faces a special set of problems. Here he is dealing with other professional aviators who are his peers. Is he going to give in to any pressure for leniency or is he going to demand professionalism? Is he going to be Mr. Nice Guy or Mr. Bad? While this, of course, is an exaggeration, every newly assigned unit IP has to face this question in some form.

If, for example, during a check ride, he finds his commander weak in some area of flying proficiency, is he going to pass him with the admonition "to brush up" on that particular weak area; or is he going to chalk up that flight as one of training and insist the commander be scheduled for additional training flights until he is proficient in all areas? It's a tough decision. How does one handle it?

PSYCHOLOGIST AND FRIEND

This points out another aspect of an IP's job. Being knowledgeable and able to communicate is not enough. He must also be a psychologist and friend as well as judge and jury. Different IPs will handle this type of problem in different ways, and do so with equal success. One unit IP did it this way. In his words (paraphrased): "... In my case, it really wasn't difficult. The worst part was that I was new—from another unit—so I had to feel my way around a bit. Actually, the group was a good one. They took their flying seriously, and there was no "horsing" around. This made my job easy.

"I had respect for the responsibilities each had, and I felt they, in turn, would respect mine. Consequently, regardless of who the individual was, when we climbed into the cockpit, I suddenly acquired a

case of amnesia. I didn't remember his face, rank or title; and his name rang no bell. He became another individual who was to demonstrate his ability to fly a particular aircraft. But one thing I never forgot was that he was a person—with feelings—just like me. And that's how it was. If he was proficient, he passed. If I felt he needed more work, we scheduled additional training flights until I knew he was ready for the big one. . . ."

This IP's system must have worked; for later, at his suggestion to his commander, an agreement was made with a neighboring unit to give each other's pilots check rides. Of course, it was impossible to do this with all the pilots, but the two units did manage to swap out about one-third of their aviators, including their commanders and safety and maintenance officers. This prevented any hard feelings and each knew he had to be proficient. Although only one-third of the pilots would be given check rides by the other unit's IP, no one knew who would be scheduled. Consequently, there was a lot of book work and brushing up on procedures on the part of all flight personnel. The result was topnotch pilots in both units.

However, not everything worked out this smoothly. One particular pilot was having some trouble with emergency procedures and was getting a bit peeved at not taking his check ride, feeling he was ready. But the IP wouldn't budge an inch. Finally, he made it. Nevertheless he harbored a certain amount of unspoken resentment against the IP. Coincidentally, not long afterwards, this pilot had an in-flight emergency that tested his proficiency for real. He passed that test, too. It was then that he told the IP about his "resentment"—and thanked him. That was the day the IP graduated. He had been accepted as one of the group, and had done so by earning their respect. But gaining acceptance is only one hurdle a unit IP has to clear. There are others.

What does an IP do when he knows an experienced and knowledgeable pilot is intentionally performing some unsafe act in conjunction with flying, whether one of commission or omission? For example, what does he do about a pilot who carries his checklist in his head instead of in his hands? Does he go to the commander or the safety officer with the problem, or does he handle it himself? Hopefully, he will exercise his authority and handle the matter himself. Does this sound petty? Well, it hasn't been too long ago that a fixed wing pilot began a takeoff with two other crewmembers on board. This man failed to follow his checklist. Although he checked to see that the external gust locks were in the aircraft, he failed to ensure all had been removed. The one on the left elevator had not. Then, after performing engine operational checks, he failed to ensure freedom of movement of all controls. He was in a hurry. And that's how he began his flight. The aircraft crashed on takeoff, killing all aboard. The pilot in question was an outstanding IP with literally thousands of hours of flying time in that type aircraft.

SET THE EXAMPLE

This brings up another major point: setting an example. No IP can afford to act in any unsafe manner. He must set an example. As a matter of fact, under no conditions can such personnel as commanders, key supervisors, safety officers, and especially IPs afford to perform any unsafe acts related to flying.

An IP, then, is much more than a teacher. He is a leader who establishes guideposts, setting standards by example. He is a policeman who ensures our aviators measure up to standards. He is an enforcer responsible for upgrading pilots to professional standards. He is the safety officer's right hand, who motivates pilots to abide by regulations and SOPs, and monitors their actions.

To accomplish his job, he must not only be knowledgeable and skilled in all aspects of flying but also must possess additional skills needed to work effectively with others. He must be understanding, patient, tactful yet firm, and possess the ability to communicate with others. He must be confident in his own abilities and capable of helping others develop confidence in themselves. Most of all, he must be dedicated to his job.

Yet, the IP is not an island unto himself. He needs support. Further, he is not infallible. Consequently, he, in turn, must be monitored. This is where the commander comes in. It is not enough for him to select the proper individual for IP duties. He must constantly monitor him for any weaknesses and support him in his responsibilities.

Along with the commander, safety officer, and other key supervisors, the IP is not merely an aid in the unit safety effort. He is especially vested with the responsibility for promoting safety consciousness among aviators. As a matter of fact, the "authority" that assigns him this responsibility is AR 95-63.

How do you stack up? On a scale from one to ten, how would you rate yourself? Are you really an IP?

Vacation Is Over!

This Year's Annual Writ Just Came In The Mail

CW3 John A. Bauer
Department of Flight Training
Fort Rucker, AL

IT'S TIME FOR the annual writ again! Those words can make the strong cry or the weak faint! Be that as it may, the writ has arrived again and we all must take it.

The Army Aviation Written Examination was started in 1954 as a test designed to ensure that all aviators possessed an adequate working knowledge of subjects critical to the safe and effective use of Army aircraft. Subjects such as regulations, navigation, map reading, aircraft performance and combat tactics were included.

Over the years instrument flying became more and more important and the annual writ slowly evolved into the Army's secondary instrument flight rules (IFR) proficiency examination (the annual instrument renewal checkride being primary, of course). Bit by bit, instrument procedure type questions appeared and by 1972, 90 percent of the test was IFR related.

So, now that we're all prepared for our second largest IFR quiz of the year, it's time for a change. Surprise! Surprise! This year no more than 40 percent of the questions are IFR orientated! The fiscal year (FY) 78 version of the writ has large sections devoted to visual flight rules (VFR), procedures and practices.

This year a variety of subjects that are either new or very hazy to most of us are included. Aeromedicine, night vision devices and techniques, threat identification and capability, and revised performance charts head the list. The list of references that go with these subjects is mighty impressive too and a few of the publications included will be as unfamiliar as the subjects. How many of us have had an opportunity to browse through FM 30-20, "Aerial Surveillance and Reconnaissance, Field Army"? With a show of hands now, how many have even heard of or seen it before?

The writ has undergone a few other changes as well this year. It will no longer be given en masse during the last three months of the fiscal year. Each aviator will take it

anytime during the 90-day period preceeding his or her birthday in conjunction with the annual standardization flight evaluation. Exam notification will be given in advance on a standardized letter which provides the aviator with the date, time and location to report for examination. This letter also provides a description of the examination, a list of references, and sample questions with appropriate answers. The traditional study guide will not accompany this notification since they are too expensive to produce and distribute and experience has shown that most aviators never used it.

Study for the annual writ is now up to the individual aviator. You can obtain a great deal of assistance in determining how best to prepare for the examination by contacting your unit standardization officer. In general, the best method of preparing for the annual writ is to familiarize yourself with the publications in the list of references. This familiarization should include reading the table of contents of each Army regulation, field manual, technical circular and training manual used for the exam. You also should read the legend in each Department of Defense (DOD) flight publication and on the tactical map. If, during the review, you discover material which is unfamiliar, a brief study period will prove beneficial.

The Reference Data Booklets (RDBs) will no longer be issued to each person as a throw away item but will be issued instead to a unit custodian (usually the operations officer) who will be responsible for keeping them in a readable and current condition for use from year to year. The reason for this is simply cost effectiveness. Twenty thousand or so copies of any book are expensive to publish and distribute. The RDBs will be updated as needed in much the same manner as ARs, TMs, etc. are updated; that is, through printed or TWX changes. Oh well, no more crib sheets inside my RDB.

Last but not least, this year's writ will have a different exam for each mission type aircraft in the inventory and aviators will be tested according to their duty positions. These categories are: utility helicopter, attack helicopter, observation/scout helicopter, cargo helicopter, utility airplane, and surveillance airplane. Each test category will have two versions, so you'll only get two shots at earning a passing grade instead of the usual three or four.

As you can see from the list of subject areas covered and reference materials used (see accompanying figure) a lot of time and effort will be required of each aviator. Good Luck and remember—now is the time to start studying, not next week.

SUBJECT AREAS

IFR Planning and Procedures
Weather
Tactical Instruments
Tactical Employment
Night Flight
Threat Identification
Aircraft Systems Operations
Aircraft Performance Charts
Aerodynamics

REFERENCES FOR FY 78 WRIT

AR 40-8, dtd Aug 73, Temporary Flying Restrictions Due to Exogenous Factors
AR 95-1, dtd 30 Nov 76, Army Aviation: General Provisions and Flight Regulations
AR 95-16, dtd Jul 74, Weight and Balance — Army Aircraft
AR 95-63, dtd 13 Dec 76, U.S. Army Aviation Standardization and Instrument Program
FM 1-1, dtd Oct 75, Terrain Flying
FM 1-5, dtd Mar 76, Instrument Flying and Navigation for Army Aviators
FM 1-30, dtd May 76, Meteorology for Army Aviators
FM 1-50, dtd Feb 76, Fixed Wing Flight
FM 1-51, dtd May 74, Rotary Wing Flight
FM 30-20, dtd Feb 72, Aerial Surveillance and Reconnaissance, Field Army
FM 90-1, dtd Sep 76, Employment of Army Aviation Units in a High Threat Environment
TC 1-4, dtd Sep 76, Helicopter Gunnery
TC 1-88, dtd Mar 77, Aviators Recognition Manual
TC 1-28, dtd Feb 76, Rotary Wing Night Flight
TC 17-17, dtd Dec 75, Gunnery Training for Attack Helicopters
TC 30-79, dtd 15 Jan 76, OV-1 Mohawk Survivability
DOD Flip Low Altitude Enroute Charts
DOD Flip IFR Supplement
Aircrew Training Manual
Appropriate Aircraft —10

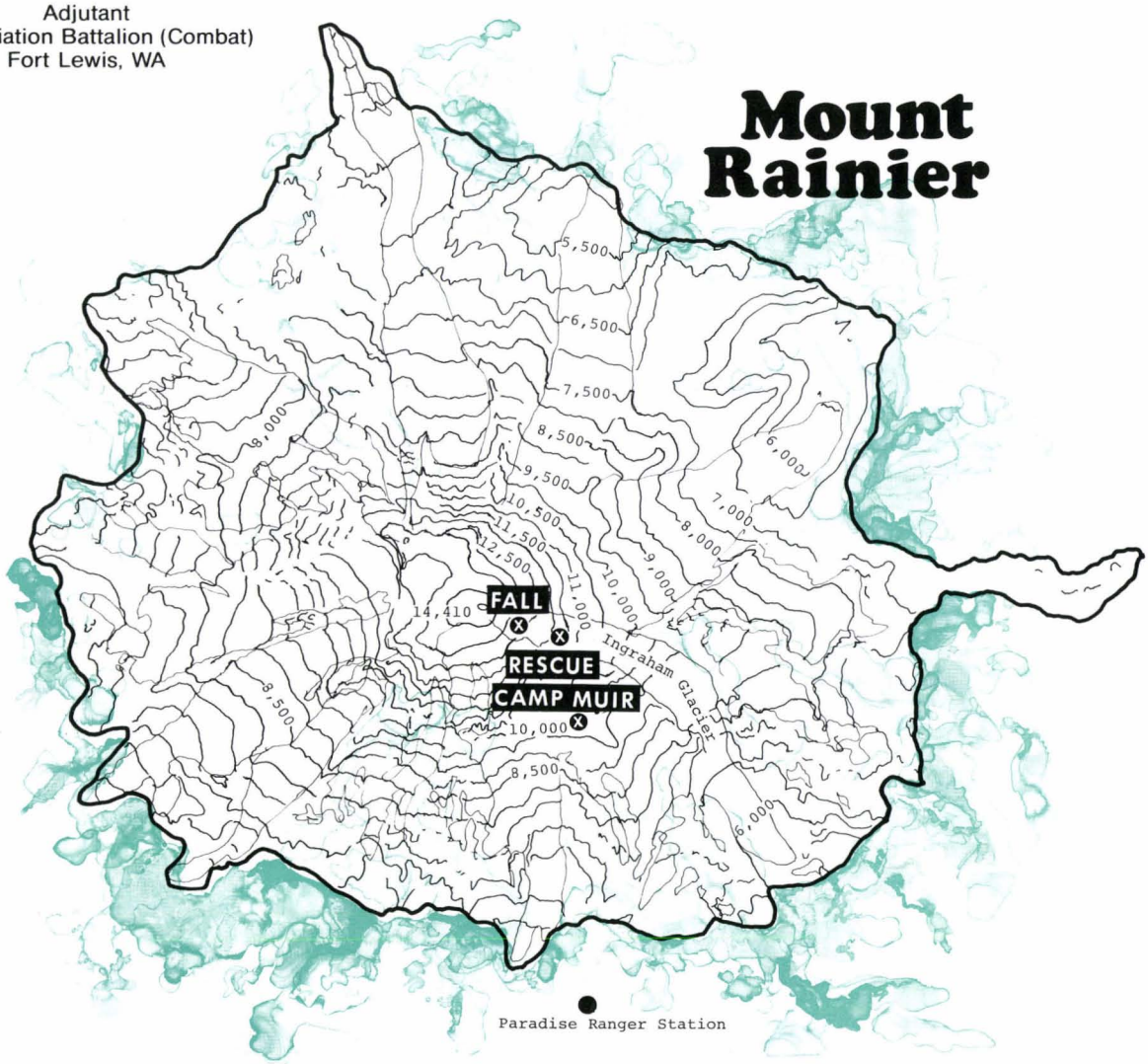
All material needed for the writ has been extracted from the above publications and bound in the Reference Data Booklet with the exception of AR 95-1, 95-63, TC 1-88, and appropriate aircraft —10.

243rd Aviation MAST rescues eight climbers

climber killed Four injured

RESCUE ON RAINIER

Captain Thomas F. Stewart
Adjutant
10th Aviation Battalion (Combat)
Fort Lewis, WA



THE INDIANS called this giant *Takhoma*, "The Mountain," and feared the worst for all who trespassed her mighty glacier covered slopes. Mount Rainier stifles one's imagination and lures the hardy to tackle her summit. The first recorded climb was in 1870 and since that time it has been used as a final testing area for assaults on Mount Everest.

Teamwork is the key to climbing the mountains and also is the word that describes a daring rescue that occurred the 7th of last September.

In the early morning hours, people were nearing their final assault on the Ingraham Glacier of Mount Rainier. They had been greeted by a magnificient sunrise and from Gray Army Airfield at Ft. Lewis, WA the mountain was capped by a perfect lenticular cloud.

While the party was ascending a smooth, icy, 35-degree slope at the 13,000-foot level, one of the climbers lost his footing. Frantic attempts were made by the climbers to bury their ice axes into the ice, but to no avail. They slid, bounced and dragged each other at a very high rate of speed down the glacier, with no chance of saving themselves.

As the members fell over a ledge, their rope was fortunately snagged by a serac, which kept them from falling further. Their equipment continued to fall and alerted a team at a lower level to the possibility of an accident. The lower party discovered the victims and dispatched a messenger to Camp Muir at the 10,000-foot level.

The fall, which terminated at the 11,600-foot level, left one dead and two seriously injured. A radio message was sent out from Camp Muir to the National Park Service, which set the rescue into motion by notifying 54th Medical Detachment (Helicopter Ambulance) at Fort Lewis. National Park personnel also were quick to recognize that the altitude and winds might require the capabilities of a CH-47 Chinook helicopter which was requested from Search and Rescue at Fort Lewis, WA.

As the Military Assistance to Safety and Traffic (MAST) helicopter—a UH-1 Huey—departed Fort Lewis, the pilots noticed a Chinook from the 243rd Aviation Company departing for a flight to Yakima Firing Center. Since the CH-47's flight would take it near Mount Rainier, the MAST pilots alerted the Chinook crew to the possible need for their assistance. After informing appropriate authorities, the Chinook followed the Huey to the park where it landed and the crew offloaded its internal cargo which was destined for aerial door gunnery practice at Yakima Firing Center.

While the Chinook crew was offloading at the Paradise Ranger Station, the MAST ship with the mountain rescue team leader from the National Park Service onboard, flew ahead to make a reconnaissance of the site. The pilot of the MAST ship reported extreme turbulence and down drafts exceeding 3,000 feet per minute. He made a series of approaches to locate the safest route for the Chinook.

Injured climber Chelsea Korte stated, "I cannot relate to you the feeling of elation as we saw, sometime later, an Army Huey rising from the cloud far below and flying toward us. My eyes were glued to it with an intensity and apprehension that came from an unvoiced doubt I had that a helicopter would be able to negotiate either the strong gusts of wind present on the mountain, or maneuver into the tiny plateau where we were.

"As I watched, the bird got closer and I could hear . . . the sound of the rotors that had become so familiar to my ears in Vietnam, and as I watched, the ship suddenly listed to her side and dropped rapidly for what appeared to be several hundred feet. She then flew slowly back down into the clouds below and disappeared.

"The thought of being hand-carried down that icy slope in a basket filled me with anxiety and fear of falling again."

The MAST ship returned to Paradise and the pilot briefed park personnel and the Chinook pilot. The UH-1 crewchief volunteered to assist the Chinook crew in locating the victims. The Chinook departed for the rugged rescue area with its crew, an aidman from 10th Aviation Battalion, the MAST UH-1 crewchief and a six-man rescue team from the National Park Service. The pilot of the MAST aircraft "knew the crew was in danger of being blown into the side of Mount Rainier by the erratic wind currents."

The Chinook pilot reported moderate turbulence enroute to the accident site while following the recommended flight path. The Dustoff (MAST) crewchief aided the crew in locating the site without difficulty.

Mr. Korte described the Chi-

nook's approach, "There it was, flying slowly, steadily toward us. Bright-colored equipment had been set out on the sloping plateau as a marking for the Huey.

"While the space available would scarcely have sufficed for the Huey, there was no chance at all that a Chinook could land. The steepness of the slope, together with the strongly gusting wind seemed surely to preclude even the possibility of its hovering, owing to the whirring of the blades so close to the uphill side of the slope.

"While the huge helicopter continued to maneuver toward us over the crevasse, I kept waiting for the inevitable realization by the pilot that the situation was impossible—but he didn't break off the rescue at all."

The pilot, with the aid of the crew, initially tried to set the aircraft down side-slope on an area 20 to 25 yards wide. This proved to be unstable, as the Chinook started slipping down the slope in the 30 to 35 knot winds. The pilot stated, "I picked the Chinook up and turned the tail facing into the edge of the plateau far enough forward so that the blades would not contact the 45 to 60 degree ice fall directly behind and above the narrow plateau. I have no idea how close the blades were to the ice-fall, only that the crew did a fantastically outstanding job in keeping us clear and in updating us on the situation.

"Since the edge of the plateau dropped off rapidly, about 60 degrees or so, and descended 2,500 to 3,000 feet, I had to look out my left door to maintain flight reference to the aircraft's altitude. I could pick out rocks and cracks in the ice and reference them to the frame of the window to keep the aircraft as level as possible."

The copilot physically assisted on the controls and a flight engineer peered over their shoulders assisting in the monitoring of the aircraft's instruments. The two other crewmembers provided guidance from the rear of the aircraft to the pilots. The six-man rescue team exited and brought the injured to the aircraft, where they were loaded and cared for by the MAST crewchief and aidman.

The semi-hover lasted about 15 minutes. Mr. Korte said, "With white clouds below and white snow all around, there seemed to be almost nothing upon which the pilot could use to guide himself and hold the aircraft steady. Rescue personnel rushed out of the back of the bird, but I had my eyes riveted to the helicopter for the crash I was certain was coming. I was the last to be put onboard, and still waited for it stiff with anticipation. It never came. With a tremendous roar and groan she slowly lifted off and drew away. Against all odds they had done it."

The Chinook, with the injured climbers aboard flew back to Paradise where the patients were transferred to the awaiting MAST aircraft for the trip back to St. Joseph Hospital in Tacoma, WA.

The superior flight capability of the Chinook crew and professional teamwork demonstrated by all the personnel involved, may have saved the lives of the two seriously injured. Minutes after the Chinook left the site, the area became obscured by weather. "The selfless and heroic efforts of the men of these units are truly a great credit to themselves and to the uniform they wear," said the seriously injured Mr. Korte. The members of the 243d Aviation Company (ASH) who participated in the rescue and the crewchief from the 54th Medical Detachment (Helicopter Ambulance) have been awarded Air Medals for their roles in the rescue.

Teamwork is the key to the performance of any mission and great credit goes to all of the individuals (see figure) involved in this daring rescue.

54TH MEDICAL DETACHMENT
(Helicopter Ambulance)
CW2 Dennis Patterson — Pilot UH-1
CW3 Doug Decker — Copilot
SGT Robyn Porath — Crewchief
SP5 John Hallmark — Medical Attendant

243D AVIATION COMPANY (ASH)
CW3 Roger Sesna — Pilot CH-47
CW2 Steven C. StJohn — Copilot
SSG Gregory J. Hembree — Flight Engineer
SSG John Lynn — Flight Engineer
SGT Michael Zimmerman — Crewchief
SP6 Daniel W. Evans — Medical Aidman
(10th Avn Bn)

NATIONAL PARK SERVICE RESCUE TEAM
Rick Kirschner — Team Leader
Lee Henkle
Fred Hemphill
John Conoboy
Kirk Storer
Steve Knox

Great thanks to Chelsea Korte for his contributing statements.

Night And Adverse Weather Training

LTC Matthew R. Kambrod
Commander, 7th Aviation Battalion
Fort Ord, CA

TODAY, IF ONE were to read any number of 1970 to 1974 periodicals addressing deficiencies in Army aviation, repetitive emphasis would be found on the inability of aviation units to sustain 24-hour or adverse weather combat operations. This emphasis resulted in a focus on research and development directed at improving hardware technology to assist the naked eye in functioning at night. While hardware technology moved ahead in the development of sophisticated optics, training technology addressing night and adverse weather combat operations remained stagnant.

This article addresses the issue of Army aviation's training requirements to meet night and adverse weather combat operations. The issue, though surfaced often, was never resolved in the early 70s and remains with us today.

The Army currently has two excellent tools with which to manage and assess aviation training. These tools are:

- The Aircrew Training Manual (ATM)
- The Army Training and Evaluation Program (ARTEP).

If we are to make substantial gains in the conduct of training at night and in adverse weather, we must structure these types of training in terms of both the ATM and the ARTEP conjunctively. To this end both are extremely compatible, but in a real world sense their potential is not maximized insofar as it relates to night and adverse weather training today.

The current ARTEP for a combat aviation battalion in an infantry division provides three separate levels of standards against which performance can be measured, level 3 being least difficult, advancing to level 1:

- Level 3 training and evaluation programs address tasks oriented toward company through crew echelons;
- Level 2 establishes standards of performance for battalion echelons;
- And Level 1 combines the diagnostic effort in summation and outlines battalion through crew echelons.

The point which needs to be made at this time is that virtually no night requirements are identified to be accomplished by individual aircrews, sections, platoons or companies, until the level 1 ARTEP is broached. This also is true for air cavalry with some minor exceptions. This must change if we are to be honest with ourselves in wanting to improve our night and adverse weather capability.

A different situation from the ARTEP exists with the Aircrew Training Manual. The ATM tasks the commander with the responsibility to evaluate and improve individual aviator readiness by achieving and sustaining a high level of proficiency in aircrew performance. Aviation commanders require that a level of proficiency be maintained by pilots and translate this proficiency into tasks performed quarterly to ensure retention of essential flying skills.

The real world inconsistency lies in the fact that aviation unit commanders develop night and adverse weather training requirements as defined, not by Department of the Army through Training and Doctrine Command (TRADOC) development of requirements in an ARTEP, but rather by the commanders themselves through their own assessment of their unit's need. This results in a total lack of standardization in definition of night and adverse weather tasks to be accomplished by aviators in tactical units.

What is determined necessary by one commander may be viewed as nonessential by another. Particularly since priority of training will go to those tasks which are explicitly designed to satisfy or meet ARTEP standards. Since level 3 and 2 ARTEPs call for no night operations,* ATM night tasks and adverse weather activities tend to be assigned varying degrees of priority established solely by the commander. Priorities may vary from zero to 100 percent support for night activities.

Finally, to carry the discussion one step further, definition of tasks in the ATM program which relate to level 1 ARTEP requirements demand only a very limited capability in, for example, an aviation battalion. The only requirement in an aviation battalion's ARTEP level 1 for night operations is a night combat assault.

Likewise, adverse weather addresses only emergency procedures should a pilot enter the clouds or fog inadvertently. This is the root of the problem.

*It is understood that in ARTEPs other than a combat aviation battalion some night tasks are identified.

The ARTEP defining the standards against which we measure our combat effectiveness has tragically few tasks developed demanding the performance of night combat or adverse weather operations. We cannot be satisfied with these standards. I suggest the following actions be taken as solutions for the problems in question:

- ARTEPs for aviation units be revised to reflect night and adverse weather requirements at all levels, 3 through 1.
- The level 3 ARTEP should reflect a heavy concentration (platoon level) of basic night tasks such as single ship logistical missions, night target identification and acquisition, night low level emergency procedures, and contour flight at aircrew, section and platoon level. On the other hand, an air cavalry level 3 ARTEP might address, for example, basic movement of scouts and guns, establishing and manning listening posts or observation posts with aircraft concealed nearby. Likewise, the use of tactical instrument flight should be introduced early as an ARTEP standard for subsequent adverse weather operations.
- A level 2 ARTEP should provide diagnostic standards to assess the capabilities of a battalion's/separate companies to conduct as a minimum logistical missions and combat assaults at night. This is an amplification of aircrew, section and platoon activities found in level 3. Likewise, using simulators as an ARTEP tool, tactical instrument flight can be incorporated as a standard for evaluation within separate companies.
- A level 1 ARTEP should be developed to assess the ability of a battalion to conduct night battalion sized operations, i.e., multiple company lifts and a composite of tactical missions spanning the normal range from night resupply to combat assaults at night or under reduced visibility conditions. Limited reverse cycle operations should be introduced in this level in recognition that in a tactical environment, 24-hour operation should require the selection of separate crews for night and day combat operations.
- Finally, consideration should be given to the establishment of a fourth level ARTEP assessing an aviation unit's capability to perform its mission solely at night. This would be the highest level of performance in the sense that it would be most difficult and it would measure the surge capability of a unit to operate solely during hours of darkness.

All aspects of night operations could be addressed in the fourth level, to include, for example, aircraft maintenance, forward area refueling, night displacement, night hot refueling and so on. The fourth level ARTEP, however, should demand far more than considered in the past. We should include the development of night standards integrating combined arms such as the adjustment of fires at night from nap-of-the-earth (NOE) altitudes, or even combat assaults by infiltration or suppression with fire support rollbacks. These are extremely difficult activities in daylight, let alone night. This fourth level clearly would establish the necessary emphasis on the total program concept of night operations.

Once standards are defined in all four ARTEP levels, commanders developing training programs to meet these standards will of necessity establish ATM tasks which correspond to the level of ARTEP toward which their units are training. Varying the frequency per quarter of each night and adverse weather task will assure the commander that proper attention is devoted toward a given level of pilot proficiency. When night requirements and standards are established for the most basic level ARTEP, there is immediate assurance of the introduction of related training into the ATM. Since this is not now done, we cannot expect night combat readiness in our units until the basic requirements are changed. "The troops do best what the boss checks." In this case the "boss" is the ARTEP standard once defined.

A final benefit of this approach ties directly to the qualification of readiness. Once tasks for ATM implementation are established which correlate to a particular level ARTEP, a capability exists to equate the respective training requirement to dollars. In the case of fundamental night qualification of aircrews to meet level 3 ARTEP requirements, a known 34-hour per pilot figure, recognized as a basic requirement for night qualification according to TC 1-28, can be applied to a unit's ATM training hour figure. The hours needed per aviator multiplied by the number of pilots requiring the specific night training coupled to the cost per flying hour all provide the training manager a final dollar value for basic night qualification. This effectively quantifies a cost for initial night combat readiness. This is an extremely useful tool in budget justification since it factually puts a price tag on readiness, a heretofore near impossibility.

In summary, the restructuring of ARTEPs at each level will force emphasis to be placed on night and adverse weather training throughout all tactical aviation commands. The revised ARTEP and the ATM employed conjunctively will ensure that combat readiness requirements are fully met and that the Army has the capability to confront and defeat the known or existing threat at night and under adverse weather conditions. The demands currently placed on Army aviation assets to perform in night and adverse weather are not nearly what Army aviation is capable of producing. This must be changed—and soon—if we are to maximize our combat power in support of ground forces.

AVNEC PART IV

This is the final article of the *Aviation Digest's* four part series covering the Army Aviation Employment Conference (AVNEC) hosted last March by the Army Aviation Center. There were 29 general officers and civilian equivalents plus more than 20 colonels attending to discuss Army aviation training, doctrine and equipment. Less than half of the attendees were aviators. Nonaviator general officer attendees represented CONUS divisions and USAREUR tactical commands and high level staffs. Others represented major TRADOC Centers/Schools. Results of the conference will be used to help develop an appropriate agenda for the Army Aviation Systems Program Review (AAPR) scheduled for 4 and 5 December 1978. Copies of the first three articles covering the AVNEC conference can be obtained upon request. Write: *Aviation Digest,* Drawer P, Ft. Rucker, AL 36362; or call commercial (205) 255-6680; AUTOVON 558-6680.

Major General James C. Smith
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Army Aviation Personnel and Training Problems

Major Glenn G. Rother
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ONE OF THE MAJOR areas discussed during AVNEC was "Army Aviation Personnel and Training Problems." This area's workshop limited its discussion to six specific issues affecting the Army aviation community. The following paragraphs discuss these issues and summarize conclusions and recommendations reached by the workshop's members.

The first issue, **management of aviation specialty 15** focused on assignment requirements within specialty 15 that will meet Army mission requirements and enhance officer career development. It considered the Department of the Army assignment and education priorities that must be interfaced with the Aviation Career Incentive Act (ACIA) of 1974 established by Congress. It considered the insufficient numbers of lieutenant entering flight school to meet future Army requirements and addressed "the inherent feeling from the field" that officers are required to maintain proficiency in their basic branches if different from their primary and alternate specialties in order to enhance career development. Additionally, the group evaluated whether aviation assignments should be based on skill, background, and quality, or on basic branch qualification (i.e., air cavalry troop and attack helicopter company assignments reserved for Armor officers).

Workshop members concluded that a requirement does exist for specialty 15 to be an OPMS specialty. They also concluded that there is a requirement to reduce field grade specialty 15 overstrength. Additionally, it was reemphasized that the implementation of ARCSA III (see *Digest,* July 1977) will have a major impact on specialty 15.

The following recommendations represent a general consensus of the workshop participants concerning the management of the aviation specialty 15 issue:

- Flight school training rates should be increased to meet ARCSA III requirements.

The information contained in this article is an executive summary and does not reflect current Army policy. While the Aviation Special Task Force (STF) produced the same recommendations it should be noted that the Chief of Staff of the Army has directed a further ODCSPER/MILPERCEN evaluation of certain specialty 15 questions before approval/disapproval of the STF's recommendations.

• Combat arms officers should receive a minimum 1-year specialty qualifying assignment prior to flight school attendance.

• Officers should receive a 4-year aviation utilization assignment following flight training.

• Aviation captains should receive one primary/entry specialty qualifying assignment.

• A mechanism should be established to review field grade aviator potential for future specialty 15 utilization. Reduced overstrength at the field grade levels will allow for more flight school input at the company grade levels.

• The MILPERCEN Aviation Model should be updated annually to provide accurate aviator attrition rates.

• Uniform aviator coding guidance should be implemented that will allow TOEs/MTOEs to be filled by using more than the first two identifying specialty code digits (i.e., 11A15) through TAADS.

• A review should be conducted to determine if specialty 15 should be an alternate specialty only.

• When possible, aviation units should be manned by officers of the particular branch which has propenency for that type unit.

• An examination of the aviation TOE/MTOE and TDA structure in the context of ARCSA III should be conducted to determine if specialty 15 should be an entry specialty. In this respect, specialty 15 officers would be trained to serve as members of the combined arms team, rather than be required to serve in a combat arms branch.

The second issue investigated the **incentives necessary to retain aviation crewchiefs and maintenance personnel in the Army.** The group evaluated the psychological factors (i.e., money, travel, adventure, acquired skills) that stimulate enlisted personnel into these MOS career fields and considered how to retain highly qualified aircraft maintenance people in the Army. It was observed that the reenlistment and retention rates within the scout and attack helicopter maintenance career fields were below the desired Armywide rates during fiscal year 1977.

Workshop members concluded that an infeasible grade structure exists within the 67 career management field which creates poor promotion opportunity for Soldiers from E5 to E6 and forces them at reenlistment to select another MOS for promotion opportunity. Additionally, airplane and scout and attack helicopter crewchiefs should receive some form of incentive (not necessarily flight pay) commensurate with their responsibilities to place them on a comparable level with utility and medium helicopter crewchiefs.

The workshop recommended a review of the maintenance concept for all Army aircraft oriented toward the component systems approach. And also that a task force should be formed to review the TOE/MTOE, TDA and grade structure of Army aviation units in order to determine if an adequate and appropriate structure exists.

The third issue focused on the **Army aviation interface requirements that will enhance combined arms training effectiveness within U.S. forces.** Additionally, it evaluated the Army aviation employment training conducted at service schools because this is the source of combat development and doctrine, and an important means of teaching leaders and trainers the tactics and techniques which contribute to battle success. To defeat the threat, U.S. forces must develop training that closely matches the modern battlefield. This can be accomplished by conducting realistic and effective combined arms team operations.

Workshop members recommended that aviation-related training within existing advanced courses and commanders' orientation training should be increased. While considering the use of liaison officers and the S-3 air, a determination should be made on how best to integrate aviation into the combined arms team planning mission. Through the production of a combined arms training "how to fight" manual, more definitive guidance as to the who, what, where, when and how of combined arms training should be provided. Additionally, efforts to establish national training areas should be continued in order to provide adequate space to train the combined arms team.

The fourth issue addressed the **Army aviation training requirements to meet night and adverse weather combat operations,** focusing on both individuals and collective training required to train Army aviators. Consideration was given to the psychological preparations (i.e., mental conditioning) needed to conduct that training as well as the maintenance and administrative functions to support it. The human factors aspect of night flying (i.e., night vision adaptation) also was addressed.

The Aviation Center recently restructured its night and adverse weather training programs to provide more realistic training to the student aviator undergoing initial entry rotary wing flight training. However, to make substantial gains in the conduct of training at night and during adverse weather, unit training must be structured in terms of current guidance prescribed in aircrew training manuals. ATMs are Army aviation's most recent advancement in the individual aviator and aviation unit training technology.

It was recommended by the workshop members that Army Training and Evaluation Programs (ARTEPs) should be modified to emphasize night and adverse weather training. Additionally, it must ensure that all ATMs are effectively integrated with corresponding ARTEPs and modified to emphasize night and adverse weather training while ensuring consistency with readiness reporting.

The fifth issue addressed the **adequacy of aviation TOE/MTOE personnel authorizations to conduct sustained combat operations.** During surge operations, personnel re-

quirements may exceed those authorized. The current and future aviator-to-aircraft ratios in the attack, combat support and medium helicopter companies were analyzed. The ability of maintenance personnel to perform their missions in a timely manner was reviewed, as this dictates whether or not the primary mission of the unit can be accomplished.

To conduct sustained combat operations in support of the ground forces, sufficient personnel must be authorized and provided to allow full use of all aviation assets.

Army Regulation 95-1, "Army Aviation: General Provisions and Flight Regulations," restricts crewmembers to 140 flight hours per month. Actual flight time tolerance has not yet been determined with current and future tactics, techniques and equipment. Currently, the U.S. Army Research Institute in conjunction with the Surgeon General of the Army is researching the flight time tolerance level for aircrew performance. The results will be used to determine aircrew budgeting and staffing ratios to meet current and future needs.

Aircrew staffing for sustained (24-hour) operations should provide fully qualified aviators at a ratio greater than one crew per aircraft with the ratio to be determined based upon mission requirements. This must be done early to provide adequate lead time for procurement, training and budgeting. Current ALO-1 authorizations of maintenance personnel should be augmented to maintain a 24-hour mission capability.

The sixth and final issue reviewed the **causes for aviation personnel shortages in the Reserve Components (RC).** Workshop members analyzed the recruiting efforts, IERW course outputs, and attrition rates of the active force and RC organizations. Based on future RC aviator requirements, it addressed the adequacy of procedures used to identify, locate and recruit former Army aviators. It considered enlisted maintenance personnel shortages in the Reserve Components.

FORSCOM has proposed and received DA approval for staffing Reserve Component aviation units up to 150 percent of their current authorizations. In conjunction with the Office of the Chief of Army Reserve and the Army National Guard. FORSCOM is developing a plan to use RC personnel as fillers during future conflicts.

Workshop members recommended that the Reserve Component Personnel Administrative Center should continue with its efforts to identify and pre-assign aviation personnel. They also proposed that Reserve Component input to the IERW course should continue to be supported. Lastly, they recommended that adequate enlisted training spaces for the RC maintenance personnel should continue to be provided.

While the recommendations discussed in this article are potentially far reaching in their impacts on Army aviation, additional staffing and study will be conducted to ensure that implementation of the AVNEC findings achieve the desired purpose of improving Army aviation's overall mission capability.

GLOSSARY

AAPR	Army Aviation Systems Program Review
ACIA	Aviation Career Incentive Act
ALO-1	authorized level of operation
ARCSA III	Aviation Requirements for the Combat Structure of the Army
ARTEP	Army Training and Evaluation Program
ATM	aircrew training manual
AVNEC	Army Aviation Employment Conference
CONUS	Continental United States
DA	Department of the Army
FORSCOM	Forces Command
IERW	initial entry rotary wing
MILPERCEN	Military Personnel Center
MOS	military occupational specialty
MTOE	Modification Table of Organization and Equipment
OPMS	Officer Personnel Management System
RC	Reserve Component
TAADS	The Army Authorization Documents System
TDA	table of distribution and allowances
TOE	table of organization and equipment
TRADOC	Training and Doctrine Command
USAREUR	U.S. Army, Europe

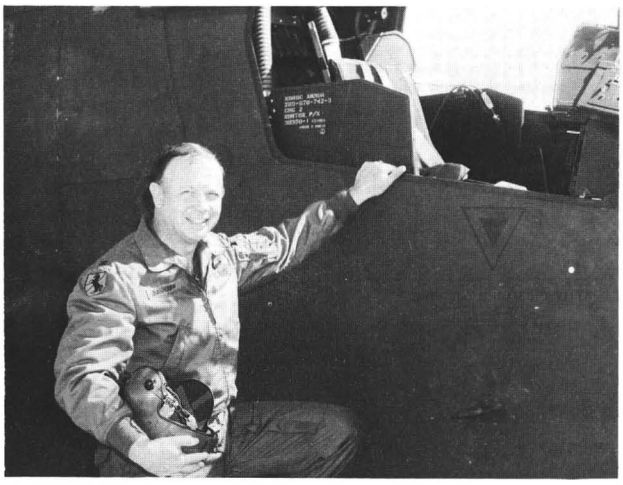
UPDATE ON ATTACK HELICOPTERS

This article was compiled by Colonel Bahnsen while still TRADOC Systems Manager for the attack helicopter. He is now commander of the 1st Aviation Brigade at Ft. Rucker

THE TRADOC System Manager for Attack Helicopters (TSM-AH) Office was formed on 1 July 1977. Its primary purpose has been to represent the *user* community in all actions concerning attack helicopter development, both the AH-1 Cobra and AAH (AH-64, advanced attack helicopter). This article is a 1-year update concerning those areas of significant actions in attack helicopters. Hopefully, the TSM team has represented the overall user force faithfully. If this is not the case, we need to hear from you.

The TSM works for the Commander, U.S. Army Training and Doctrine Command (TRADOC), Ft. Monroe, VA, under the direct supervision of the Commander, U.S. Army Aviation Center, Ft. Rucker, AL. He coordinates all that he does with the Commander, U.S. Army Armor Center, Ft. Knox, KY. The Ft. Rucker/Ft. Knox day-to-day link-up has been a key to the TSM's first year. Additionally, the TSM office has an almost daily interchange with the program manager, AAH and the project manager, Cobra.

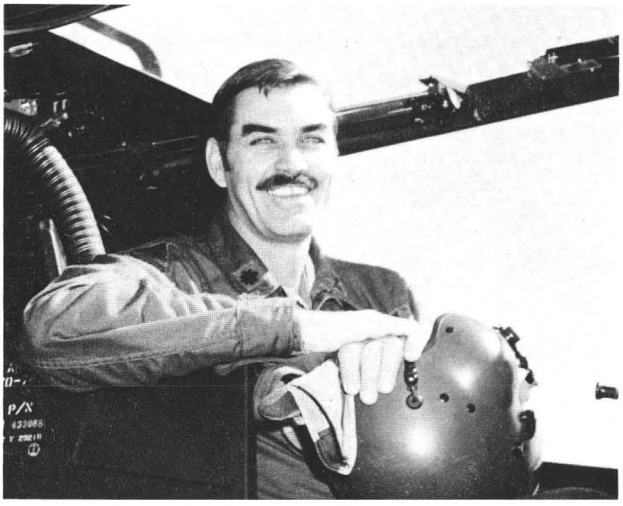
COL John C. Bahnsen



The TSM office is staffed with five officers and a good-looking, super efficient secretary. All the officers are attack helicopter pilots. Their respective responsibilities are shown in figure 1.

TRAINING

LTC Joe Moffett



TRAINING IS an area of great concern to everyone in the aviator force. We have devoted considerable effort in this field (figure 2, page 18). The challenge of filling the shaded area between lines A and B is monumental and it grows with the complexity of equipment. One goal of the TSM-AH is to ensure the necessary training programs are completed to help correct this situation with both the AH-64 and Cobra.

ITDT. In August 1977, the first step was taken by stating a user requirement for acquisition of *integrated technical documentation and training* (ITDT) for the AH-64 and AH-1S. In December 1977, part of this requirement was validated and Department of the Army directed that ITDT become part of the Hughes Helicopters' AH-64 contract. Final negotiations were concluded in May 1978 and AH-64 ITDT will become a reality. Simply stated, ITDT is "maintaining while training." Expected benefits of ITDT are increased readiness and reduced life cycle costs.

Cobra ITDT presents a dilemma! In September 1977, the joint TRADOC/DARCOM General Officer ITDT steering committee, recommended the Cobra be given ITDT priority for a "fielded" aviation system. However, because of the various Cobra configurations and other more pressing requirements, the Cobra will be resubmitted as an ITDT candidate next year.

Training Devices. The users have recognized the need for a family of attack helicopter training devices. The Aviation Center was tasked to develop training device requirements to support this need. This is no small chore and requires some real brainstorming by the entire attack helicopter community to provide worthwhile training devices.

A part of this family will be a series of threat air defense trainers which can be used by both field units and in the institution. These devices will be lightweight, hopefully low cost, easy to maintain, and most important—portray the necessary threat simulations to ensure training to increase survivability.

Gunnery. Decreasing monies, higher cost maintenance and higher training ammunition costs dictate that the Army find a more cost effective method to teach aerial gunnery. One answer to this problem is simulation. Over the years, the Synthetic Flight Training System (SFTS) has more than proved its worth in teaching instrument flying. Recent improvements in simulator technology make the SFTS look like the "Blue Boxes" of the 1940s. The devices of today are called combat mission simulations (CMS) and that's exactly what they do.

When a crew "returns" from a tactical mission flown in these devices, they are thankful to be alive. The realism is there! The TSM Office, in conjunction with Armor Center, Aviation Center and PM-TRADE, are procuring the best available devices and more importantly the number required to keep our attack crews combat ready. There are many things that can be taught in simulators that cannot be done realistically in actual aircraft: among them are missile avoidance techniques and various inflight emergencies.

The preliminary step in crew integration is to ensure that crewmembers are proficient in their stations. To minimize valuable time in the CMS, part-task trainers to instruct the pilot and gunner independently are required. Aviation Center and Armor Center are developing these requirements for attack helicopters. Once fielded, these trainers will effectively teach gunners to accurately employ their organic weapons without actual expenditure of expensive ammunition. Simultaneously pilots can be learning emergency procedures, night flying using the Integrated Helmet and Display Sighting System (IHADSS) and conducting nap-of-the-earth (NOE) navigation. Once the crew is individually proficient, the CMS can be used to attain crew proficiency at minimum cost. The AH-64 air crew evaluator, a snap-in, snap-out device with video recording and playback capability, can be used by unit commanders to evaluate crew weaknesses/strengths and develop meaningful training programs.

One of the weakest links in attack helicopter operations is the lack of an Armywide standard gunnery program. Armor Center, Aviation Center and TSM office cooperated in writing FM 17-40 (Draft), "Attack Helicopter Gunnery," May 1978. This was a combining of TC 17-17, "Gunnery Training for Attack Helicopters" and TC 1-4, "Helicopter Gunnery," plus some new slants in preliminary gunnery training and range firing. FM 17-40 is the first step in a long march to get attack helicopter gunnery to the high level we will need on the next battlefield. This document is in the field now for comment.

Comments should be in to the Armor Center by October and a final product to the field in early 1979. FM 17-40 provides a step-by-step gunnery program for both active and reserve attack helicopter units. Additionally, the *Aviation Digest* has an ongoing solicitation for ideas on how gunnery is being taught by successful attack helicopter units. User input will be used to refine the techniques and programs contained in FM 17-40. In particular, the Army needs to know how to realistically score gunnery, especially rockets and guns. In the past this area has not been

Figure 1

KEY TSM ACTIONS

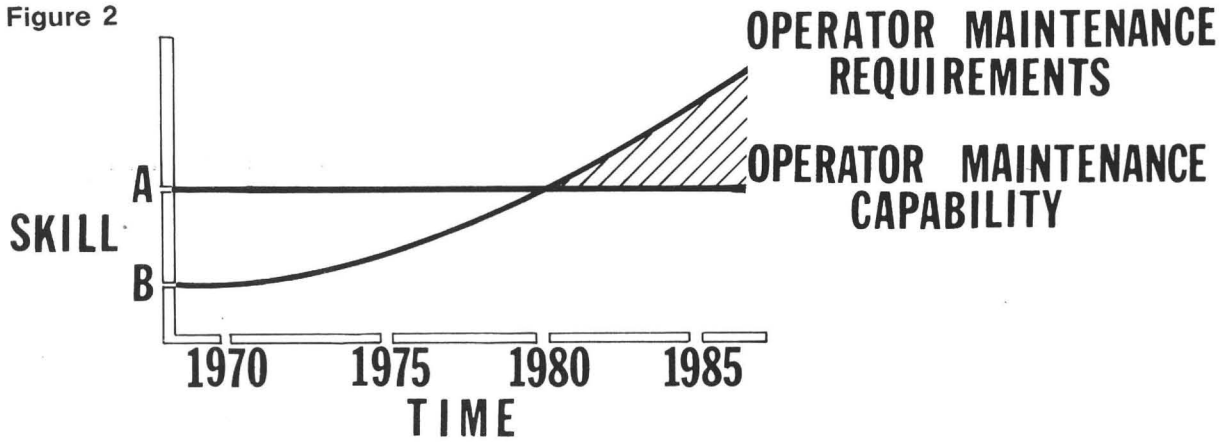
LTC Joe Moffett
TRAINING
- ITDT
- SIMULATION
- DEVICES
- GUNNERY
- RANGES

LTC Jerry Hipp
PERSONNEL
- ORGANIZATION
- VISIONICS
- FATIGUE
- PILOT SELECTION/ RATIOS

MAJ Chuck Crowley
LOGISTICS
- LSA
- FARRP
- ILS

MAJ Joe Beach
TEST & EVALUATION
- ACE
- JAWS
- J-CATCH

Figure 2



given sufficient visibility to ensure that the Army has viable gunnery range scoring devices.

Aerial Gunnery Ranges. Adequate attack helicopter gunnery ranges are practically nonexistent force-wide. The users agree that ranges must present realistic threat arrays in the manner found in battle. Seldom will attack pilots experience the luxury of a full 90 degree deflection shot. More than likely a twisting, turning, fleeting glimpse will be what one sees and engages.

The Aviation Center commander has directed development at Ft. Rucker of an 11,000 meter multi-purpose range which will accommodate the HELLFIRE missile, 30 mm cannon and 70 mm rockets. This range should be the model for future attack helicopter gunnery ranges. Additionally, a study is ongoing to provide Ft. Rucker a fully instrumented range which can be used for tactics development exercises (TDEs) and other projects requiring data collection.

Future requirements for air-to-air gunnery training is a whole new problem we are just now beginning to consider. Commanders worldwide need to look into this rather complex problem.

In sum, training is in the spotlight. The thrust of our efforts is directed toward providing the field with the simplest, most up-to-date and cost effective methods of preparing attack crews to fight as members of the combined arms team in any environment, anywhere in the world.

PERSONNEL INITIATIVES

LTC Jerry Hipp

FUTURE ATTACK helicopter organizations require a 24-hour a day fighting capability. Most strategists agree that we will require additional authorizations to crew adequately our attack helicopter fleet and dedicated day and night crews are being seriously considered. The results of the "Attack Helicopter Organization Study, 1985" (ATHELO), to be available early in 1979, hopefully will substantiate increased aircrew projections and spawn new initiatives in solving manning deficiencies.

The use of a computer simulation model to identify maintenance manpower and aircrew ratio needs will be applied to the AH-64. This model is based on a realistic combat scenario on a projected battlefield. The ATHELO study will apply the model in development of aircrew ratio recommendations. Future AH-64 COEA also may use the model to weigh overall effectiveness under varying conditions and manpower constraints.

Pilot selection for the AH-64 is an emotional issue. Only the best qualified attack pilots will be selected for AH-64 transition. Criteria will include special visual capabilities—ability to adapt to darkness, higher

standards of visual acuity, perhaps no corrective lenses will be permitted (restricting training to aviators not requiring eyeglasses), and use of contact lenses for pilots requiring glasses after AH-64 transition. The highly demanding AH-64 human/machine interface requirements will tax the limits of the crewmembers.

Advanced visionics in the TADS/PNVS package will demand attention and require decisions. The development of the IHADSS and accompanying sets of symbology to enable the crew to fly and fight in adverse conditions burdens the crew with further demands. We must select only the most capable, most competent, most mentally and physically prepared aviators to crew our AH-64s.

As we improve the AH-1S Cobra fleet with better visionics, better night vision devices, and reliable NOE navigation systems, the same criteria used with AH-64 selection also should apply to AH-1 pilot selection. This is not a planned vendetta against aviators with glasses. The visionics and eyepieces and glasses combination make it doubtful that all will operate at maximum efficiency, especially when you are in night and adverse weather lighting conditions.

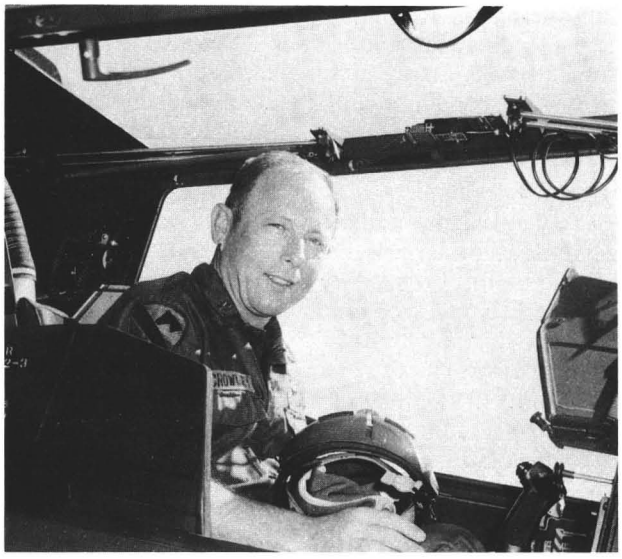
Night Operations. Pilot night vision capability and the ability to maximize the advance visionics of the AH-64 can make the difference in battle. Preliminary research has determined that about 15 percent of the Army population has exceptional night vision; about 30 percent are marginally effective at night; and a number are essentially night blind. We anticipate future use of a "Light Emitting Diode Dark Adaptometer" to distinguish accurately both above average and below average night visual sensitivity in the aviator force. Such an adaptometer has been developed by LTC S. L. Biggs, a flight surgeon at Letterman Army Institute of Research. Interestingly, the night vision capability of the current Army aviator force generally is an unknown quantity. We intend to identify weaknesses in this area and to include night vision sensitivity in future pilot selection processes.

Aviator Fatigue. Helicopter aircrew fatigue long has been a ponderous question. Considerable fatigue research has been conducted by NATO advisory groups and the U.S. Army Aeromedical Research Laboratory (USAARL) at Ft. Rucker. Results of the research have been applied to development of safety regulations and to evaluate impact on aircrew performance. A major unknown, however, is the impact on aircrews of flying day/night nap-of-the-earth in a combat environment.

NOE flying demands complete concentration, preparation and forethought. This constantly changing environment requires rapid perceptual judgments and extremely precise control responses. USAARL is planning additional study on the NOE envelope with full support of TRADOC. Let there be no doubt that physical and mental fatigue probably will become the aviator's biggest limitation while operating the AH-64 and that the endurance of the most physically fit pilot will be far less than the endurance of the aircraft flown.

LOGISTICS

MAJ Chuck Crowley



TSM-AH HAS BEEN involved actively in the development of the logistic support package for the AH-64. Reliability and maintainability have been prime factors in the design of the AH-64 from the start of the program. The TSM office working with the U.S. Army Logistics Center, Ft. Lee, VA and the U.S. Army Transportation Center, Ft. Eustis, VA, is participating in the LSA which is an intensive effort to review each maintenance task required at AVUM, AVIM, and depot level maintenance on the AH-64. Each task is reviewed in terms of manhours, MOS, skill level, equipment and tools required to perform the task.

The purpose of the LSA is to ensure the AH-64 is completely supportable in the field. We also have been involved in improving and replacing the aging collection of ground support equipment (GSE) currently in use by aviation maintenance units. We are endeavoring to provide a modern family of GSE which will meet the maintenance requirements of today and the demands of the future. We also are working with other TRADOC centers and schools to

improve the equipment and procedures used in FARRP.

In recent years there has been increasing emphasis on the use of automatic test equipment for aircraft maintenance. The fully modernized AH-1S will have several items of test equipment for use at AVUM and AVIM. We recently have initiated an effort to reduce or eliminate this proliferation of "suitcase type" test equipment in favor of a more versatile and reliable test equipment. This effort will determine the most effective way of improving the supportability of the AH-1S in the future.

The primary objectives of our efforts in the logistic area are to ensure the attack helicopter fleet is supportable in the field and the maintenance system is responsive to the unit's needs. Easily said, but infinitely more difficult to do.

TEST & EVALUATIONS

MAJ Joe Beach

IN ADDITION TO participating in the developmental tests for attack helicopters, the TSM office has planned, supported, participated in and executed other TDEs involving attack helicopters.

One of our major concerns has been the involvement of helicopters in air-to-air engagements. ACE TDE was conducted during November and December 1977 by the U.S. Army Aviation Board under the sponsorship of the TSM office. This TDE consisted of a preliminary look at an AH-1S flying against a simulated threat attack helicopter in aerial engagements. Although limited in scope, ACE provided some valuable data that has been integrated into a new manual, soon to be distributed to the field.

At the completion of Phase I ACE TDE, an effort is underway that will provide us with yet more detailed data in the helicopter air-to-air problem. This effort known as J-CATCH, will be a Joint Army/Air Force evaluation that will investigate the integration of attack helicopters and high performance aircraft to destroy threat helicopters. Colonel Bob Bonifacio and his group at the Aviation Board at Ft. Rucker are carrying the ball for the Army in J-CATCH. Upon completion, it is envisioned that the J-CATCH results will be available to all units to assist them in training.

Because of the Army's increased awareness of air-to-air battles involving helicopters, the TSM-AH office hosted the first helicopter air-to-air symposium in October of 1977 at Ft. Rucker (see *Digest,* December 1977). Attendees from all services numbered about 200. The 2-day exchange of ideas among services resulted in an integration of effort for future programs. In late February or early March, 1979, a second helicopter air-to-air symposium will be held at Ft. Rucker to further define where we are headed in the air-to-air arena. Industry will be invited to this update and all services will be in attendance (see page 48).

During September and November of 1977, Colonel Bahnsen acted as codirector in another TDE known as JAWS. The TDE was conducted using an attack helicopter team, consisting of a 4/5 mix, and four A-10 close air support aircraft against a representative threat tank unit with all its organic air defense systems. This provided a realistic vehicle to determine the tactics required to integrate attack helicopters and Air Force close air support aircraft into an effective attack team.

As a result of JAWS, a joint training manual was released in draft in May and will be finalized later this year. This manual depicts the integration, tactics, and command and control of Army/Air Force attack assets to defeat the armor threat. It also includes an annex for a 5-day training plan. Additionally, a JAWS movie was produced and has been distributed to the field. If either the movie or the TM have not been received, please contact our office.

As development of the AH-64 continues, this office is involved in the planning, training, and its impact when fielded. As OT test dates rapidly approach, a unique method to qualify OT aviators in the AH-64 is underway. As one could imagine, the AH-64 will be a sophisticated aircraft relative to the AH-1. Never before has the Army had to train aviators in an aircraft that will allow it to conduct day, night and adverse weather missions such as the AH-64 provides.

To adequately train OT aviators to use the TADS/PNVS, two surrogate systems will be used for training prior to AH-64 transition. This should reduce the number of flight hours required for a total AH-64

checkout. This unit will be known as the Development Test and Training Detachment (DTTD). Additionally, the DTTD will have simulators available onsite that will further increase aviator proficiency and simultaneously reduce flight hours. As a fallout of the DTTD, Aviation Center personnel will monitor and modify the training program to ensure its adequacy/validity for export to units.

TASVAL. During the upcoming year another critically important major test is planned to be conducted with Army, Air Force and Marine Corps participation. It is known as tactical aircraft effectiveness and survivability in close air support antiarmor operations (TASVAL). Directed by the Office of Secretary of Defense, the results of this test will be evaluated by the Institute for Defense Analysis (IDA) and others to determine aircraft survivability and tactical aircraft effectiveness. TASVAL may impact heavily on future production decisions of the AH-64. This is especially true in view of the fact that the A-10 is in production and the AH-64 is still in development. TSM has provided Army representation to TASVAL from its conception and will continue to do so until it is final.

CONCLUSION

This article merely scratches the surface on attack helicopter areas that require attention. Our mission continues to be to provide the field with the best total system possible, to include hardware, personnel, training, logistics, and the tactics needed to fight the next battle. Hopefully, we are aware of most attack helicopter problems.

If we, the TSM-AH office are not on target in presenting the *user view* on attack helicopters, your direct help is not only solicited, but encouraged. Call us, write us, come see us or invite us to your location. Our address is: CDR, USAAVNC, ATZQ-TSM-A, Ft. Rucker, AL 36362; or call AUTOVON 558-2108/3408/5171, Commercial 205-255-2108/3408/5171.

GLOSSARY

ACE	air combat engagement
ATHELO	Attack Helicopter Organization
AVIM	aviation intermediate maintenance
AVUM	aviation unit maintenance
CMS	combat mission simulations
COEA	cost and operational effectiveness analysis
DARCOM	Army Materiel Development and Readiness Command
DTTD	Development Test and Training Detachment
FARRP	forward area refueling and rearming point
GSE	ground support equipment
HELLFIRE	Helicopter Launched Fire and Forget
IDA	Institute for Defense Analysis
IHADSS	Integrated Helmet and Display Sighting System
ILS	integrated logistic system
ITDT	integrated technical documentation and training
JAWS	joint attack weapons systems
J-CATCH	joint Army/Air Force evaluation of attack helicopters/high performance aircraft to destroy threat helicopters
LSA	logistic support analysis
MOS	military occupational specialty
mm	millimeter
NATO	North Atlantic Treaty Organization
NOE	nap-of-the-earth
OT	operational test
PM-TRADE	project manager for training devices
PNVS	Pilot's Night Vision System
SFTS	Synthetic Flight Training System
TADS	Target Acquisition Designation System
TASVAL	tactical aircraft effectiveness and survivability in close air support antiarmor operations
TDE	tactics development evaluation
TM	training manual
TRADOC	Training and Doctrine Command
TSM	TRADOC System Manager
USAARL	U.S. Army Aeromedical Research Laboratory

OPMS CORNER Officer Personnel Management System

Promotion Board Reflections

Brigadier General Jack Walker
President of the 1977 LTC, AUS, APL, JAGC and CH
Promotion Selection Board

SOME MONTHS ago, Colonel Billy E. Spangler authored an article in the November issue of "Commanders' Call," a publication of the Army's Chief of Public Affairs. It dealt in considerable detail with the promotion board process and was the first time that I have seen such full coverage of the mechanics of promotion board operations. In my judgment, that article contributed a great deal of understanding to what was heretofore regarded by many as a mysterious "black box" process. It's with that same objective in mind, airing out the black boxes, that I share with you some observations made during a recent assignment as President of the 1977 LTC, AUS, APL, JAGC and CH Promotion Selection Board. These observations reflect the feelings of most of the board members.

First and foremost, we wish to assure you that,in our opinion, the process for promotion selection is sound and would be difficult to significantly improve upon. I observed that my fellow members of the promotion board were selected carefully, with consideration given to maturity in judgment and career expertise. They represented as broad a spectrum of specialties as could be reflected in a 15-member board. The board included reserve component membership, a female officer, a minority officer and an aviator. These officers serve not to act as advocates, but instead to explain to the other board members any unique career aspects of the backgrounds of those being considered.

Whole Man Concept. There is no formula or predetermined rigid criteria which board members are asked to apply to the selection process. Rather, selections are made as a result of the subjective file review conducted by individual board members and the compilation of scores applied to each file as a result of that review. A Letter of Instruction (LOI) from the Secretary of the Army is provided the board and is the single document, other than the officer's official military records, that influences the board's decision. I will touch on the LOI later. For now, let me explain the approach to file evaluation.

Officer promotion boards operate on a whole man concept, which means that the members weigh all the information they have about an individual and decide, on balance, what they think of him or her as compared to others in the zone. It is important to note that officers are not evaluated solely on the basis of past performances, but more importantly, on their demonstrated potential to make future contributions to the Army in positions of increased rank responsibility. Files are distributed to the board members alphabetically rather than by branch, as was done in the past. This procedure tends to deemphasize branch, implement the OPMS concept and support the philosophy that every job is an important job. The key to both success and, I might add, career satisfaction is doing every job well and having that fact accurately recorded in your file. There is **no** *order of merit list* provided the board.

Information available to board members includes the Officer Record Brief (ORB), the efficiency section of the official military personnel file (OMPF) and the LOI. Board members have on call, for their review, the most current roster and status report of all officers enrolled in the nonresident Command and General Staff College (CGSC). A briefing on OPMS is presented to the board prior to consideration of files.

Although the file evaluation by any one board member for a given individual file may take a relatively short time, that file also is evaluated by the majority of other members. Every document can be reviewed in the process. Therefore, every item of information in your OMPF should be accurate and as up-to-date as you can possibly make it. No one can influence this accuracy to a greater degree than the individual officer that the file represents. Your file does represent you. Your visits and calls to MILPERCEN for review and, if required, correction of microfiche will greatly assist in accomplishing this essential element.

Specific observations made by the board during the selection process are presented below to provide direct insight as to those items which our board found to be important

This article was published in the 21 April 1978 issue of *Focus*. While dealing with a 1977 promotion board, the subject is important enough to warrant reprinting in this issue of the *Digest*. Appreciation is extended to the Public Affairs Office, U.S. Army Military Personnel Center for permission

and, more importantly, which can be influenced by individual officers.

OMPF. Except for the efficiency reports, ORB, photograph, school record, awards, and records of derogatory information, other documents in the OMPF were seldom used and tended to clutter and complicate the file review. Academic reports are useful documents in the selection process, especially when considering those in the secondary zone. The photograph is the visual portrayal of you as an officer; it may be worth a thousand words. It should be current and should include a date on the data plate used in the photo.

ORB. This usually is the first item used by the board members. The ORB is an excellent document that provides the needed information in an easy to use format that should present the officer's composite career picture. It is essential that the information be current and accurate. It is understood that correcting or updating of the ORB is not accomplished easily in all cases, but it is apparent also that individual officers simply do not take sufficient action to ensure data is correct and that such things as physical examination, assignments and level of military and civilian education are current. These are commonly considered factors by all board members. Be assured that decisions to promote or not promote are not made on the basis of an ORB alone. However, the ORB is one of the first and key tools that the board uses.

OER. OERs are the most important group of documents in the OMPF. The board experienced difficulty in interpreting abbreviations which frequently appear in part IIIa and b (Duty Description) of the DA Form 67-7. Many abbreviations and acronyms do not make sense and raters/indorsers should not use them. Many descriptions have only the MOS code. OER reclamas remain in the file and, if disapproved, have a tendency to highlight a bad report. No document that we prepare is more important than an officer's OER. Each deserves the care we expect to be given our own. The word picture is important; do not expect the board to analyze subtle comments or pick up hints—simply tell it like it is.

The following additional observations are presented to provide further insight into the items this board considered as being important.

Military Education. Nonresident completion of CGSC level education was given equal credit to completion of resident CGSC. If the officer did not complete either program or was not at least an active participant, expectations for promotion *by this board* should not have been too high. Many assume a Masters Degree or a Doctorate is more marketable at selection board time than a good record of completion from CGSC. In the opinion of this board, this is not necessarily a valid assumption. Civil schooling accomplishments in support of recognized OPMS specialties was given favorable consideration by the board.

Physical Fitness. Since annual physical fitness scores are not standard items recorded on OERs or ORBs, current photographs, current physical profiles and OER comments contain important indicators of physical fitness. Physical fitness is important. Again, OER comments on the subject of fitness were of importance to the board.

Appearance. The appearance of many majors in the zone for selection was below currently acceptable DA standards. This observation is supported by photographs and is due partially to apparent overweight conditions. Poor grooming, uniforms improperly fitted, failure to correctly wear authorized ribbons and accouterments, excessively long hair and, in many cases, mustaches inappropriate to current regulations or untrimmed, contributed to the overall substandard appearance.

Letters To The Board. Letters should be limited to one page and should state the *facts*. Point out new information, such as progress in the nonresident CGSC course, pursuit of enrollment in graduate school and noteworthy qualifications in your specialties which iden-

Continued on page 39

GLOSSARY

LTC	**lieutenant colonel**
AUS	**Army of the United States**
APL	**Army promotion list**
JAGC	**Judge Advocate General's Corps**
CH	**Chaplain**
LOI	**Letter of Instruction**
OPMS	**Officer Personnel Management System**
ORB	**Officer Record Brief**
OMPF	**official military personnel file**
CGSC	**Command and General Staff College**
MILPERCEN	**Military Personnel Center**
OER	**officer evaluation report**
MOS	**military occupational specialty**
DA	**Department of the Army**

Winter flying requires specialized techniques. Awareness and training are two essential weapons in the battle against . . .

Blowing Snow WHITEOUTS

THERE ARE MANY hazards to operations over snow-covered terrain and one of the problems ranking highest in severity and producing most of aviation's winter mishaps is that of rotor-induced whiteout. Rotor-induced whiteout occurs during operations close to the ground, usually during takeoff or landing. The movement of air through the rotors of a helicopter causes a strong air current downward through the rotor system. When the airspeed is below effective translational lift, the direction of flow is perpendicular to the ground. If the helicopter is flown in ground effect, a recirculation of the air occurs. When flight is performed over loose snow, the movement of the air picks the snow up and circulates it, forming a ground-level snow cloud. Visibility is reduced to zero as you descend or climb through a snow cloud.

Severe disorientation can occur during a whiteout condition and you may have the sensation of moving in one direction when, in fact, you are stopped or moving in another direction. This can result in erroneous control application and you could then be in serious trouble.

Lack of experience or training in a snow environment is the biggest contributor to whiteout mishaps. Consider the following:

WHITEOUT MISHAPS

• While hovering forward, an OH-58 crew became disoriented in blowing snow and the aircraft bounced off the ground three times and tipped over on its right side. The pilot failed to use proper procedures for takeoff from snow.

• A UH-1, approaching an LZ, flew into heavy blowing snow, lost control and crashed. The pilot was not familiar with procedures in the operator's manual and continued to land after encountering a whiteout condition. The crew was not adequately trained for snow environment operations.

• Four AH-1s were flying loose trail formation on a training mission. A snowstorm approaching along the intended flight path prompted a discretionary landing. The formation spread out to land in an open field. The flight leader landed without incident. The crew of the No. 2 aircraft experienced a whiteout condition and the front seat pilot took control and landed the aircraft. No. 3 had to execute a go-around and land into the wind in another field. As the pilot of the No. 4 aircraft began to terminate his approach, rotorwash caused a whiteout condition and visual contact was lost outside the aircraft. The right skid hit the sod and the aircraft bounced and rolled over on its right side.

The crew lacked experience in dealing with the hazards encountered in a snow environment.

• An OH-58 pilot became disoriented while hovering in snow and the aircraft crashed on its left side. The pilot was flying in weather conditions beyond his capabilities. He attempted to continue flight even though he had previously experienced spatial disorientation in a whiteout. He was not adequately trained nor did he have knowledge of techniques of hovering in falling and blowing snow.

KNOW THE SNOW

Knowing the condition of the snow will give you an idea of what to expect during the takeoff or landing phase of your mission. The condition of snow will vary from loose and dry to well-packed. It may be crusted or melted and frozen to ice. Each condition will produce a different effect when overflying or landing. Use the following factors to determine the condition of snow:

• Where the temperature is −20° C. or below, fresh snow will be loose. Any time a wind of 10 knots or more exists, you can anticipate blowing snow. Open areas may be blown clean of fresh snow deposits; however, huge snowdrifts will develop when terrain features such as trees and crevasses block the flow of air.

• Loose snow that has been exposed to the sun for 3 days or more will form a crust. The depth of this crust will depend on the time it has been exposed to the sun. Overcast conditions will not cause the snow to crust. The rotorwash of an OH-58 may not cause a breaking up of the crusted snow, while operation of a CH-47 over the same area could cause the crust to break up in pieces.

• Footprints of people or animals provide an indication of the snow condition. Deep prints indicate snow is loose and blowing snow will be encountered when landing. If a person is seen standing atop snow without sinking, you can anticipate crusted or frozen snow.

• A low, slow pass will give an indication of the snow condition. If the rotorwash creates a snow cloud, you must initiate the proper flight technique for a safe landing.

The following techniques are recommended for helicopter operations in a snow environment:

TAXIING IN THE SNOW

The helicopter produces the greatest amount of rotorwash when hovering. This creates a very hazardous condition for taxiing skid-mounted aircraft. This hazard is not as serious for aircraft with wheels. These aircraft can ground taxi safely to the takeoff point with only minimum pitch, thus reducing the force of the rotorwash.

If you must relocate a skid-mounted aircraft from the parking area to the takeoff point:

• Ground taxi the helicopter to a point where it can be flown to a hover and air taxied at a high taxi speed (approximately 10 knots to 15 knots). The reason for ground taxiing is to permit positive control of the aircraft when in close proximity to other aircraft and obstructions. At this low altitude, the rotorwash will produce an area within the snow cloud where forward visibility can be maintained with the ground. The type of aircraft being flown will determine the size of the clear area. The air taxi speed should be slightly below effective translational lift airspeed. This technique allows the aircraft to be flown forward of the snow cloud where visibility is not restricted by blowing snow.

• Avoid taxiing in the near vicinity of another aircraft that is running up or taxiing. Sufficient time should be allowed for the snow cloud produced by another aircraft to dissipate before taxiing through the area.

TAKEOFF

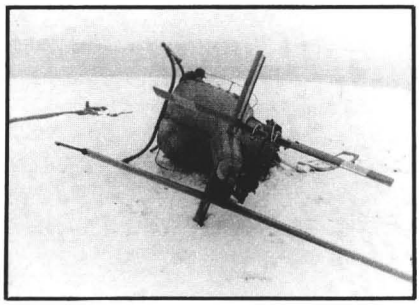
The techniques used to take off from snow will vary depending on the type aircraft you are flying; however, the doctrine for this type of takeoff is common to all helicopters. The following takeoff techniques are recommended:

• Ensure the skids are free from obstruction, e.g., tree roots and rocks, and not frozen to the ground. A visual inspection of the skids will

reveal any obstruction that must be removed before takeoff. It may be necessary to get the aircraft light on the landing gear and apply small pedal pressure to ensure the skids are not frozen to the ground. CAUTION: Avoid excessive antitorque control inputs.

• Where the snow is only a few inches thick, application of pitch to the blades before takeoff may blow most of the snow away from the takeoff point, thus reducing the density of snow that will be lifted on takeoff.

• After the above procedures have been accomplished, stabilize the aircraft on the ground until the snow cloud dissipates. When ready for takeoff, position the cyclic for takeoff. If there are no obstacles along the takeoff route, it should be positioned to achieve a maximum performance takeoff attitude. If the takeoff is to be made over an obstacle, a near vertical ascent should be made.



The pilot of this aircraft became disoriented during a rotor-induced whiteout condition.

• When ready for takeoff, make a continuous application of torque. The aircraft should have no forward movement until clear of the ground. Sufficient torque should be applied to ensure a positive rate of climb. As the aircraft begins to climb, blowing snow will increase and reference to the ground will be temporarily lost. Maintain heading and flight attitude by reference to the flight instruments. When clear of the snow cloud, adjust flight attitude and torque so as to achieve normal climb airspeed and rate of climb. Throughout the maneuver, the copilot should monitor the engine and transmission instruments.

• Prior to takeoff, you should discuss with the copilot what action will be taken in the event of an engine failure or rpm bleed-off while in the snow cloud. The normal procedure for single-engine aircraft is to maintain takeoff heading and to perform a hovering autorotation. The copilot's responsibility is to assist in identifying the failure and height above the ground during the descent. If flight is conducted in a multiengine aircraft, you must determine before takeoff if single-engine operation is possible based on gross weight. If it is determined the aircraft must be landed, the pilot should beep up the good engine to gain maximum power and position the aircraft in a landing attitude. Power is added during the descent to cushion the aircraft onto the ground.

LANDING

When landing a helicopter to snow-covered terrain, you can anticipate being engulfed by a snow cloud unless the proper landing technique is used. This technique requires the aircraft be flown in front of the snow cloud until it makes contact with the ground. Although the specific technique will vary for each type of helicopter, the doctrine for snow landings is the same for all helicopters. Remember that no two snow landings are the same. You must always anticipate the unexpected and be prepared to cope with any condition that confronts you. Use the following techniques when landing to snow-covered terrain:

• Before initiating the approach, you should learn as much about the touchdown area as possible, e.g., condition of the snow, slope of the area, obstacles. If the landing is made to an improved landing site, some forward airspeed on touchdown is desirable. However, when landing to an unfamiliar tactical site, forward speed should be dissipated upon touchdown. The approach should be planned so that only minimum power is required to terminate. If there are no obstacles along the approach path, a shallow approach is recommended. If an approach angle greater than a normal approach is required to get into a confined area, it is preferable to terminate the approach out of

ground effect above the touchdown point and hover vertically downward. The rate of descent will depend on the condition of the snow. In very loose snow, a slow descent will blow the snow away, allowing you to maintain visual reference with the ground. This procedure permits greater control when in the snow cloud.

• The initial position of an approach to the snow is the same as any other approach. The primary difference is in the last 50 feet. Instead of making the normal deceleration below effective translational lift airspeed, you must maintain this airspeed until just before touchdown. This technique allows you to keep the helicopter in front of the snow cloud until touchdown, after which the aircraft will become engulfed in the snow cloud. The approach angle of the last 50 feet deviates from the standard constant angle of descent. A slight leveling off is required to maintain airspeed. Forward cyclic must be applied to maintain speed. As the aircraft descends to an in-ground-effect attitude, blowing snow will develop to the rear of the aircraft. At this point, begin a deceleration. After the aircraft has begun to decelerate, it should be positioned in a landing attitude. If inadvertent ground contact is made due to poor depth perception, it will not be hard enough to damage the aircraft. Once contact is made, reduce torque until the aircraft is firmly on the ground. Never plan to terminate the approach to a hover as disorientation can occur easily in a snow cloud.

• The most difficult aspect of the approach is determining your height above the terrain. Trees or other terrain features located in the near vicinity of the landing area provide good ground reference. If none of these objects are available, it may be necessary to drop an object, e.g., tire, tree limb, or smoke grenade, near the touchdown point. A technique used by UH-1 pilots is to position the beam of the searchlight between the antitorque pedals on the pilot's side. The beam of light forms a good ground reference as you descend to make the landing. This technique is used during daylight only.

• The crew chief should conduct a walk-around inspection to ensure the aircraft is positioned securely on the ground prior to shutdown. If on a slope, precautions must be taken to ensure the aircraft will not slide downslope after shutdown.

• Night approaches to the snow are normally made to a reference point on the ground, e.g., tactical landing light or runway light. These devices provide a good reference for judging angle of descent and rate of closure. When executing a night approach to a tactical landing site with lights, always plan your approach to land short of the touchdown point. This technique ensures that you will not overshoot and have to decelerate rapidly in a snow cloud. Additionally, by shooting short, it allows you to maintain airspeed after the level-off, thus keeping the aircraft in front of the snow cloud until touchdown. If the landing light or searchlight is used during the approach, position these lights so the beam is beneath the aircraft.

EN ROUTE

In a nontactical environment, aircraft will normally be flown at an altitude and airspeed where the rotorwash will have no effect upon loose snow. In a tactical environment, however, you must fly at terrain flight altitudes to avoid destruction by threat weapons. Because terrain flight altitudes are so low to the ground, rotorwash creates a signature identifiable for several miles, particularly when conducting NOE flight. En route considerations of which you must be aware when conducting NOE flight over snow-covered terrain are:

• To minimize the effect of rotorwash on loose snow, maintain an airspeed of 40 knots or greater. At this airspeed the rotorwash is displaced horizontally. Little or no blowing snow will develop, even at NOE altitude.

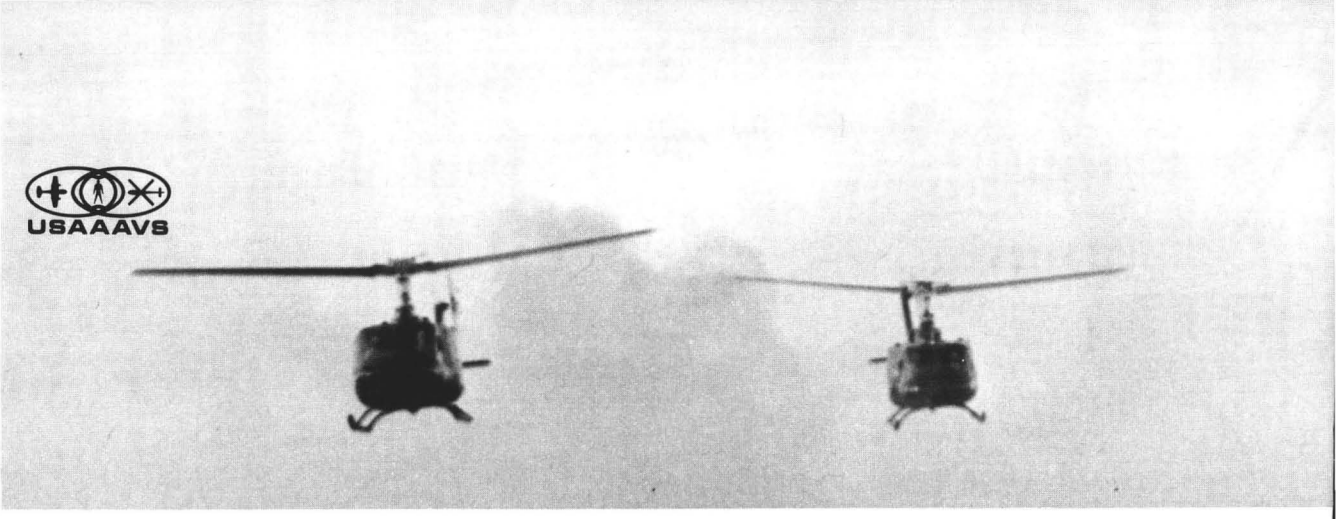
• When flight is conducted below 40 knots, avoid flights over forested areas. Snow in the trees is more easily disturbed than snow on the ground. Also, the flight route can be easily detected by the signature left on the trees.

• Avoid flying close formations over the snow. Depending on the nature of the terrain and the condition of the snow, 5 seconds' to 10 seconds' (approximately 200 meters) separation should be maintained while en route. Separation should be extended to 15 seconds to 30 seconds (¼ to ½ mile) just prior to arriving in the landing zone to preclude the possibility of having to land in a snow cloud produced by other aircraft.

• When conducting multi-aircraft operations, avoid flying through narrow valleys or crevasses. Because of the limited maneuver area, aircraft must follow the same ground track, thus requiring trailing aircraft to fly through blowing snow. Also, the vibrations produced by helicopters are intensified in a small area and may cause avalanches.

• Terrain features that served as good references for one mission may not be recognizable on the next flight. Snowstorms or winds can change the appearance of a snow-covered area in a matter of hours. An awareness of this phenomenon is essential to ensure accurate navigation.

The specialized techniques listed above, along with much more valuable winter flying information, can be found in DA Training Circular 1-12 (Cold Weather Flying Sense). The time to learn these specialized techniques is now . . . before the first snowfall.



A flight of two helicopters departed for a weekend cross-country in weather that can best be described as marginal VFR. Their route of flight was over mountains to an airport in the plains. They made a fuel stop in the foothills, and despite worsening conditions, took off on a section instrument departure (to leave the control zone), intending to continue VFR. Less than 30 minutes after departure, the flight flew into a mountain and nearly all aboard were killed.

The events which preceded the accident were typical of those which often foretell disaster. Let's review some of the events leading up to the crash as they occurred.

About 2 weeks before the flight, the flight leader began thinking about and planning a section cross-country to a destination more than halfway across country. He picked a close friend to be the other aircraft commander and two other squadron pilots to fly as copilots. Over a period of several days, they met to discuss the flight. A request was submitted, but turned down because of the distance involved for the time available. So they regrouped and resubmitted another request to a base not so far away. It was approved.

They met early on the morning of departure, received a weather briefing, and conducted a short mission briefing. The flight leader and the other aircraft commander went to operations while the other two pilots proceeded to the aircraft to conduct the preflights. The weather, generally, for the first leg of their route was 2,000 overcast, 4 miles in rain and fog. They were also told there was an AIRMET in existence, but to check at their first fuel stop for the latest information.

They flew the first leg of a VFR stopover flight plan between 500 and 1,000 feet agl, except for one excursion down to the deck to simulate gun runs on a freight train.

At their first stop, they failed to receive an update on the weather and did not request details of the AIRMET. The weather was reported as 500 broken, 2,000 overcast, 1 mile in rain and fog. Before takeoff, they were advised that the field was IFR. They were offered an IFR departure to maintain 2,300 feet to a fix outside the control zone with the expectation that they would proceed VFR after reaching the fix. They departed the fuel stop with conditions below minimums for the only approach they were capable of executing.

Five miles outbound from the airport, before reaching the fix, they were given vectors toward their route of flight. Departure questioned whether they were VFR, and the pilots replied they were. They were cleared on course.

Sequence reports indicated that weather en route was 500 to 1,000 broken, 1 to 3 miles in rain and fog. The flight was observed on radar to descend from 2,300 to 1,100 feet msl, placing the flight 300 feet agl.

One witness in an automobile about 18 miles from the eventual crash site saw the flight pass overhead at a very low altitude. The terrain continued to rise along the route.

At one point, the wingman lost sight of the lead and began a shallow climbing turn to maintain separation. After 30 degrees of turn, the wingman regained sight of the lead. He continued on course and joined up when he was beckoned ahead with a call from the flight lead that it was clear. They were now flying at treetop level.

Two witnesses, one and a half miles from the crash site, saw the two aircraft at an estimated height of 10-20 feet above the trees. One witness said to the other, "They had better climb or they'll fly into the mountain." Seconds later, the two aircraft crashed within several hundred feet of each other—2,100 feet below the top of the cliff! Weather at the crash site, as reported by rescuers, was zero/zero.

Information that was pieced together indicates that the flight was very casually approached from its inception.

One of the surviving pilots had no idea of the terrain heights along their route. When asked what was the highest point along their route, one pilot guessed 4,500 feet. At the fuel stop, they received en route weather as 5,500 (msl) overcast, thus, a 1,000-foot

NOT KNOWING YOUR PILOTS

From APPROACH

obstruction clearance. In reality, en route terrain rose to almost 7,000 feet.

Apparently, their planning did no more than satisfy the requirements to fill in the information on the cross-country request. They failed to study maps of the route, they didn't conduct a briefing of the route, and they didn't discuss IFR possibilities or alternate routes. The flight leader never conducted a mission briefing or obtained a proper weather briefing for the second leg of the flight.

A look into the background of the flight leader revealed that he enjoyed a reputation among his peers as one who was a perfect combat pilot even though he had never seen combat and had only 800 hours total flight time. Yet, he flagrantly and routinely violated rules and regulations (not known by the squadron superiors). Some thought he was a hot stick. The other aircraft commander did not enjoy the same reputation, but had had two incidents (known by superiors) involving pilot error. One incident was a wheels-up landing, for which his aircraft commander designation was revoked until he passed a recheck. He was counseled by his skipper and others about any more displays of poor judgment. Yet, a week after being redesignated, he and the flight leader were buzzing small boats on a lake.

There is a certain amount of admiration for one who knows his aircraft well and is proficient in controlling it through a broad range of performance. There is also a fine line between the pilot who flies aggressively but within limits and the pilot who flies aggressively but exceeds these limits. Except for the fact, however, that *flight violations are indicators of poor pilot judgment.* They are not a confirmation of superior pilot ability.

Investigations sometimes reveal, after the fact, that the individual had been guilty of flight violations. Such was the case of these pilots. The sad part, however, is that those in his squadron who knew failed to communicate these facts to the ASO, OPs, XO, or CO—someone who could do something about it. It is difficult to report a fellow pilot, but when one is cognizant of dangerous, gross, or flagrant violations, he has a moral obligation to speak to the guilty one and bring it to the attention of competent squadron authority.

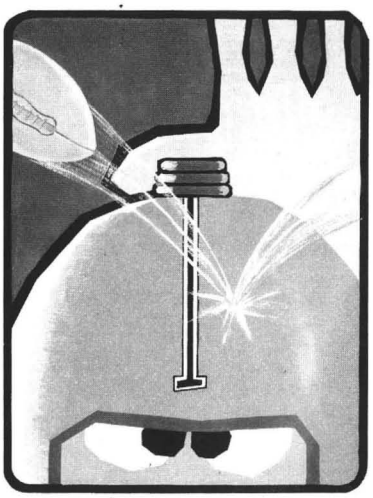
As one of the endorsers said, "Those people who knew of the previous unsafe flying practices of the two command pilots and who yet failed to report this to appropriate authority did their commander, the victims, and the country a great disservice." It's not easy to embarrass a friend, but it's easier than going to his funeral.

Think about it.

Reprinted from APPROACH

"Ironically, many of the characteristics of the high-risk naval aviator are also the characteristics of the best tactical pilots in the Navy. The good naval aviator will characteristically display aggressiveness, confidence in his ability, and a desire to be second best to no one. He enjoys the camaraderie of naval aviation, the *esprit de corps* of the squadron, and he can hold his own swapping sea stories at the O-club. The difference, however, between the type of pilot we want in the Navy and the high-risk aviator is discipline and judgment. The good naval aviator knows his capabilities and his limits. He knows his aircraft's capabilities, and he flys it to its limits—but not beyond. He realizes that he must be psychologically and physically fit to perform the demanding tasks required of him in the best fashion. In summary, the good naval aviator approaches his flying in a professional manner. The naval aviator we want today must be a team player who can cooperate with and coordinate the efforts of other crewmembers, wingmen, and ground tactical controllers. His complicated systems demand some of his nonflying hours be spent studying operations and tactics manuals, and his off-duty hours not be spent exclusively drinking and swapping tall tales at the O-club." **Robert A. Alkov, Ph.D., "Personality Characteristics of the High-Accident Risk Aviator,"** *APPROACH,* **March 1977, pp. 18-21.**

VIEWS FROM READERS



Editor:

Please announce that the 16th Annual Safety and Flight Equipment (SAFE) Symposium will be held at the Town & Country Hotel, San Diego, CA from 8 to 12 October. The meeting will cover aspects dealing with the safety of people in a hostile or potentially hostile environment. Authors will present findings of their latest studies; panels with safety specialists allow interaction with attendees. Exhibits and demonstrations of safety related equipment will be held. Participants include manufacturers, users, scientists, government and military safety-oriented professionals.

For further information contact:

SAFE Symposium Committee
7252 Remmet, No 203
P.O. Box 631
Canoga Park, CA 91303
Phone: (213) 340-3961

Editor:

Two years ago Captain John Dunnavant took a story of mine "I Was A Witness To A War," and sent it to your office marked "To Whoever Cares." Well you called me and told me that you cared. Then you printed it [December 1976].

I am writing you again because Captain John Dunnavant is dead and I care. That is why I am writing this tribute to him.

When I became a member of the air ambulance platoon (Medevac/MAST), it did not take me long to get a self-inflicted pride that is the norm for that type of work. It seems that when we saved a life it was all in a day's work, but when someone else does it, he is a hero. But that's okay, we almost prefer it that way.

But the most humble and certainly one of the most respected members of the 326th Air Ambulance Platoon was Captain John Dunnavant. He died on January 4, 1978 in a helicopter crash while attempting to save the victims of a small airplane crash. We will all miss him.

No one will ever understand why he had to die. And if he did have to die, at least it was while doing something he did not take lightly. He cared about what he did and was very good at it.

In closing I would like to include a poem that hung on the bulletin wall in Medevac Operations:

It is not the critic who counts
Nor the man who points out how
the strong man stumble—
Or where the doer of deeds could
have done better.

The credit belongs to the man who
is actually in the arena,
Whose face is marred by dust and
sweat and blood;
Who knows great enthusiasm, great
devotion and the triumph of
achievement.

And who, at the worst, if he fails,
At least fails while daring greatly—
So that his place shall never be
with those odd and timid souls
Who knew neither victory nor
defeat.

You've never lived until you've
almost died.
For those who have had to fight
for it,
Life has truly a flavor the protected
shall never know.

. . . John Dunnavant did not take life lightly and no one I know took him lightly. But, Lord how he *did* live.

Gary C. Grieser
4498 Silver Star Road
Apt F-124
Orlando, FL 32808

Editor:

A group of active and retired Army officer and enlisted personnel have organized an effort to construct a memorial to the combat medic to be located at Ft. Sam Houston, TX. The fund has been authorized by IRS to function as a nonprofit, tax deductible, charitable organization.

We would appreciate any support to help us meet our goal. For more information write Richard J. Berchin at Combat Medic Memorial Fund, P.O. Box 34, Academy of Health Sciences, Ft. Sam Houston, TX 78234 or call (512) 221-2454/5706.

Richard J. Berchin
Chairman
Combat Medic Memorial Fund

Editor:

On 26 June I visited the Hoffman Building in Alexandria, VA. While I was up there I found out how anyone who is missing numerals for the Air Medal can be considered for them. Here is a copy of a sample letter (self-explanatory).

Headquarters, Department of the Army
USA MILPERCEN DAPC-MSS-AP
200 Stovall Street

Alexandria, VA 22332
1. Under the provisions of paragraph 216, AR 672-5-1, consideration for award of additional numerals to the Air Medal is requested.
2. Documentation in support of this request is attached. Incl 1 (certified true copy of flight records) shows that _____ hours of _____ time were flown between _____ date and _____ date. Incl 2 (certified true copy of DA Form 66 or DA Form 20) shows the combat units of assignment to be as indicated. Incl 3 substantiates that my last numeral award was for the period which ended on (date) _____ and that no additional awards were ever received.
3. If approved, please forward the appropriate certificate and citation to my commander at the address shown below, and make appropriate disposition of copies.
4. Because of the research and board action required, I understand this request may take up to 180 days.

Sincerely,

Name
Rank, Service Number

I hope you will use this information to help the many men I know are missing numerals for their Air Medals.

LTC Robert L. Clewell
U.S. Army Readiness Region II
Annville, PA 17003

Editor:

The 3rd Aviation Detachment, 17th Aviation Group, Eighth U.S. Army, Camp Walker, Taegu, Korea was officially redesignated the 201st Aviation Company (Assault Helicopter) recently.

With a lineage going back to the early 1950s, the 3rd Aviation Detachment, now the 201st, will be known as the Red Barons, a name given the 201st in Vietnam.

Originally the 201st was the 2043d Quartermaster Truck Company, Aviation. In September 1966 it was redesignated the 201st Aviation Company (Corps). Less than a year later, the unit was reactivated at Ft. Bragg, NC and in October 1967 deployed to Nha Trang, Vietnam for 6 years. In Vietnam, the unit provided, among other things, valuable VIP air transportation. The 201st Aviation Company (Corps) was inactivated in March 1973 in Vietnam.

Major Bruce A. Powell, former commander of the 3rd Aviation Detachment, assumed command of the 201st. Also present for the ceremonies was Colonel George Newton, Commander, 17th Aviation Group and LTC Robert L. Chancellor, Commander, 19th Aviation Battalion (Combat).

Public Affairs Officer
19th Aviation Battalion
Camp Humphreys, APO 96271

Editor:

The general points made by COL Geigerman, MD, in the Jan 78 issue are well taken and his article should be required reading for all Army aircrewmembers. However, it should be pointed out that many of his specific recommendations as regards periods of grounding following the ingestion of certain medications are not in accord with current Army policy or regulations.

ARs 40-8, 40-26 and 40-501 all contain references to this topic, and should be consulted by all interested parties. Specific differences between Dr. Geigerman's recommendations and the ARs are as follows:

Barbiturates: restriction for 24 hours, not the 48-72 hours he recommends (AR 40-8, para 4a(2)).

Mood ameliorating or tranquilizing drugs: restriction for 4 weeks unless used for nonpsychiatric reasons, in which case restriction is for 72 hours. This would include the use of Valium for muscle spasm, Compozine for nausea and Donnatol for gastroenteritis among others in the 72-hour grouping (AR 40-8).

Immunizations: restriction for at least 12 hours for all immunizations except smallpox rather than the 0-48 hours recommended by Dr. Geigerman (AR 40-8).

There are several other points which are made by Dr. Geigerman with which I tend to disagree; however, these are admittedly a matter of training, experience and opinion, and are not found in any regulation. Specifically, certain medications which require grounding by the article are often utilized in Army aviation and have been felt to pose no threat to flight safety—these include Benzedrex inhalers, Afrin nasal spray, and Kaopectate for mild diarrhea. In addition, his recommendations for duration of grounding following the use of certain medications (codeine derivatives, local anesthetics, atropine, balladonna and analgesics) are observed more in the breach than in the observance as 24-hours grounding is normally considered the maximum necessary grounding rather than the 1 to 4 weeks recommended by Dr. Geigerman.

These comments should in no way be interpreted as disagreeing with Dr. Geigerman's major points which I am in complete agreement with. There is no doubt that aviation personnel are at a greater risk from the normally minor side effects of commonly available medications than are other individuals and there is also no doubt that aviation personnel should be under the medical supervision of a trained Flight Surgeon. Our differences are primarily attitudinal and reflect the varying opinions of the Army and the Federal Aviation Administration.

I would like to second Dr. Geigerman's final sentence: "All fliers receiving any type of drug therapy should discuss with their physicians or a Flight Surgeon the possible effects of their drug therapy on flying." As a general rule, unless you have been told by your Flight Surgeon that a drug is safe to fly with, consider yourself grounded.

Major David M. Lam, MD
Senior Flight Surgeon
222d Aviation Battalion
Ft. Wainwright, AK 99703

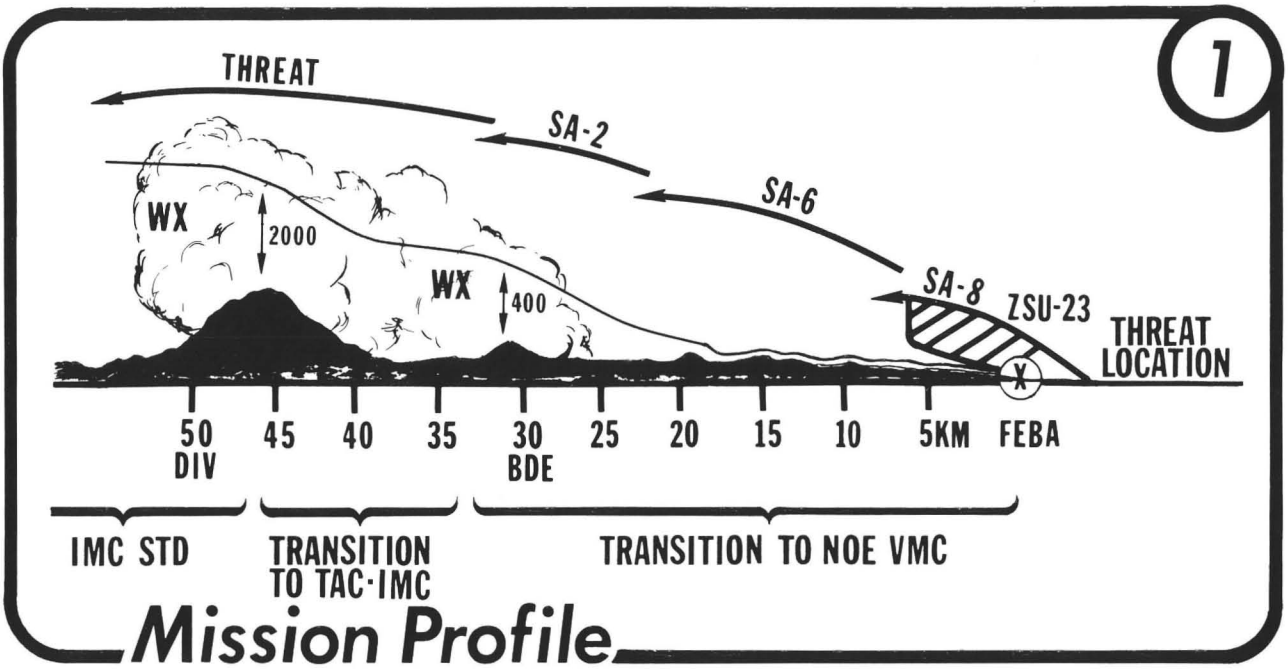
Editor:

In regards to a letter written by CW3 Wright published in your January issue, the practice of using amber glass with blue goggles for instrument training is still used. Thin, amber plexiglass is cut to a shape needed and placed inside the cockpit windows, chin bubble, etc. The instrument trainee wears blue colored goggles. Both the amber and blue are fairly light in shade, but when the trainee looks at the amber all he sees is black. At the same time visibility is not hindered for the instructor at all.

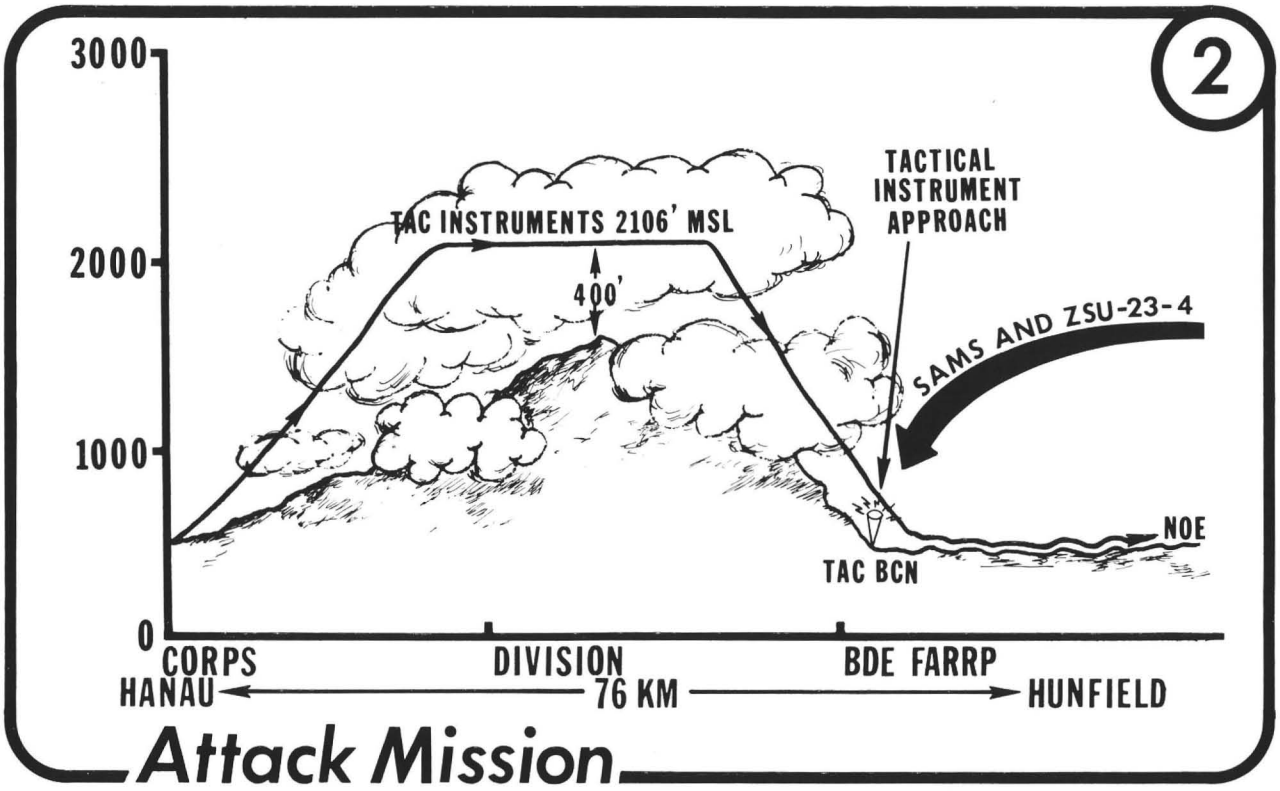
This method was used in H-3s when I was undergoing transition to that aircraft several years ago and is still used by H5-10, San Diego, CA.

It is the safest and most realistic method to simulate IMC that I have seen.

LT Paul D. Frye
Aviation Safety Officer
NAS Corpus Christi, TX 78419



Mission Profile

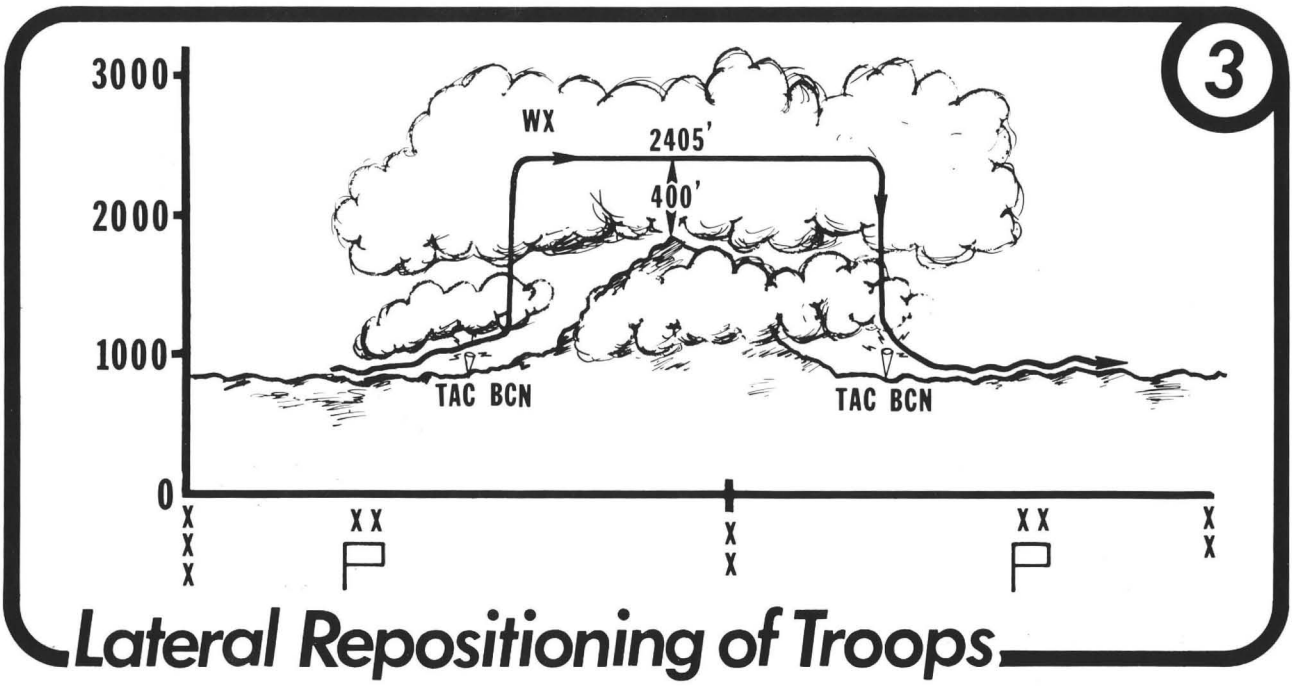


Attack Mission

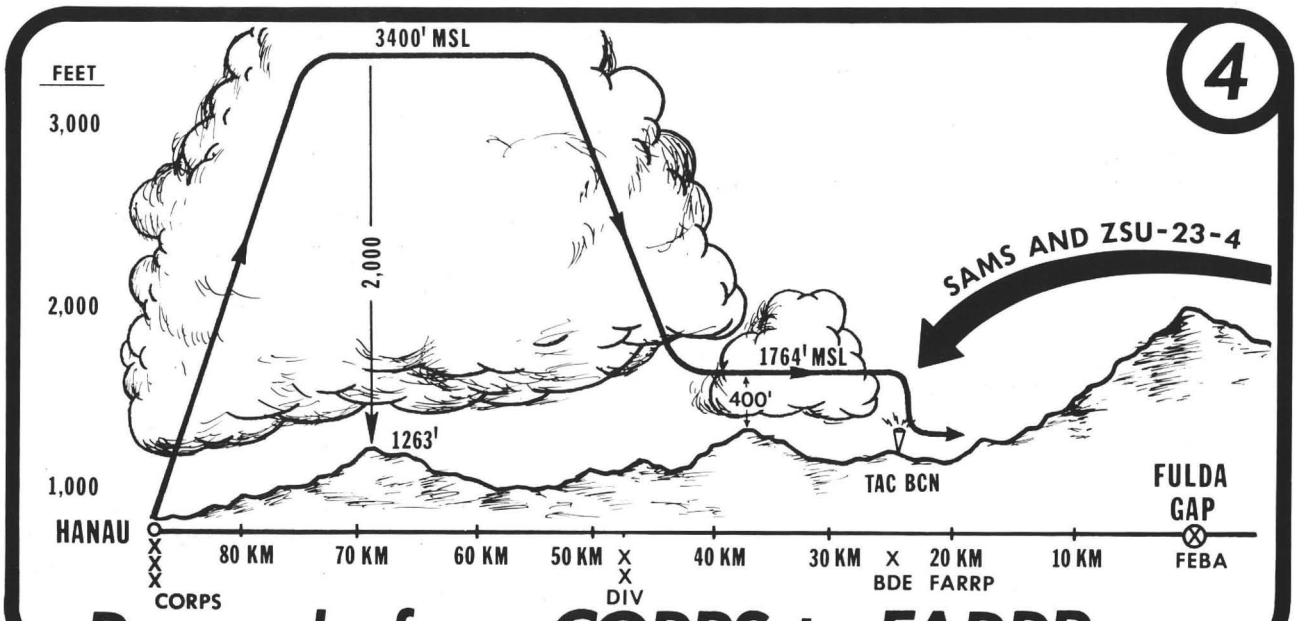
Continued from page 1

are forced by the radar acquisition capability of the enemy to reduce their altitude as the forward edge of the battle area (FEBA) is approached and the threat is intensified by the enemy air defense. Now let's consider three missions that may be required in the combat zone.

Attack Mission. An airborne enemy infiltration has occurred 4 kilometers (km) west of Hunfeld. An analysis of the situation shows that division artillery



Lateral Repositioning of Troops



Resupply from CORPS to FARRP

is not available to counteract the infiltration. After a study of the situation, including the existing and forecast weather conditions, corps determines the most feasible means of handling the infiltration is by attack helicopters. A company of attack helicopters is directed to carry out the mission.

Weather conditions at corps are: Ceiling 100 foot (ft) variable to 200 ft and visibility 1/2 mile in fog (figure 2). Enroute through the mountains, ceiling and visibility are reported to be zero. In the brigade and infiltration area the ceiling is 200 ft and the visibility is 2 miles. The weather forecast is for the conditions to remain the same for the next 6 hours. An altitude profile to accomplish the mission with the existing weather conditions and threat shows the attack helicopters leaving corps and climbing in instrument meteorological conditions (IMC) to 2,106 ft. This altitude is maintained through the division

5

1949 - RECOGNIZED NEED FOR INSTRUMENT PROFICIENCY

1953 - INSTRUMENT TRAINING COURSE INITIATED

1957 - CIVILIAN CONTRACTORS USED FOR INSTRUMENT FLYING COURSE

1958 - INITIATION OF HELICOPTER INSTRUMENT FLYING COURSE

1960 - STANDARD INSTRUMENT CERTIFICATION AWARDED ALL FIXED WING GRADUATES

1965 - VIETNAM BUILDUP—ROTARY WING TACTICAL INSTRUMENT CERTIFICATION

1971 - STANDARD INSTRUMENT CERTIFICATION FOR ALL AVIATORS

Background

6

- BE TRAINED TO ACCOMPLISH MISSION DAY/NIGHT UNDER MARGINAL WEATHER.
- BE TRAINED TO A HIGH LEVEL OF CONFIDENCE / COMPETENCE TO ASSURE MISSION ACCOMPLISHMENT, PRECLUDE DOLLAR LOSS AND INSURE PERSONNEL AND EQUIPMENT SAFETY.
- BE QUALIFIED TO OPERATE IN THEATER ARMY AREA IN COMPLIANCE WITH JOINT USAF/ARMY AIRSPACE MANAGEMENT PROCEDURES.
- BE QUALIFIED TO OPERATE IN FAA / ICAO CONTROLLED AIRSPACE.

Instrument Training Objectives

area (highest terrain elevation 1,706 ft) using tactical instrument procedures.

At the brigade area a tactical beacon (TAC BCN) is tuned and a tactical instrument approach made. When visual contact is made, the flight continues using terrain flying techniques to the point of contact. When the mission is completed, the helicopters return to corps by tactical instrument procedures from the forward area refueling and rearming point (FARRP).

Next, a requirement develops to reposition troops to assist in a counterattack.

Lateral Repositioning Of Troops. A UH-1 Huey element of a division is tasked with a mission to transport a special task force to an adjacent division. The general weather in both divisions consists of 200 to 300 foot ceilings with 2 to 3 miles visibility in fog. The top of the ridge between the divisions is obscured by clouds (figure 3, page 33).

An analysis is made of the current threat and it is deemed feasible to conduct tactical instrument flight across the ridge. Using FM 1-1 "Terrain Flying," FM 1-5 "Instrument Flying And Navigation For Army Aviators" and theater directives, the flight is planned as follows: The aircraft is flown east using terrain flight procedures to a division tactical beacon. At the beacon the aircraft climbs over the beacon to an altitude of 2,405 ft mean sea level (MSL) which is 400 ft above the highest obstacle along the route of flight. The helicopter maintains 2,405 ft until reaching the TAC BCN in the adjacent division. There, the aircraft descends in a holding pattern until visual conditions are encountered. The pilot proceeds to the destination using terrain flight procedures.

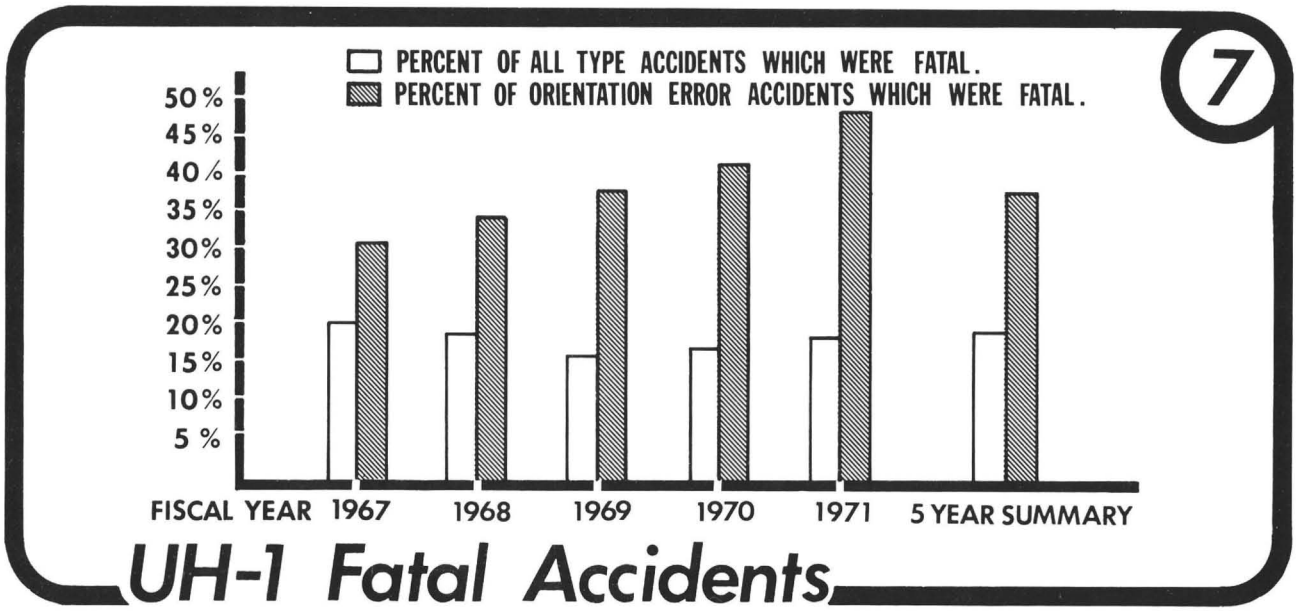
The third example is a resupply mission.

Resupply Mission. An urgent need develops for a resupply of aviation fuel at a FARRP 24 km southwest of the Fulda Gap area along the FEBA. The resupply mission is assigned to a CH-47 Chinook at the corps aviation assets near Hanau (figure 4, page 33). An approaching warm front from the southwest has reresulted in the following weather: at 0900 hours at the takeoff point, ceiling zero feet, obscured visibility, zero miles in fog, becoming 100 feet obscured, and 1/2 mile in fog by 1300 hours. Weather at the division rear is forecast to be the same. The forecast for the FARRP and areas near the FEBA from 0900 to 1600 is ceiling 200 ft obscured, and visibility 2 miles in fog. With ceilings and visibilities too low for terrain flight, an instrument flight plan is developed. The threat analysis determines that conventional instrument flight can be conducted to division rear, tactical instrument flight to a TAC BCN in the brigade, and terrain flight to the FARRP. The CH-47 tracks outbound from a TAC BCN at division rear until receiving the beacon at brigade. The helicopter then tracks inbound to the beacon and executes a tactical approach.

The route and approach are planned in accordance with FM 1-5 and theater directives, resulting in a minimum enroute altitude of 3,400 ft MSL to division rear where descent is made to 1,764 ft MSL and maintained to the brigade beacon. A tactical approach is conducted until visual conditions are encountered or until reaching a minimum descent altitude (MDA) of 1,545 ft MSL (200 feet above the highest obstacle in the landing zone). If visual conditions are not encountered, a missed approach is executed, and a subsequent alternate course of action taken.

Now that the mission requirements have been covered and a need for instrument flying established, the history of the instrument program should be reviewed.

Background. During World War II, Army aviation



UH-1 Fatal Accidents

operated Liaison aircraft (L-4s and L-5s) which were virtually unable to perform instrument flight. Experience gained during this period indicated that Army pilots did have to fly under adverse weather conditions in combat and a number were lost because they had not received instrument flight training.

The Office, Chief of Army Field Forces (OCAFF) decided in 1949 that Army instrument proficiency would add significantly to mission performance, safety and success in combat flying situations involving marginal weather, night flight, arctic flight and for extended deployment flights (figure 5). With this direction, the Army instituted an instrument training course leading to an instrument certification in 1953.

In 1955 a Continental Army Command (CONARC) study determined that about 2,000 Army aviators had to be instrument qualified by fiscal year (FY) 1956. CONARC proposed to Department of the Army a training program by civilian contract to train 540 aviators per year until the backlog was eliminated. This program with minor revision, was implemented in FY 1957 and addressed only basic instrument procedures. After considerable experimentation and study, it was determined that helicopters were capable of instrument flight and in 1958 a helicopter instrument flying course (HIFC) was initiated for selected individuals. Graduates were awarded a standard instrument certification.

In 1960 the Army modified the fixed wing training program by requiring all graduates to be instrument qualified as part of their initial training. At the same time, a plan was submitted to CONARC to have, starting in FY 1964, both fixed and rotary wing aviators receive instrument certification during their initial training.

However, when the buildup for Vietnam started in 1965, equipment, time constraints and training for Vietnam necessitated a modification of the training program. Under the revised program, initial entry students were issued a tactical instrument certification upon graduation. This program was initiated to meet the immediate need in Vietnam for tactically oriented aviators. Additionally, the instrument phase, although narrow in scope, was 8 weeks long—the same as now wherein we provide full qualification. The use of simulators and new training methods have made this possible.

A small percentage of the "top" students in 1965 received additional training and were graduated with a standard instrument certificate, one which essentially did not include sufficient tactical instruments. All others were prohibited from flying instruments in all but emergency situations. In essence the purpose of tactical instrument certification was to enable aviators to salvage equipment and personnel under emergency conditions.

In 1971, the training program was further modified and all rotary wing initial entry students were, as now, required to obtain a standard instrument certification in order to be graduated. Since that time we have added the advanced or tactical instrument capability to enhance tactical mission competence.

Army aviation's missions indicate that Army aviators will be required to fly at times under marginal weather conditions. This means that to be combat effective Army aviators must be highly trained in both standard and tactical instrument flight. The Army Aviation Center's instrument training program (figure 6) is geared to accomplish that end.

The need for an improved and expanded instrument program was further evidenced by the results of a study conducted by the U.S. Army Aeromedical

Research Laboratory (USAARL). This study is on the cause of UH-1 accidents during a 5-year period (1967 to 1971) which revealed that a major cause of fatal accidents occurring in the UH-1 was orientation error. Figure 7, page 35, shows that orientation error accidents resulted in a disproportionate number of the fatalities.

These kinds of statistics reinforce the policy that all aviators be trained to fly under instrument meteorological conditions regardless of whether they are enroute from Ft. Campbell, KY to Ft. Hood, TX or over the combat zone. Cancelling essential tactical missions in marginal weather must not be rationalized by a lack of instrument flight capability. To enable the Army to exploit the effectiveness of our hardware to its fullest, we must strive to maximize individual capabilities even under marginal weather conditions.

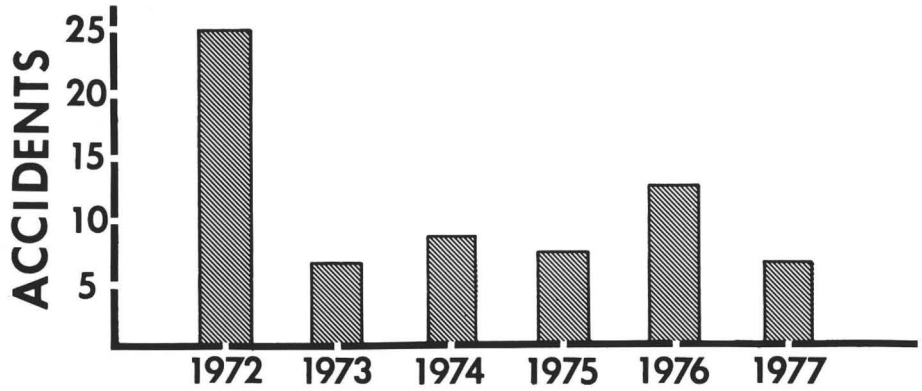
8

1967–1971

TOTAL	R/W	
334	92%	ACCIDENTS
117		FATAL ACCIDENTS
332	94%	DEATHS
430	97%	INJURIES
$65,000,000	91%	AIRCRAFT DAMAGE

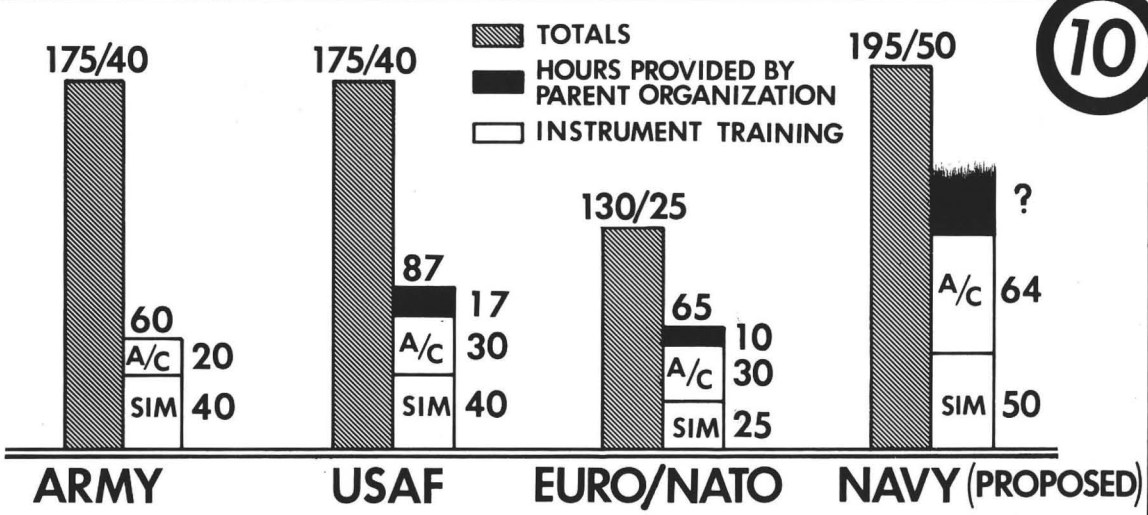
Orientation Error Accidents

9



Major UH-1 Accidents with WX as a Factor

10



Initial Entry Rotary Wing Flight Hours

Figure 8 points out that most orientation error accidents occurring during this period were in rotary wing aircraft at a tremendous cost in personnel and equipment. Less than 2 percent of those accidents involved aircraft flying on a planned instrument flight rules (IFR) flight plan. Most occurred in Vietnam where aviators apparently encountered inadvertent instrument meteorological conditions and lacked the confidence and/or ability to fly by reference to the instruments only. In these cases aircrews were not capable of surviving; mission accomplishment probably was not a major consideration.

Since the implementation of the standard instrument program in 1972, there has been a large reduction in weather related accidents (figure 9). The relatively low number of accidents occurring after 1972 can be related to the increased knowledge, skill and confidence that aviators gained as a result of increased instrument training requirements.

Many of the skills acquired through the standard instrument program are used in tactical instrument flying as the result of the transfer of learning principle. Transfer benefits are derived in the following manner: the Aviation Center trains aviators to control the aircraft within well defined parameters while simultaneously monitoring the full spectrum of instruments and making necessary corrections based upon the interpretation of the readings. Radio communications and navigation also must be performed at the same time. These same requirements are faced when in contact or when in support of ground elements. Initial entry aviators who have been trained in all of these tasks can simultaneously fly, navigate, communicate, report, check times, tune and identify radio navigational aids (NAVAIDS)—all functions fundamental to mission accomplishment.

Instrument flying also sharpens attack pilots' skills to the point where they are better able to keep the aircraft in trim condition without being distracted from the primary mission. This enhances the siting and killing capability of the weapon systems. This learning transfer applies especially during periods of darkness and limited visibility. Aviators must be thoroughly trained in multiple tasking since the success of each mission depends on the aviators' abilities to perform numerous tasks simultaneously.

The Aviation Center's formal courses of instruction that include instrument training are initial entry rotary wing (IERW), rotary wing instrument course (RWIC), rotary wing qualification course (RWQC) and instrument flight examiners course (IFEC). Figure 10, page 36, shows the IERW course with slight modifications in the instrument phase to accommodate the Air Force and North Atlantic Treaty Organization (NATO) Allies. Note that each of these groups receive 30 hours of instrument training in the aircraft and in the case of the Allies, it is in lieu of the combat skills phase. The screened area shows that NATO and

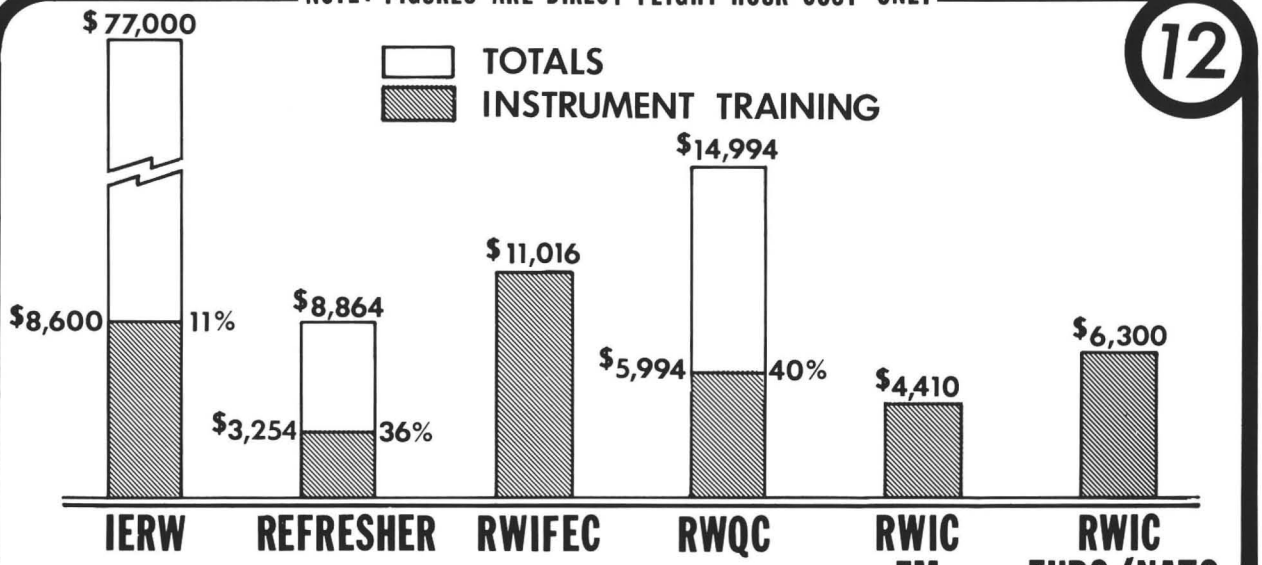
11

AIRCRAFT	SIMULATOR	SAVINGS
$ 300.00	$ 72.00	$ 228.00 – UH-1
1,081.00	155.00	926.00 – AH-1
1,536.00	132.00	1,404.00 – CH-47

$ Saving per Hour

NOTE: FIGURES ARE DIRECT FLIGHT HOUR COST ONLY

12



Instrument Training Costs

13

REQUIRED VMC TAC DAY/NIGHT	REQUIRED IMC	COST VMC TAC DAY/NIGHT	COST IMC	
				FLIGHT INSTRUMENTS
X	X	89.95	89.95	AIRSPEED INDICATORS
X	X	201.00	201.00	ALTIMETER
X	X	247.00	247.00	TURN & SLIP INDICATOR
X	X	183.00	183.00	CLOCK
X	X	316.00	316.00	PILOT HEATER
X	X	1213.00	1213.00	ATTITUDE INDICATOR
X	X	2052.00	2052.00	REMOTE INDICATOR COMPASS
	X		145.00	VERTICAL SPEED INDICATOR
X	X	54.88	54.88	MAGNETIC COMPASS
				COMMUNICATIONS
X	X	4673.00	4673.00	FM RADIO
X	X	2183.00	2183.00	VHF RADIO
X	X	4248.00	4248.00	UHF RADIO
X	X	2220.00	2220.00	TRANSPONDER
				NAVIGATION
X	AS REQUIRED	1330.00	1330.00	ADF
	AS REQUIRED		3400.00	VOR/ILS/MB
		$19,010.83	$22,555.83	A DIFFERENCE OF $3 545.00

UH-1/CH-47
Avionics/Instrumentation Requirements

14

REQUIRED VMC TAC DAY/NIGHT	REQUIRED IMC	COST VMC TAC DAY/NIGHT	COST IMC	
				FLIGHT INSTRUMENTS
X	X	89.95	89.95	AIRSPEED INDICATOR
X	X	201.00	201.00	ALTIMETER
X	X	5000.00	5000.00	RADAR ALTIMETER
X	X	247.00	247.00	TURN & SLIP INDICATOR
X	X	183.00	183.00	CLOCK
X	X	316.00	316.00	PITOT HEATER
X	X	1213.00	1213.00	ATTITUDE INDICATOR
X	X	2052.00	2052.00	REMOTE INDICATOR COMPASS
	X		145.00	VERTICAL SPEED INDICATOR
X	X	54.88	54.88	MAGNETIC COMPASS
				COMMUNICATIONS
X	X	4673.00	4673.00	FM RADIO
X	X	2183.00	2183.00	VHF RADIO
X	X	4248 00	4248 00	UHF RADIO
X	X	5919.00	5919.00	TRANSPONDER
				NAVIGATION
X	AS REQUIRED	1330.00	1330.00	ADF
	AS REQUIRED		4500.00	CONUS NAVIGATION PACKAGE
		$27,709.83	$32,354.83	A DIFFERENCE OF $4 645.00

OH-58/AH 1
Avionics/Instrumentation Requirements

the Air Force receive additional instrument training upon returning to their parent organizations. At the right of figure 10 it shows that the proposed Navy program has more hours dedicated to instrument training.

Flight simulators have proven to be cost effective for instrument training. There were initial reports from the field regarding the use of too many aircraft hours to support the instrument program at the cost of tactical training. The regulations were rewritten and now direct that, where available, the simulator will be used to accomplish annual instrument requirements and annual instrument renewal evaluations. When the simulator is not available, the aircraft normally flown will be used. Cost savings associated with simulator use can be seen in figure 11, page 37.

The IERW course development trends over recent years have shown a continuous decrease in the aircraft flying hours provided the students in the instrument phase of training. Meanwhile the hours presented in the UH-1 simulator have increased considerably, i.e. 40 hours. This gradual change has resulted in a huge cost savings in instrument training.

The six courses taught at the Aviation Center include some instrument training. On page 37 figure 12* shows the flight training cost for those courses. The cost in the shaded area represents the direct flight hour cost of instrument training. They do not include such things as student salaries, TDY costs, hospitals, clerical assistance, maintenance and building costs.

Another important area concerns aircraft requirements. Items listed in figure 13** are installed in the aircraft to enable operating under known or forecast instrument meteorological conditions, as well as during tactical/visual meteorological conditions/day/night operations. The additional cost for equipping an aircraft for instrument flight as compared to visual day/night/tactical flight is $3,545.00 as can be seen at the bottom of figure 13. The cost differential is minimal when compared to the benefits gained in increased operational capability and safety.

Figure 14** shows a similar comparison between tactical day/night and IMC for the OH-58 Kiowa and AH-1 Cobra. It also reveals a minimal cost differential for benefits gained.

The instrument training and qualification program accents:

- Increased mission accomplishment
- Training transferred to combat missions
- Reduced personnel and equipment loss
- Low cost

The mobility and firepower of Army aviation are indeed invaluable assets to commanders. When we examine the threat it becomes apparent that we cannot afford to let the capabilities of Army aviation be limited by adverse weather. To help effectively beat the threat Army aviation must be available to commanders around the clock—*and under marginal weather conditions.* We can cost effectively provide the instrument training needed so that Army aviators will not just be "fair weather" members of the combined arms team.

*** Cost may vary according to method of computation and use. CH-47 and AH-1 simulator costs were based upon 4,000 hrs/yr. Aircraft cost is based on replinishment spares, POL, depot maintenance and modifications. UH-1 simulator cost is based on Ft. Rucker costs (approved by the Army Audit Agency) inflated to FY 78 dollars.**

**** Some items on these charts exceed the requirements of AR 95-1. They are essential for effective operation in a tactical environment. Itemized equipment costs are from Army Master Data File, 3Qtr/78.**

OPMS

Continued from page 23

tify you as a candidate for contributions in future service. For instance, if you have a weight problem, provide updated facts on what you are doing about it and include a new photo, if appropriate. It is not in your best interest to write a letter that points out adverse OERs unless something of real substance is offered. Don't forward a letter with poor grammar or spelling errors.

Letter Of Instruction. The LOI is the single most important *policy* document in the promotion process. The board is profoundly influenced by the LOI and takes great care to apply the LOI guidance to the selection process. Read the LOIs when lists are published to be aware of current guidance given to selection boards. There is no better source.

As a result of our board experience, the members gained a full appreciation for and confidence in the equity and thoroughness of the three-panel selection system. This process provides for fair and impartial selection of the best qualified officers. However, it also was apparent that there are many more officers who have potential for outstanding performance at the next higher grade than constrained promotion authorizations will allow.

Final Message. YOU must help in keeping your file as accurate, complete and current as possible. You owe it to yourself and the Army to provide the board the most accurate portrayal of your performance and potential. Just as OPMS was proven to this board to be the foundation and heart of the officer career management system, the OMPF is the heart of the selection process and is therefore one of the most important factors in determining the future strength of the officer corps. The promotion system depends upon sound decisions based on sound data. The future strength of the officer corps depends upon the recognition of the best qualified officers our Nation can provide.

Jan Johnson
Photograph by L. B. Epstein

PEARL'S

Personal Equipment & Rescue/Survival Lowdown

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

Color Me OD

I recently received this question from the field. "Is the olive drab (OD) color tee shirt and underwear safe for aircrewmembers to wear?" The color of the material is not really that important. White undergarments will slightly reflect heat away from your body in the event of an aircraft fire, but the amount reflected is considerably negligible.

The extremely important fact to remember is *never* wear synthetic materials (other than Nomex) such as nylon, while working in, near or flying in your aircraft. Synthetic materials will melt into your flesh in a fire, greatly compounding any burn injuries you may receive.

The recommended undergarment materials are cotton or wool. If you are not sure of the type material you are wearing, remove or cut a small sample. Light and hold a match under the sample. If the sample melts, draws up into a ball or gives off a black sooty smoke, *do not* wear this material for flying. Of course this advice holds true for all other

items such as gloves and socks. So you can color me OD or any other color, as long as the material is made of natural material such as cotton or wool.

Lifestock

The Defense Personnel Center (S9T), Director of Clothing and Textiles, 2800 South 20th Street, Philadelphia, PA 19101, *stocks* Nomex clothing that will help save your *life* in the event of an aircraft fire.

However, your unit must requisition the Nomex clothing for you, and you must always wear it properly to be protected. If you find that S9T is not filling your requisitions, call the "Stock Control Division," AUTOVON 444-3031, to ensure that they have your requisition. You may also write to the above address.

If you have a specific question such as sizes available, call the Army clothing item manager at S9T, Mr. Joe Pop at AUTOVON 444-2537. Mr. Pop recently advised me that the "one-piece Nomex flight suit" will be available in all sizes in January 1979. (P.S. Keep your fingers crossed.)

To Be—Or Not To Be

To be, or not to be seen is the question. If you find yourself in a survival situation in enemy territory, you may not want to be seen easily. Therefore, you or your unit commander may not want the orange reflectorized tape installed on your flight helmet.

But *to be* seen the orange reflectorized tape installed on your flight helmet will assist the survival and rescue teams in spotting you in the daylight. A 1/2 inch strip of silver reflectorized tape down the center of the orange tape will help you to be seen at night.

However, reflectorized tape is only installed on your flight helmet at your unit commander's discretion. If the tape is installed, it should be installed as outlined in TM 10-8415-206-13. The orange reflectorized tape, NSN 9390-00-656-1186, is available from GO (GSA Federal Supply Service, Supply Control Division, 1500 E. Bannister Road, Kansas City, MO 64131). The silver reflectorized tape, NSN 9390-00-949-7552, is available from S9G (Defense General Supply Center, DGSC, Richmond, VA 23219).

We recommend the reflectorized tape be installed. If I find myself in a survival situation, there is no question whether I want to be—or not to be seen.

Lost Training

Many of you have called or written expressing concern over the training which you have received at the Air Force and Navy aviation life support equipment (ALSE) training schools not being recognized. Your concern is well founded since you and your unit commanders have gone to the trouble and expense to get you trained. There is nothing added to your military occupational specialty (MOS) number that designates or indicates that you are now a school trained ALSE specialist.

Once you leave the unit you are now in, for all practical purposes, the valuable training you have received at the Air Force and Navy ALSE schools is lost in the system. Of course we do not want you to quit going to these excellent schools, since this is the only training available to the Army aircrewmembers.

We do hope to have some designation added to your MOS to indicate that you are school trained. Also, the Army ALSE MOS specialist package is still on the move. Once the ALSE MOS is authorized we will have Army ALSE schools for you to attend. These schools will specialize in teaching and training you on the equipment used by the Army aviator. Once we have accomplished these goals we will no longer have lost training in the system.

Flare Up

Some of you may need to send a flare up to help ensure that the SAR team spots you.

However, the flare, foliage penetrating, NSN 1370-00-490-7362, is difficult to obtain. The flare can be obtained by submitting an "off-line" requisition to B14 (U.S. Army Armament Materiel Readiness Command, ATTN: DRSAR-DAD, Rock Island, IL 61299).

If you experience difficulty in obtaining these flares, please call B14, CPT R. Evans, 793-4491/4335, or Linda Apponyi, 698-3241/3291.

Cold Weather's Coming

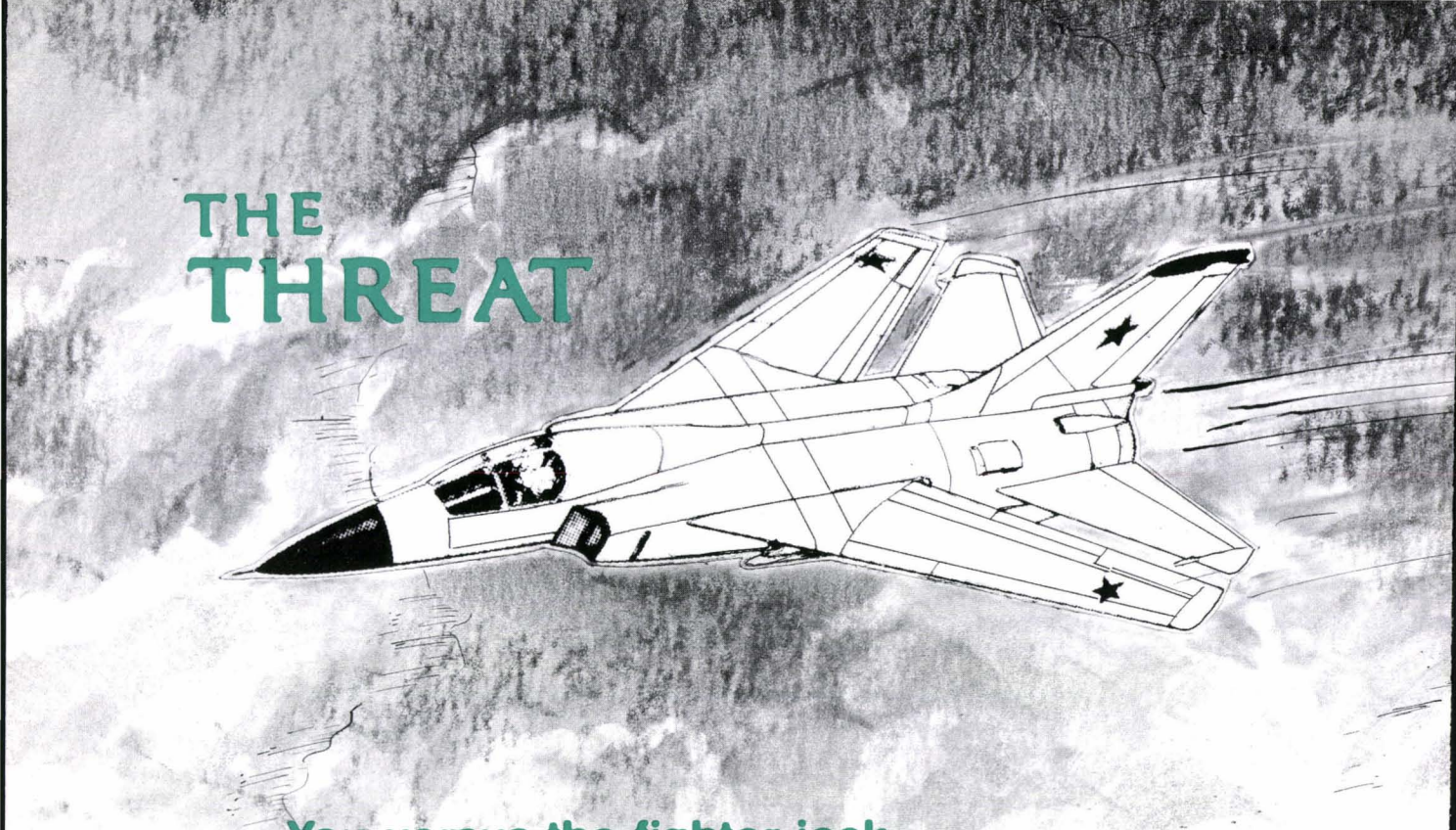
For you aviators in the North Country, here is a list of information that may be of interest to you. There are cold weather drawers available that will help improve your disposition when the cold wind blows. These drawers are cotton or cotton/wool blend. Here is how to get them:

Extreme Drawers Cold Weather:

NSN	SIZE	U/P	SOS	LIN
8415-00-782-3226	SM	$4.85	S9T	None Asgd
8415-00-782-3227	MED	4.85	S9T	None Asgd
8415-00-782-3228	LG	4.85	S9T	None Asgd
8415-00-782-3229	XLG	4.85	S9G	None Asgd
8415-00-270-2009	MED	1.55	S9T	None Asgd

Drawers Cold Weather: Mens, Cotton/Wool Knit, Ankle Length

8415-00-269-5589	LG	$2.35	S9T	G49350
8415-00-269-5591	XLG	2.35	S9T	G49350
8415-00-269-5592	XXLG	2.35	S9T	G49350
8415-00-904-5119	XSM	6.53	S9T	G49350
8415-00-904-5120	SM	6.53	S9T	G49350
8415-00-904-5121	MED	6.53	S9T	G49350
8415-00-904-5122	LG	6.53	S9T	G49350
8415-00-904-5123	XLG	6.53	S9T	G49350
8415-00-904-5124	XXLG	6.53	S9T	G49350



THE THREAT

You versus the fighter jock

It's The One You DON'T SEE.

Major Lucas D. Lowery Jr.
Tactical Air Command Representative
Fort Rucker, AL

LOSE SIGHT, lose fight" is only one of the "ancient truisms" a neophite fighter pilot must memorize and believe before being eligible for admission into the air-to-air fraternity. This proverb refers to losing sight of your adversary in the middle of an aerial fight and is an unfortunate happening which will definitely make you a candidate for a missile up your tailpipe.

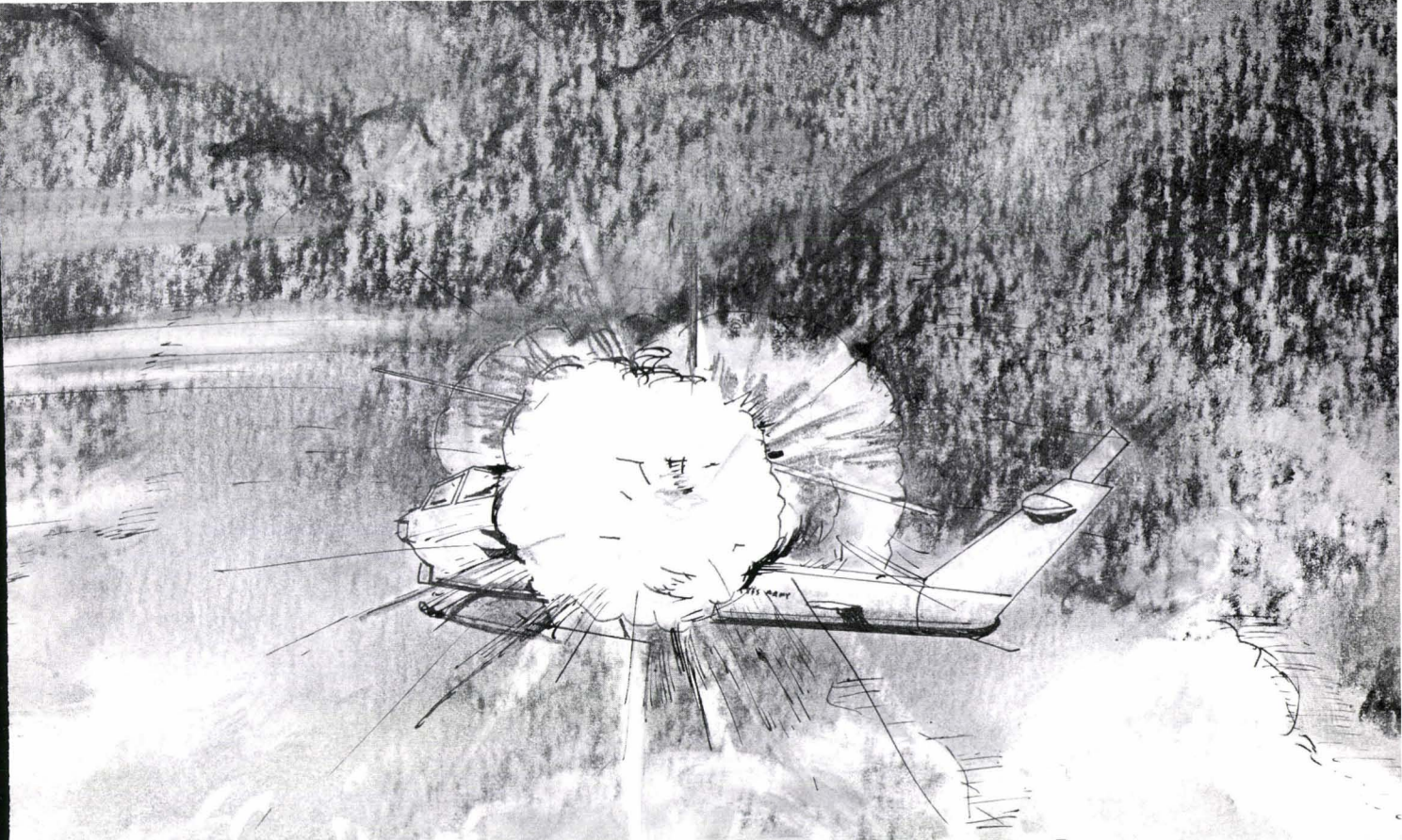
A situation which can be even more deadly, hence the title of this article, is never seeing the enemy at all! Regardless of the color of your suit, your aerial mission, or the aircraft you fly, this need to see your enemy at the same time, or first, is basic for combat longevity. In fighter aircraft it is one of the main reasons tactical formations are tailored to afford maximum visual look-out as well as to accommodate aircraft systems and performance.

One of the most commonly used tactical formations is a line abreast formation of two aircraft spread 4,000 to 6,000 feet, with each crewmember assigned a visual sector to scan. At this range, you are spread far enough apart so that you visually can check the rear of the formation (Deep Six) and acquire attackers before they reach lethal range. The lateral limits of the formation are determined by visibility, enemy missile range and our aircraft's performance.

At lower altitude, enemy missile range is shorter, visibility less, and aircraft performance better, so the formations generally are closer. As altitude increases, visibility generally is better, enemy missiles ranges longer and aircraft turn radius greater, hence, wider spreads. All this is aimed at seeing adversaries before they do you any harm. We know that once we see them, we can negate their attack and then (hopefully) become the attacker instead of the attackee.

About now you're probably saying, "well, that's nice, but what does it have to do with me, I'm a fling-wing driver?"

I am not an expert on U.S. Army aviation tactics and for-



.....That Will Get You

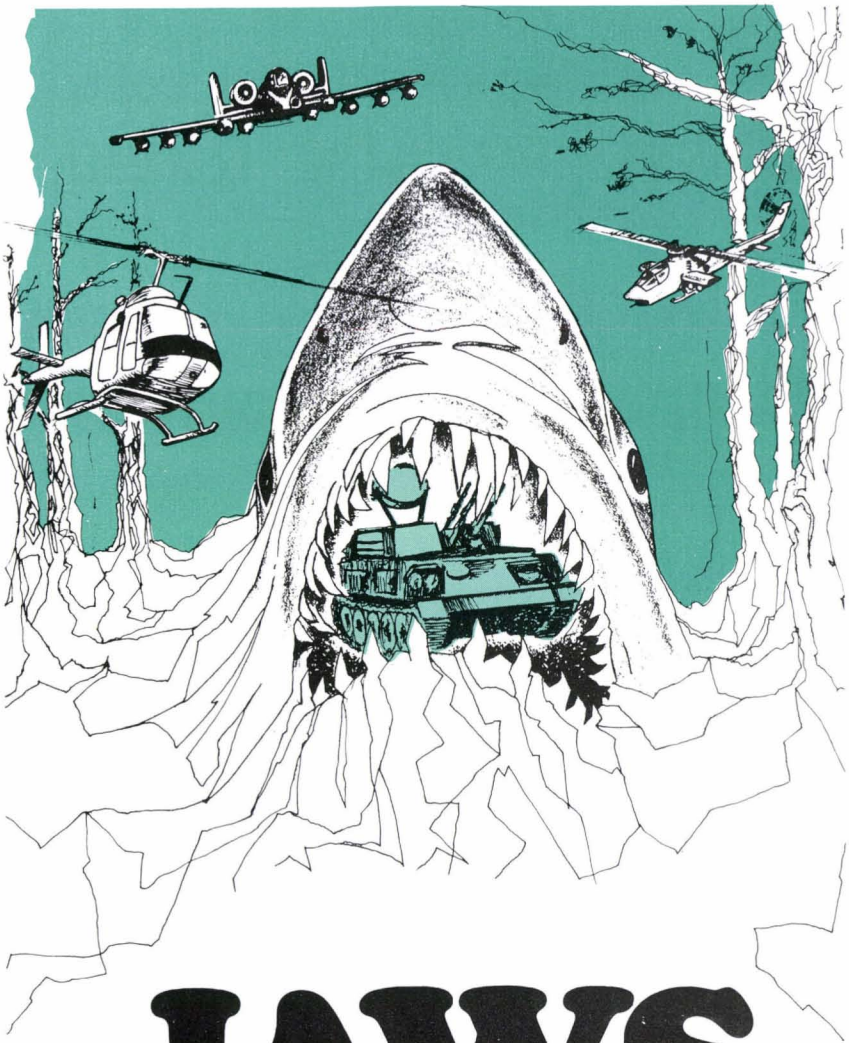
mations, but I have had enough experience with "simulated" fighter versus helicopter engagements to know that the "lose sight, lose fight" and "the one you don't see. . ." adages still hold true.

Helicopters generally are difficult to see but, once acquired, those huge rotating discs make great strafe targets if the choppers fly a predictable flight path, or hover in one spot. On the other hand, it also has been my experience that helicopters do some weird things—such as fly backwards and sideways (at least it's strange to a fixed-wing jock like me)—and that their doing so really spoils a good gun tracking solution for the fast mover on final attack.

Another consideration that the fighter jock has is closure rate/tracking time. Survival of a fighter in a high threat battle arena generally dictates a relatively high speed (400 to 500 knots). At these speeds, closure rates on rotary wing targets are extremely high. When this is coupled with maximum effective gun ranges of about 2,500 feet you can see that tracking time available to the fighter driver is minimal.

Attacking a predictable (you haven't been seen) target with a modern fighter is fairly easy, but in trying to hose down a low flying, jinking, unpredictable target the fighter jock must make rapid, late sight corrections and worry about the pull out altitude all in a couple of seconds or less (not wholly impossible, but a miscalculation could ruin one's entire day).

The purpose of all this has been to let you know one fighter pilot's opinion and to suggest that you assume a high threat, little or no air superiority environment and develop some good full-crew look-out doctrine, or "put your head on a swivel." If you can detect the threat jet early you probably can use your "weird" maneuverability to completely negate the first attack and chances are the enemy fighter pilot won't take time for a second try. But if a second attack develops, you have a chance to hide before the fighter can be turned around... *but first you have to see the threat!*



JAWS

Major Joe Beach
Office of TSM, Attack Helicopters
Fort Rucker, AL

TO FIGHT outnumbered and win, maneuver commanders need all of the timely and effective fire power support they can get. It is obvious that all fires and combat power must be fully coordinated, timely and orchestrated. How does the U.S. Army and U.S. Air Force accomplish that?

In the past, artillery, attack helicopters and close air support were individually employed on the battlefield. They rarely were employed simultaneously to quickly bring maximum firepower to bear on the enemy. We can no longer afford to operate in this manner if we are to win the first battle of the next war. The key to success will be the complementary effect of simultaneous and timely employment of all available combat power. *Continuous violent pressures must be the rule.*

To develop tactics which allow the joint employment of attack helicopters, close air support and artillery, the Army and Air Force participated in an exercise entitled the Joint Attack Weapons Systems Tactics Development and Evaluation (JAWS TDE). The exercise was chartered by the U.S. Army Training and Doctrine Command (TRADOC) and the U.S. Air Force Tactical Air Command (TAC) as a joint TDE.

The TRADOC System Manager for the Attack Helicopter (TSM-AH) selected a group of top notch experts from TRADOC headquarters and at various Army posts including Forts Knox, Bliss, Sill, Rucker and more, to serve as the nucleus for the Army's participation in JAWS.

The JAWS TDE included A Troop, 7/17th Cav from the 6th Cavalry Brigade (Air Combat), Ft. Hood, TX; an element of five A-10s from the 57th Tactical Training Wing at Nellis AFB, NV; ground and air forward air controllers (FAC); and observers from several TRADOC centers, TAC units and the U.S. Army Forces Command (FORSCOM). Also included was an element of Air Defense Artillery Threat Simulators (ADATS) from Ft. Bliss, TX.

The Joint Air Attack Team (JAAT) and artillery were employed against a threat force consisting of a tank battalion with supporting first echelon air defense weapons. Aggressor air consisting of helicopters and fighter planes were played during portions of the TDE.

The initial tactics development phase of JAWS was conducted at Ft. Benning, GA, in September 1977. The tactics validation phase was at Ft. Hunter Liggett, CA, in November 1977. From the beginning it was evident that attack helicopters, A-10s and artillery could be employed simultaneously with devastating results. Some of the tactics used by the A-10s and attack helicopters are shown in the accompanying figure.

BASIC TACTICS EMPLOYED

ATTACK HELICOPTERS

- TERRAIN FLIGHT
- PRIORITIZING TARGETS
  - ADA WEAPONS
  - TANK FORCE
- MINIMUM EXPOSURE TIME
- MAXIMUM STANDOFF RANGE
- TEAMWORK
- SURPRISE AND SHOCK EFFECT
  - COORDINATION
  - DECOY

A-10

- LOW LEVEL TACTICAL NAV
  - INGRESS/EGRESS
- BASIC FORMATION
  - 2 SHIP
- MINIMUM EXPOSURE
  - ATTACK PARAMETERS
- ATTACK COORDINATION
  - FAC/BATTLE CAPTAIN
  - AH COVERING/SUPPRESSIVE FIRE
- MUTUAL DEFENSE
  - SUPPRESSION
- AH TARGET CUEING

OH-58 conducting reconnaissance to locate threat force

AH-1S unmasks and attacks threat force

There is a great similarity between the tactics employed by the A-10s and attack helicopters. The reason for this is simple. The air defense threat on the modern battlefield dictates that all attack aircraft take advantage of terrain masking, minimum exposure and maximum standoff range in order to inflict maximum damage on the enemy force and survive.

As a prelude to their primary mission of destroying the armor force, the attack aircrafts' priority targets are the first echelon air defense weapons normally accompanying the threat force. This can be done quickly if the aircrews are familiar with the appearance of the air defense weapons and their normal locations within the threat formations.

During initial engagements the enemies' air defense is presented only fleeting targets attacking together from several directions. The attack helicopters are firing from standoff range with tube-launched, optically-tracked, wire-guided (TOW) missiles and the scout helicopters are decoying the air defense by popping up beyond the range of the air defense weapons and creating false dust clouds with their rotorwash. All of this plus the effect of artillery and fires from friendly ground forces disrupts the air defense command and control and greatly reduces the effectiveness of the air defense weapons.

The A-10s were controlled by a ground FAC operating from a scout helicopter for increased mobility. The attack helicopters were controlled by the Attack Helicopter Team Leader. Between them, the FAC and Helicopter Team Leader orchestrated the coordinated attacks. They found constant communications with each other and the maneuver commander was a necessity. This communication provided an exchange of realtime intelligence information which optimized the coordinated attacks.

When the JAAT has destroyed or neutralized the first echelon air defense, they turn to their primary mission of destroying the enemy armor force. Again, coordinated attacks are used to maximize the fires on the enemy force. While the A-10s are ingressing to the target area they are getting passive cues about target locations from the attack helicopters.

The A-10 pilots on JAWS became familiar with attack helicopter tactics and therefore could judge the location and range to the targets based on the location and orientation of the attack helicopters. As the A-10s pass, the attack helicop-

A-10 departs target area after attack on threat force

ters unmask, acquire and fire TOW missiles at air defense artillery (ADA) and tanks. During the attacks by the A-10s and attack helicopters, artillery and ground forces fires also are inflicting their damage on the ADA and enemy armor force.

As mentioned, coordinated timely attacks are the name of the game. Since both the attack helicopters and A-10s are operating in the terrain flight environment, airspace coordination is required. A simple rule of thumb was developed during JAWS. Attack and scout helicopters have the airspace from the ground to the treetops and A-10s have everything above the treetops.

The attack helicopters normally will be in the area before the A-10s. The scouts will have completed reconnaissance of the target area and will have identified the air defense units. The attack helicopters will take the air defense units under fire along with the artillery. After the A-10s arrive they receive an inflight briefing by the air FAC. In this specific employment situation the air FAC serves as a radio link between the A-10s and the ground FAC. As the A-10s begin their initial runs on the target area, the attack helicopters remask.

Once the A-10s have passed, the attack helicopters unmask, acquire a target and fire. When the A-10s have attacked the armor force and are departing they draw the full attention of the remaining air defenses which gives away their positions to the attack helicopters. This scene is repeated with A-10s and attack helicopters reattacking the targets from different directions until the enemy attack is blunted.

Since it is unlikely that joint operations of this nature will be preplanned, aircrew training will spell the difference between success or failure. *It is important that A-10 and attack helicopter team crews train together frequently.* Each must be knowledgeable in the other's tactics and weapons. Joint training will provide the vehicle for developing teamwork and further refining the tactics for joint A-10/attack helicopter operations.

Coordinated attacks from attack helicopters and A-10s, coupled with artillery and fires from supported ground units, provide the ground commander with the combat power needed to fight outnumbered and win.

All of the lessons learned during the JAWS TDE are being compiled in a joint field manual, "Joint Air Attack Team," scheduled to be published and sent to the field in late 1978.

ATC ACTION LINE

UNITED STATES ARMY AIR TRAFFIC CONTROL ACTIVITY

RECENTLY I overheard part of a conversation about "Conflict Alert." What is it?

Conflict Alert is a new automatic conflict detection and alert function which has been incorporated into the enroute air traffic control (ATC) system computer. It detects potential conflicts defined by horizontal separation (5 miles) and altitude separation (1,000 feet, 2,000 feet above flight level (FL) 290 and 500 feet for visual flight rules (VFR) on top). Conflict prediction is accomplished by projecting a current aircraft track position into the future (2 minutes). This projection uses information from long-range radar and Mode C altitude reports from aircraft transponders or pilot reported altitudes entered into the computer by the controllers.

There are several areas in which the use of Conflict Alert is not operationally feasible. These include: certain control sectors that are adjacent to terminal radar approach control facilities; where separation criteria of less than 5 miles is being applied; certain control sectors which routinely service military operations involving extensive aircraft maneuvers; and very busy sectors where data entry can fall behind.

Pilot responsibility is not altered by the Conflict Alert program nor is there any special radio terminology required. If a flight is detected in a potential conflict, the pilot will receive a safety advisory or, in the case of an instrument flight rules (IFR) flight, a clearance from ATC. Because verbal altitude reports from non-Mode C aircraft are required, a timely response to controller request for altitude reports is essential to maintain separation.

Although the Conflict Alert feature provides the controller with an additional method for detecting potential aircraft conflicts, the bottom line remains the same—Conflict Alert cannot replace good operating practices. There is no operational program or procedure in current use that will replace the *see and avoid* practice from the cockpit.

When landing at airports with approach control services and where two or more instrument approach procedures are published, what advanced information can a pilot expect on the instrument approaches?

In this case, pilots will be provided, in advance of their arrival, with the type of approach to expect or that they may be vectored for a visual approach. Vectors are no longer made to the traffic pattern, but to the airport or for a visual approach.

More on Radar Vectors: Controllers may vector aircraft within controlled airspace for separation purposes, noise abatement considerations, when an operational advantage will be realized by the pilot or controller, or when requested by the pilot. Vectors outside of controlled airspace will be provided only on pilot request. Pilots will be advised as to what the vector is to achieve when the vector is controller initiated and will take the aircraft off a previously assigned nonradar route.

Readers are encouraged to send questions to:

Director
USAATCA Aeronautical Services Office
Cameron Station, Alexandria, VA 22314

Air-To-Air Symposium Postponed

The second Air-To-Air Symposium has been changed from 31 October to 2 November 1978 to late February or early March, 1979 at Ft. Rucker, AL.

Last year the symposium was limited to military attendance and briefings. This time the format also will include participation by industry.

Persons interested in attending or desiring information concerning the coming symposium should contact Major Chuck Crowley, address: CDR, USAAVNC, ATZQ-TSM-A, Ft. Rucker, AL 36362; or call AUTOVON 558-2108/3408/5171, commercial 205-255-2108/3408/5171.

TECHNOLOGY *projections* GUIDANCE

Army Aviation Systems Program Review (AAPR-78)

product improvement

systems implications

THE UNITED STATES Army Aviation Center (USAAVNC), Ft. Rucker, AL will host AAPR-78 on 4 and 5 December 1978. The Vice Chief of Staff, U.S. Army (VCSA); the Commander, U.S. Army Training and Doctrine Command (TRADOC); and other major Army commanders head a list of senior attendees which includes more than 50 flag officers or their civilian equivalents. They will participate in intensive management sessions dealing with the crucial aviation materiel equipment developmental issue that faces the Army today in order to ensure future combined arms team support by Army aviation is *fully* combat effective.

AAPR-78 will feature a new TRADOC system program review format. It will be geared to providing attending decisionmakers a firm analytical base on which to compare judgments that will determine the future course of Army aviation's system developments. Major areas to be covered under the new format include:

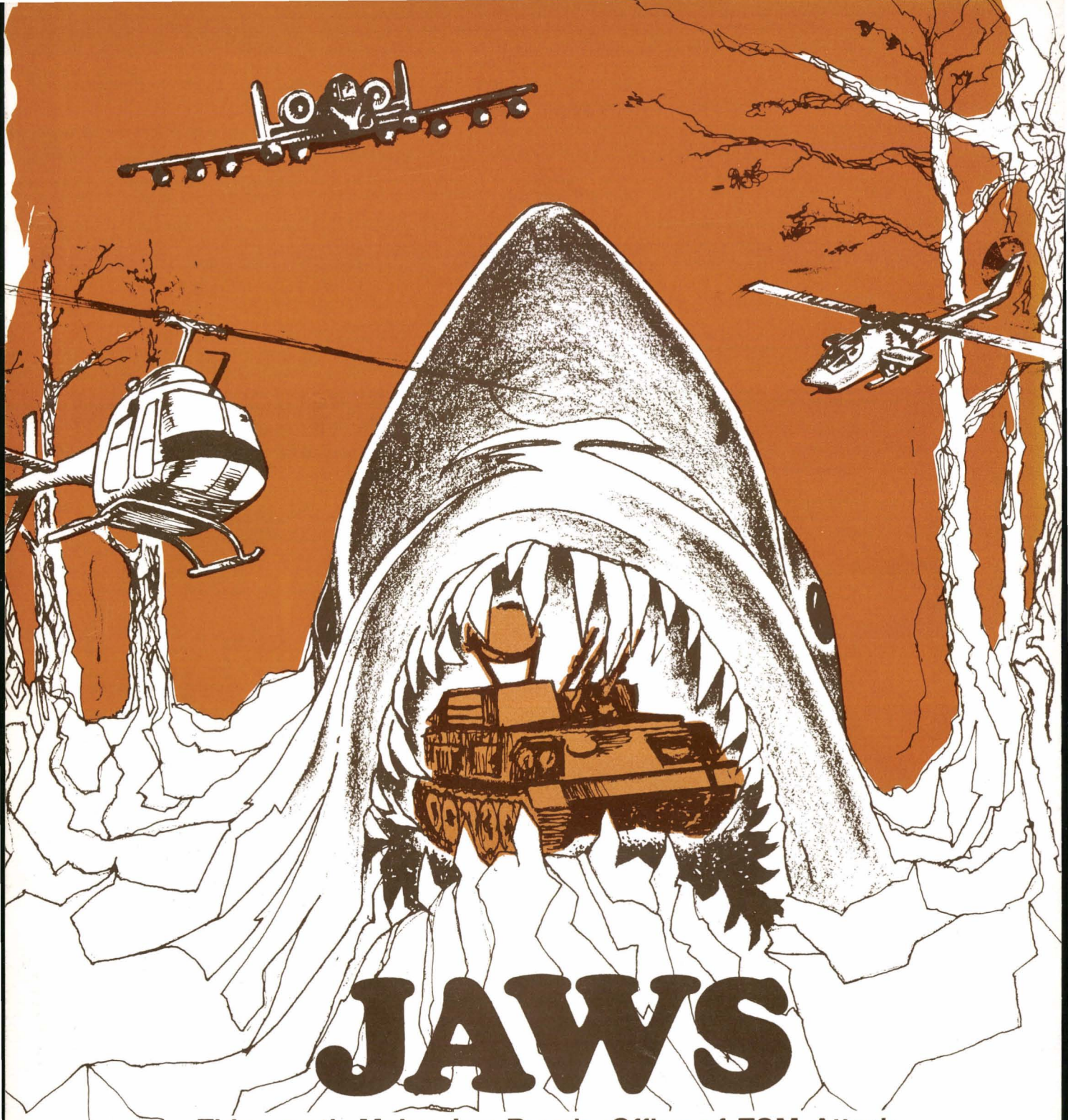
- Current goals/priorities/funding
- Current aviation force analysis
- Aviation product improvement options
- Projected aviation force analysis (7 to 10 years hence)
- Effectiveness summary (comparison of Deltas)
- Technology forecast
- Joint (Army/Air Force) and North Atlantic Treaty Organization rationalization, standardization and interoperability issues
- Total system implications
- Summary (priorities/funding/future guidelines)
- VCSA remarks/guidance

In addition to the special AAPR-78 work group established by the Aviation Center commander to support this major effort, fulltime project officers have been provided by the Armor, Military Police, Transportation and Artillery Centers to work at Ft. Rucker. Analytical support for this effort is being provided by Concepts Analysis Agency, U.S. Army TRADOC Systems Analysis Activity, Combined Arms Center, U.S. Army Materiel Systems Analysis Activity and Ballistic Research Laboratory. The combining of all AAPR-78 efforts has been given by the Aviation Center commander to the Director of Combat Developments (DCD), COL Bernie Knight at the Aviation Center.

The DCD point of contact for daily actions which affect this project is MAJ Frank T. Peterlin, Chief AAPR-78. Questions concerning AAPR-78 can be answered by calling AUTOVON 558-3702/5803.

Future issues of the *Aviation Digest* will contain additional information on this upcoming conference which will impact heavily on the future development of Army aviation systems.

GOALS *interoperability* ANALYSES



JAWS

This month Major Joe Beach, Office of TSM Attack Helicopters, Fort Rucker, reports on the Joint Attack Weapons Systems Tactics Development and Evaluation (JAWS TDE) exercise. JAWS TDE was designed to develop tactics which allow the joint employment of attack helicopters, close air support and artillery by Army and Air Force units. Major Beach's article begins on page 44.

Illustration by Maggie Dorough