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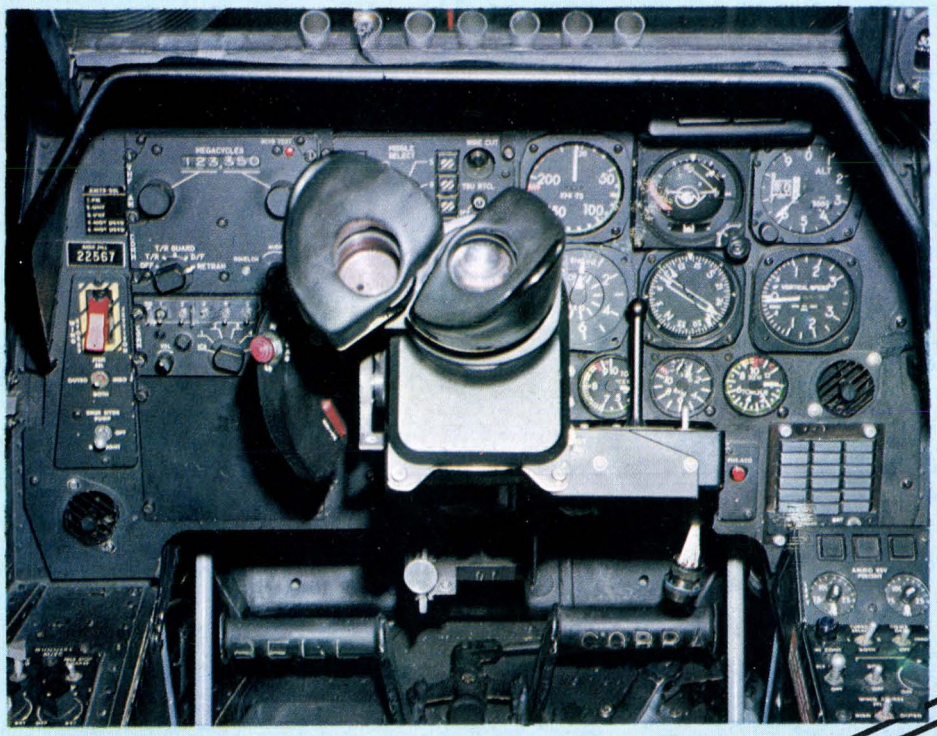
UNITED STATES ARMY
JANUARY 1978

AVIATION DIGEST



MODERNIZED COBRA

UNITED STATES ARMY AVIATION DIGEST

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A major activity of the
U.S. Army Training and Doctrine Command

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A major activity of the
Inspector General of the U.S. Army

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JANUARY 1978 VOLUME 24 NUMBER 1

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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.

The *DIGEST* is an official Department of the Army periodical published monthly under the supervision of the Commanding General, U.S. Army Aviation Center. Views expressed herein are not necessarily those of the Department of the Army nor the U.S. Army Aviation Center. Photos are U.S. Army unless otherwise specified. Material may be reprinted provided credit is given to the *DIGEST* and to the author, unless otherwise indicated.

Articles, photos, and items of interest on Army aviation are invited. Direct communication is authorized to: Editor, *U.S. ARMY AVIATION DIGEST*, Fort Rucker, AL 36362.

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TRADOC System Manager For HELLFIRE

ON 17 OCTOBER 1977 a third Training and Doctrine Command (TRADOC) System Manager (TSM) office was established under the Commander, U. S. Army Aviation Center, Ft. Rucker, AL (see Sep 1977 *DIGEST* for stories on AAH and ASH TSMs.). The HELLFIRE TSM office is headed by Colonel Alman I. Butler, an Infantry officer and Master Army Aviator. HELLFIRE is the acronym for the helicopter launched fire and forget modular missile systems. Team members for the office are shown in the figure.

The TSM HELLFIRE office is chartered by the Commander, TRADOC to ensure that from the user's point of view the missile is considered as a total weapons system early in the development cycle and that plans and requirements in all areas (personnel, training, logistical, operational, organizational, and test and doctrinal) are developed and fully integrated early in the life of the system. This intensive management continues throughout the life cycle of the system. The HELLFIRE TSM does not replace nor duplicate the Army Materiel Development and Readiness Command (DARCOM) HELLFIRE Project Manager. The TSM represents the user first and foremost, and interacts with and complements the Project Manager.

The HELLFIRE TSM is the focal point for all user interests. He will coordinate the TRADOC effort with the DARCOM community and work with the Army Staff representing the user.

TSM
Hellfire

COL Butler

Training	Personnel	Logistics
LTC Anderson	MAJ Thomason	(to be selected)

Address Hellfire TSM
U.S. Army Aviation Center
ATTN: ATZQ-TSM-H
Ft. Rucker, AL 36362
AUTOVON: 558-6804/6005/4072

CURRENT AH-1 EVOLUTION PLAN

290	100	98	107
MODERNIZED AH-1S	PRODUCTION AH-1S	UP-GUN AH-1S	MODERNIZED AH-1S
Modified from existing AH-1G's	Low glint canopy New instruments New blade at #67 Radar warning CONUS Nav radios RAM improvements	20mm cannon Stores management 10,000 volt alternator	Laser rangefinder Laser detector New fire control I R jammer New I R suppressor Doppler Nav New transponder and secure voice

Figure 1

MODERNIZED

FIELDING THE AH-1S Cobra TOW antiarmor attack helicopter to operational units has been a tremendous success. The combination of proven technology, coordinated management and professional introduction speaks for itself. This new helicopter has been demonstrated to several European countries and at the Paris Air Show. In each case, its capabilities have generated enthusiastic aviator response and positive command interest.

The first ship of the 297 new production aircraft was delivered to the Army in March 1977, with final delivery scheduled for February 1981. As these new helicopters are delivered from the production line, they will be issued initially to FORSCOM CONUS units. This fielding began in August 1977 at Fort Bragg, NC with the assignment of aircraft to the 82d Airborne Division.

This article, the first of a three-part series, addresses the scope of the Cobra program and highlights the improvements that have been or will be accomplished within the next few years to modernize fully the AH-1S Cobra TOW antiarmor attack helicopter. The second and third parts of this series will cover the new turret and weapons programs and the fire control, aircraft survivability and laser rangefinder/tracker programs, respectively.

MODERNIZATION ACCOMPLISHED IN PHASES: Improvements to the AH-1S new production aircraft will be accomplished through phased product improvement programs. The configuration changes and phasing for the Cobra fleet evolution to modernized AH-1S is summarized in figure 1. The first 66 aircraft produced will feature a new canopy and cockpit, a new T703 engine, uprated transmission plus im-

GLOSSARY

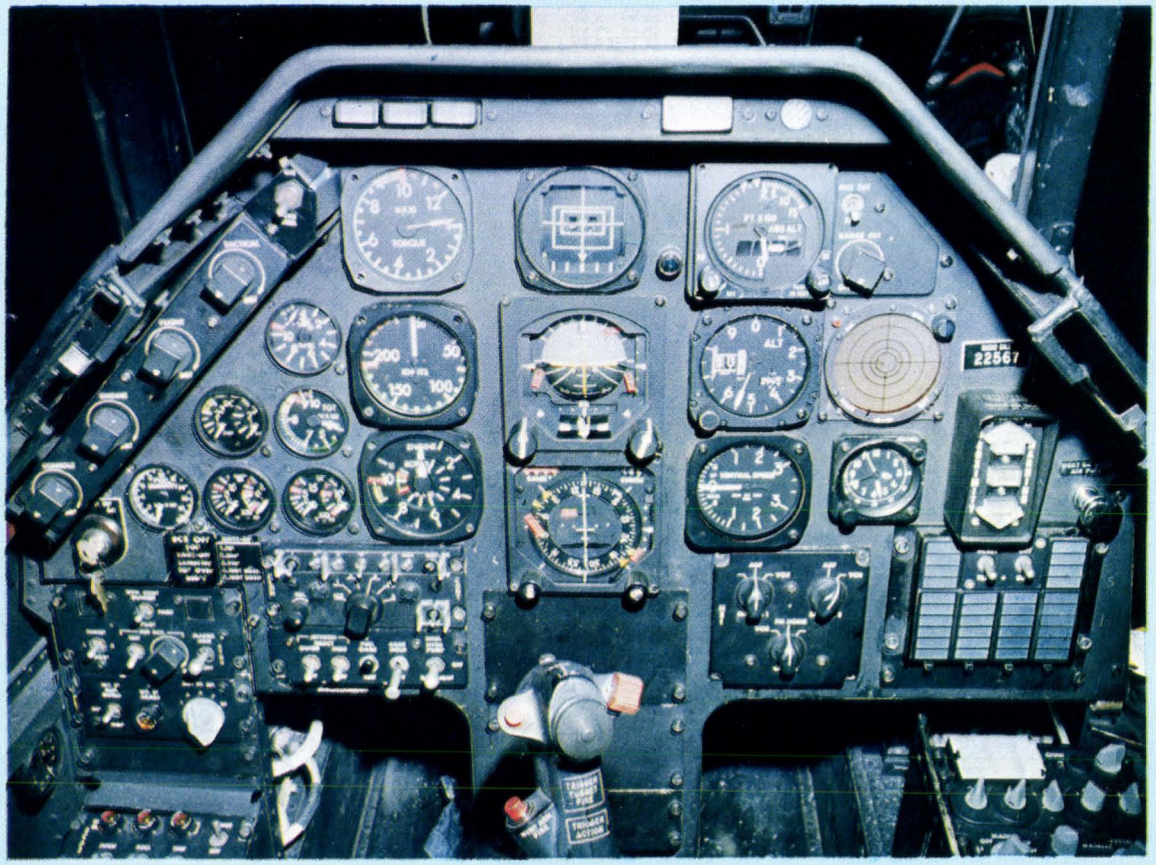
ADF	automatic direction finder
AM	amplitude modulation
CONUS	Continental United States
ECU	environmental control unit
FM	frequency modulated
FORSCOM	Forces Command
HSI	horizontal situation indicator
IFR	instrument flight rules
ILS	instrument landing system
KHz	kilohertz
MHz	megahertz
NOE	nap-of-the-earth
NVG	night vision goggles
RAM	reliability, availability and maintainability
SLAE	standard lightweight avionics equipment
TOW	tube-launched, optically-tracked, wire-guided
TSU	telescopic sight unit
UHF	ultra high frequency
VHF	very high frequency
VOR	VHF omnidirectional range
VSI	vertical situation indicator

Figure 2 — AH-1S new production Cobra with IR paint

COBRA

Colonel Robert P. St. Louis
Project Manager, Cobra, DARCOM
St. Louis, MO

Figure 3 — pilot station instrument panel and consoles



proved survivability design features and reliability, availability and maintainability (RAM) characteristics.

Figure 2 is the new production AH-1S. Beginning in April 1978 with the 67th production helicopter, a new improved main rotor blade developed by Kaman Aerospace Corporation will be installed. A new wing stores (2.75 mm rocket) management subsystem and a universal turret capable of accepting 20 or 30 mm weapons will be cut into the production line beginning with the 101st aircraft, scheduled to be delivered in September 1978. A new fire control subsystem consisting of laser rangefinder, ballistic computer, low airspeed sensor and a heads-up display will be installed on the 199th aircraft which is scheduled to be delivered in November 1979.

CANOPY AND INSTRUMENT PANELS: The production AH-1S model has a new outward appearance with its nearly flat canopy. This canopy has seven planes of viewing surfaces designed to decrease the glint signature and reduce the probability of visual detection during NOE flight. Another advantage of the new canopy is additional headroom for the pilot's visibility in NOE flight.

The cockpits of both the pilot and copilot/gunner have been redesigned with a new instrument panel to provide for crew efficiency during NOE and IFR flight. Figure 3 is the pilot's new instrument panel. The major improvement in this panel is the grouping and the size of the instruments. The torque meter, pilot steering indicator and radar altimeter are the primary tactical instruments used by the pilot to accomplish the antiarmor mission. These three instruments are located in the center of the panel, under the glare shield, and are 3-inch diameter in size. They facilitiate NOE flight and maneuvering of the helicopter into position for firing the TOW missile and keeping it within maneuver limits until missile impact.

Flight instruments are arranged in a standard IFR "T" configuration comprised of 4-inch diameter VSI and HSI grouped with 3-inch airspeed, altitude and vertical speed indicators. The number of engine instruments is reduced by using dual scale 2-inch instruments where possible. All instruments are equipped with wedge glass to distribute red lighting evenly over the instrument. The dial range markings, numerals and letters are designed to be readable under extremely low light red illumination and when using night vision goggles.

The instrument lighting switches are located on the left side of the panel and provide selective illumination of related instruments for engine, flight, tactical and console groups. The light intensity is rheostat controllable and a toggle switch is provided to the pilot and copilot for returning lighting to the panel if the NVG lights malfunction.

NEW INSTRUMENT CAPABILITY: In addition to the grouping of the instruments on the panel, there are several new instruments that have been added to improve the effectiveness of the AH-1S helicopter. The *radar altimeter*, one of the three primary tactical instruments, provides the crew the ability to fly safely at NOE during periods of poor visibility. The APR-39 radar warning receiver — a survivability improvement — is simple and lightweight, capable of being used during low level and NOE operations. This device provides the pilot sufficient warning in time to take evasive action before receiving fire from radar directed enemy antiaircraft weapons. This warning is provided through an audio and a visual display in the form of a strobe line on a cathode ray tube.

HSI and VSI. These two instruments provide a system that makes precision IFR flight and ILS, VOR and ADF approaches as natural in helicopters as it has become in fixed wing aircraft. Growth capability has been incorporated for future navigation systems such as doppler and flight director computers.

Copilot Panel. Figure 4 on the front cover shows the arrangement of the instruments used by the copilot/gunner. These flight instruments also are grouped in a standard IFR "T" configuration located on the right side of the panel and are all 3-inch diameter in size. A standby magnetic compass is mounted above and on the right side on the copilot/gunner panel glare shield. All of these instruments are marked and lighted as the pilot's. The eyepiece for the TSU is in the center of the cockpit and is used by the copilot to locate the target and guide the missile on to the target during the firing sequence.

An ECU has been redesigned for the AH-1S. The distribution ducts and plumbing for ventilating and environmentally conditioning air within the crew compartments have been modified and rerouted to adapt to the new cockpit configuration.

IMPROVED MAIN ROTOR BLADE: A new composite main rotor blade has been developed by Kaman Aerospace Corporation for use on the AH-1S. It has been designed to be used on the existing airframe without modifications to the AH-1S or its rotor system. It is scheduled to be installed in April 1978 on the 67th new production helicopter and will provide improved flight performance, survivability features and RAM, while reducing the radar cross section and acoustic detectability signatures.

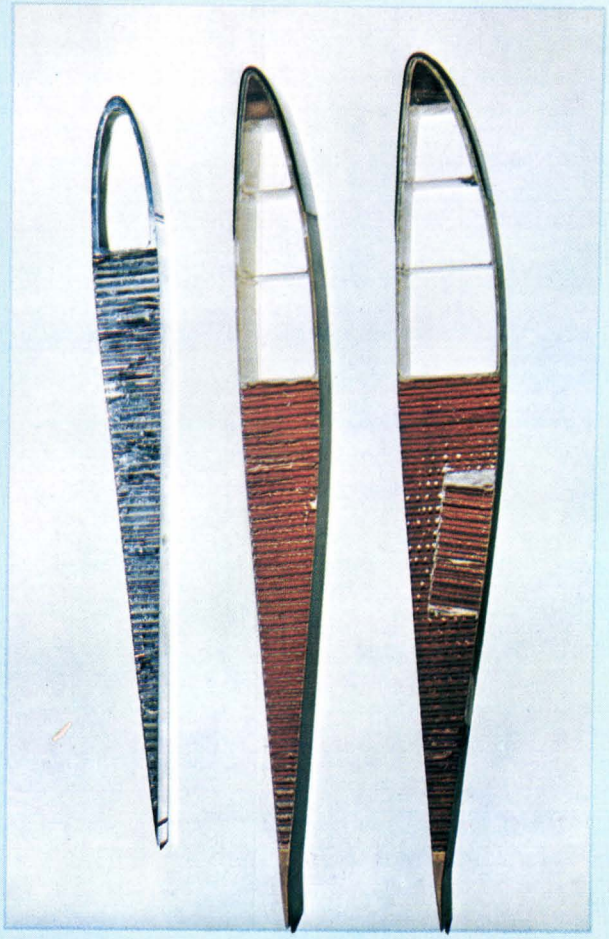
Figure 5 shows the test blade installation on an existing AH-1G model. The chord of the blade is 30 inches wide with the outboard

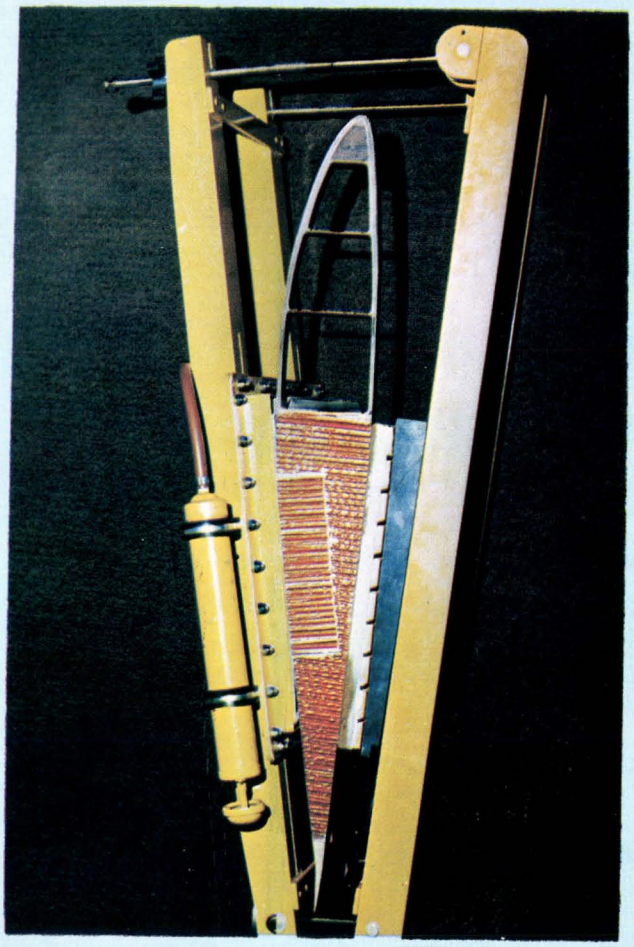
Figure 5 — improved main rotor blade installed on AH-1G Cobra helicopter

15 percent tapered in both chord and thickness.

Figure 6 shows the tapering effect of the new blade and compares it to the present metal blade. The new blade has been designed for almost total repairability of the skin and core aft structure by personnel in field units. This is accomplished with the aid of a heat-pressure pack tool, shown in figure 7, which can accomplish the repair of the blade without removing it from the aircraft. A survivability feature of the new blade will allow 30 minutes of flight after being hit with a single 23 mm high explosive, incendiary, tracer round and is invulnerable to a single hit 12.7 mm round. The "through damage," which would result from this type of a ballistic hit involving both skins and the core, can be repaired by personnel in the field in less than three hours. The maximum allowable operating time for the new blade is 10,000 hours which is an increase of 9,000 hours over the present metal blade.

CANOPY ESCAPE SYSTEM: A new crew compartment escape system provides a means of escape for the pilot and copilot/gunner in emergency situations where normal egress is not possible. Operation is accomplished by a ballistic jettison system which explosively cuts the acrylic side windows from the canopy support structure while linear shaped charges and thrusters explosively





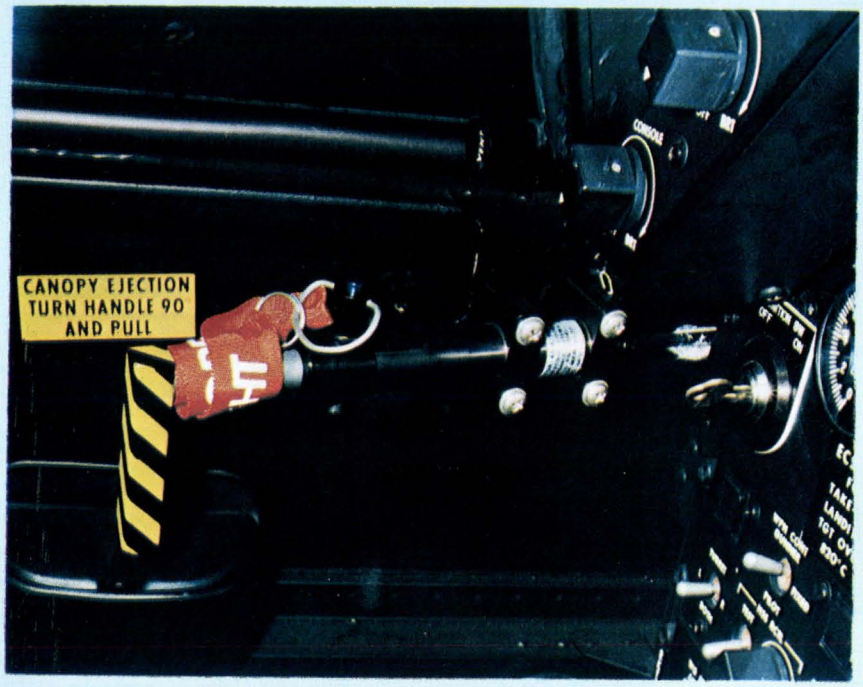


Figure 6 (Upper Left) — inboard and outboard cross sections of improved main rotor blade (top) and outboard cross section of standard metal blade

Figure 7 (Upper Right) — heat-pressure pack special tool installed on improved main rotor blade section incorporating repair

Figure 8 (Lower Left) — arming firing handle for pilots canopy removal egress system

separate the pilot and copilot/gunner entrance doors. It is totally independent of the aircraft electrical system or of any external energy source, and can be actuated only from inside the pilot or copilot/gunner station by either of two arming/firing handle mechanisms. Figure 8 shows the canopy removal system components for the pilot station.

Other significant improvements are shown in figure 9 and include:

Hydraulic Pump. An electrically driven pump which takes the place of the collective control accumulator which provides an unlimited number of collective strokes in the event of a main hydraulic system failure. It can be used for boresighting of the turret and TOW missile subsystems without the need of additional ground support equipment (Hydraulic Mule).

Rod End Bearing. An improvement to replace current rod end bearings of the hydraulic servo cylinder connecting tubes which will increase the fatigue life of the bearings to 3,300 hours.

Tungsten Carbide Bearing Sleeves. An improvement to replace main rotor teflon feathering bearing sleeves with a more durable materiel for increasing sleeve life.

Standard Lightweight Avionics Equipment (SLAE):

- *ARC-114 Radio* — An FM communication radio replacing the ARC-54/131. It is a smaller, lighter radio that is compatible with secure voice systems.
- *ARC-164 Radio* — A UHF-AM voice communication radio replacing ARC-51. It performs all ARC-51 functions but is smaller, lighter and compatible with secure voice systems. It provides 25 KHz spacing in the 224-400 MHz band.
- *ARC-115 Radio* — A VHF-AM voice communication radio replacing the ARC-134. It also is compatible with secure voice systems.

CONUS/NAV (ARN-123). Improves the AH-1S navigation capability by adding VOR and ILS receivers, glide slope, marker beacon and indicator lights.

Engine Deck Panels. A three piece engine deck designed to reduce bonding separations and provide for replacement of the forward and middle panels by field units. It also includes arms which support No. 1 hangar bearing.

Antitorque Controls. Provides push-pull tubes between tail rotor pedals and tail rotor pitch mechanism thus eliminating troublesome pulleys, sprockets, cables and chains. This improvement is included on the Mod "S" models.

Fire Detection. The system installed in the engine compartment includes a single loop sensing element connected to a control unit which activates fire warning indicators, located on the pilot's instrument panel.

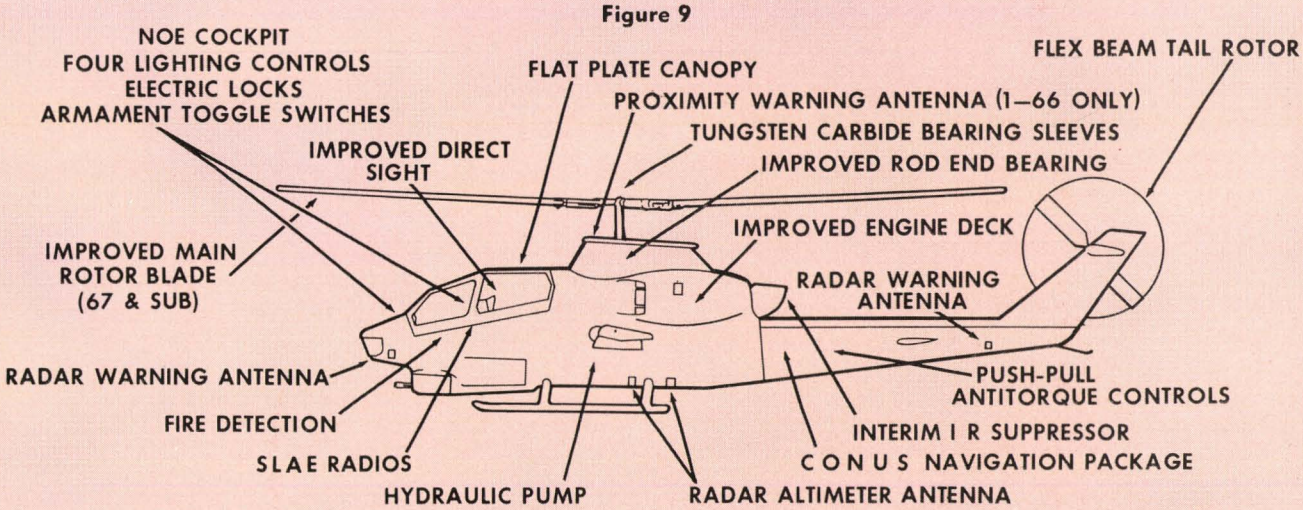
Flex Beam Tail Rotor. A simple uniball feathering bearing with a single piece hub which reduces maintenance and provides better antitorque controllability. This improvement is included on all AH-1 models.

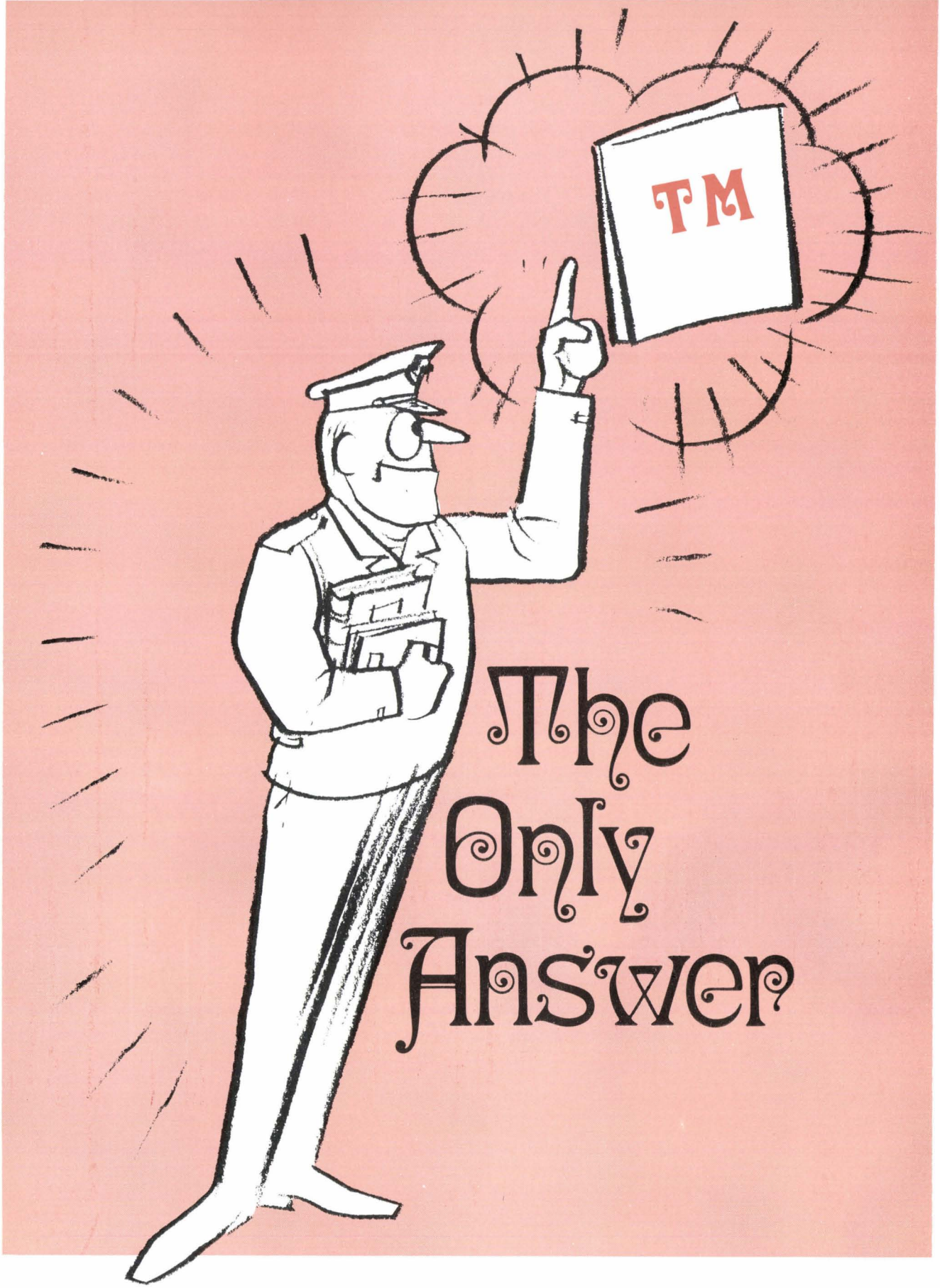
The Cobra attack helicopter has proven itself to be a viable aircraft for today's antiarmor requirement. It also will complement the advanced attack helicopter in the high-low mix of attack helicopters in the U.S. Army fighting force of the future.

The next article on the modernization of the AH-1S will cover the new turret and weapons programs.

PRODUCTION AH-1S FEATURES

Figure 9




TM
The Only Answer

FOR JUST ABOUT every form of human activity from hopscotch to defusing hydrogen bombs there is a book to go by – a book designed by experts with one purpose alone, to make things clearer, easier, and foolproof. The book's real importance, the degree to which you follow it or ignore it, depends on what you have in mind and what is at stake.

When it comes to maintaining or flying Army aircraft you are a long way from hopscotch and considerably closer to defusing bombs. The tasks involved are usually long, tedious, complicated, and require the kind of expert, meticulous attention to detail and proper procedures a top-flight surgeon puts into an open-heart operation.

Books for important and critical procedures will always be necessary. An appreciation of this fact should be part of the basic equipment of every intelligent, highly trained man. In Army aviation circles, every pilot or maintenance man should know that the -10, -20, the handbook, standard procedures, THE BOOK – whatever you choose to call it – is the only real failsafe device to ensure a job being done *every time* the way it is supposed to be done.

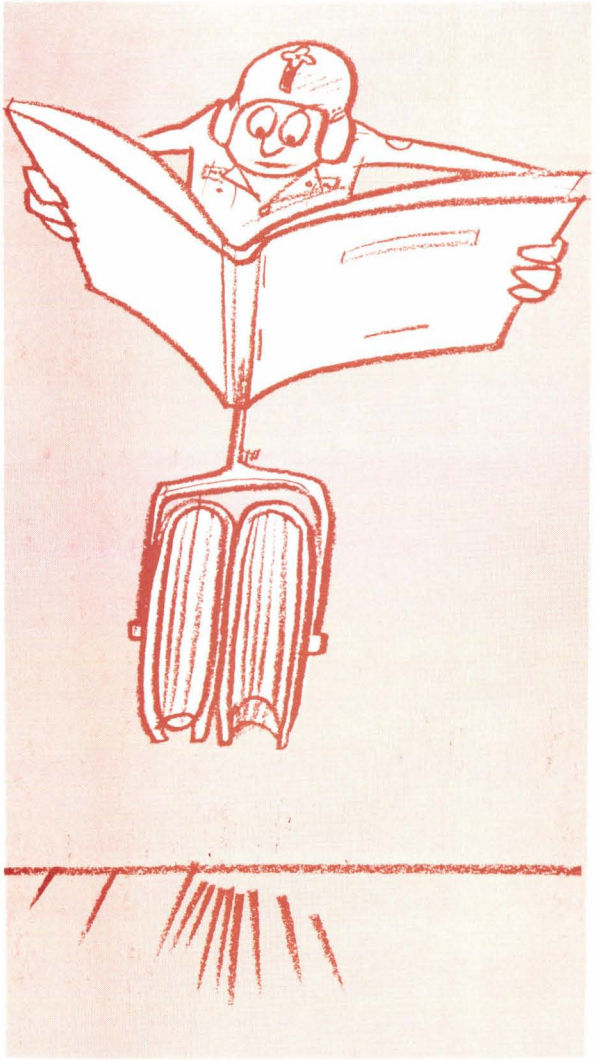
As everybody who has ever tried it knows – and most of us have tried it at one time or another – it is possible to violate the book deliberately and get away with it. Sometimes. Eventually you are sure to get all the trouble you've been asking for, with a lot more thrown in free of charge.

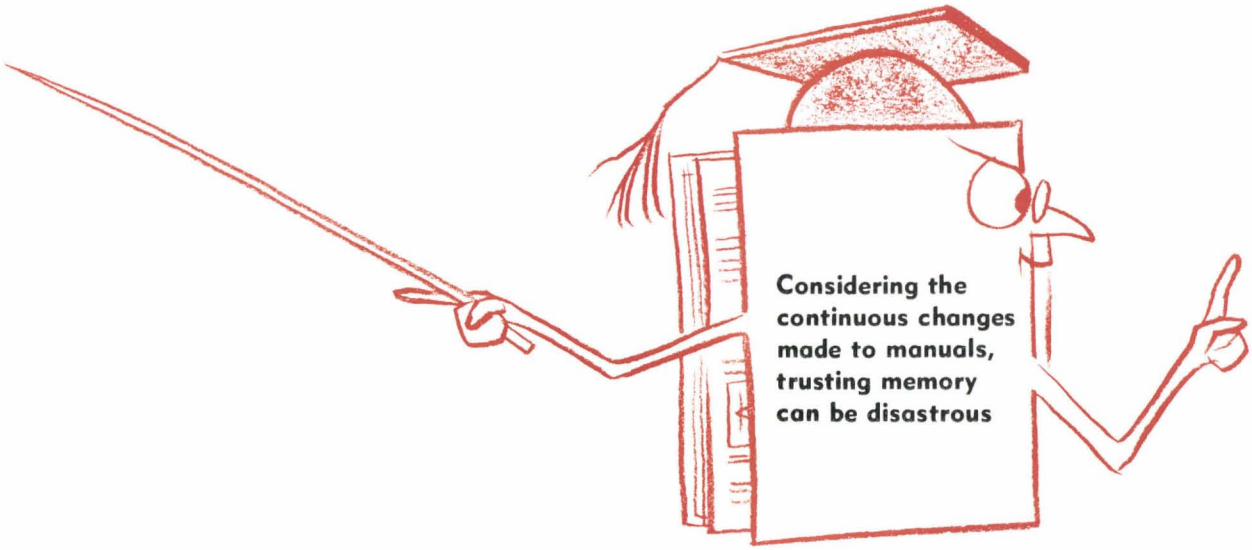
The book exists to keep a trained man in a hurry from the memory lapses anybody can have, particularly if he is under pressure. And who isn't these days? While we are talking about memory, it's possible for a man to acquire a set of memories *which aren't so* unless he has a reference in black and white to set him straight.

The book is also protection against another human failing about as universal as the common cold – the use of poor judgment. Left to yourself, one of these days you are sure to make a faulty decision. Perhaps the information you have to go on isn't as full as it should be. Just perhaps – and here is another common human failing – you have developed an appreciation of your own abilities which is considerably higher than simple honesty would allow. If you will give it a chance, the book can take you gently by the hand and lead you along the straight and narrow.

The book is the only answer. The trouble is, it is not an answer everybody listens to – not even veteran pilots and maintenance men who have been around long enough to know better. For one thing, no handbook is the kind of reading you'd want to dip into while you are lying in the hammock with a tall glass of something cool. It is dull, complicated, and easy to avoid.

What happens all too often is that impatience sets in. A mechanic servicing an aircraft begins to





THE ONLY ANSWER

fall back on his memory, to tell himself he recalls a particular procedure because, whether or not he knows it, he wants to avoid the time and trouble of wading through a lot of fine print to make sure. Or a pilot, pressed for time, fails to follow the preflight the book calls for because he really thinks he has it all down in his head. Relying on memory for any procedure is a dangerous thing to do ... but considering the continuous changes made to manuals, trusting memory can be disastrous.

You can almost always pinpoint a specific and easily avoidable cause for *any* accident which has happened because the book has been overlooked or, worse, deliberately avoided. If a pilot fails to check his gross weight with his performance chart he is likely to end up with the sensation that he is trying to fly Grant's Tomb. If a mechanic fails to torque a bolt properly, or skips an essential procedure, somebody is going to have to pay the piper.

Everybody in Army aviation—in fact, most people everywhere—operates all the time with the best of intentions. People who operate in a well-meaning but unorganized fashion probably never really have given much thought to what "the book" really is. They would never consider trying to open a beer bottle with their teeth if there was an opener at hand. They've known since infancy that a key is highly useful when you want to get in the house without battering down the front door.

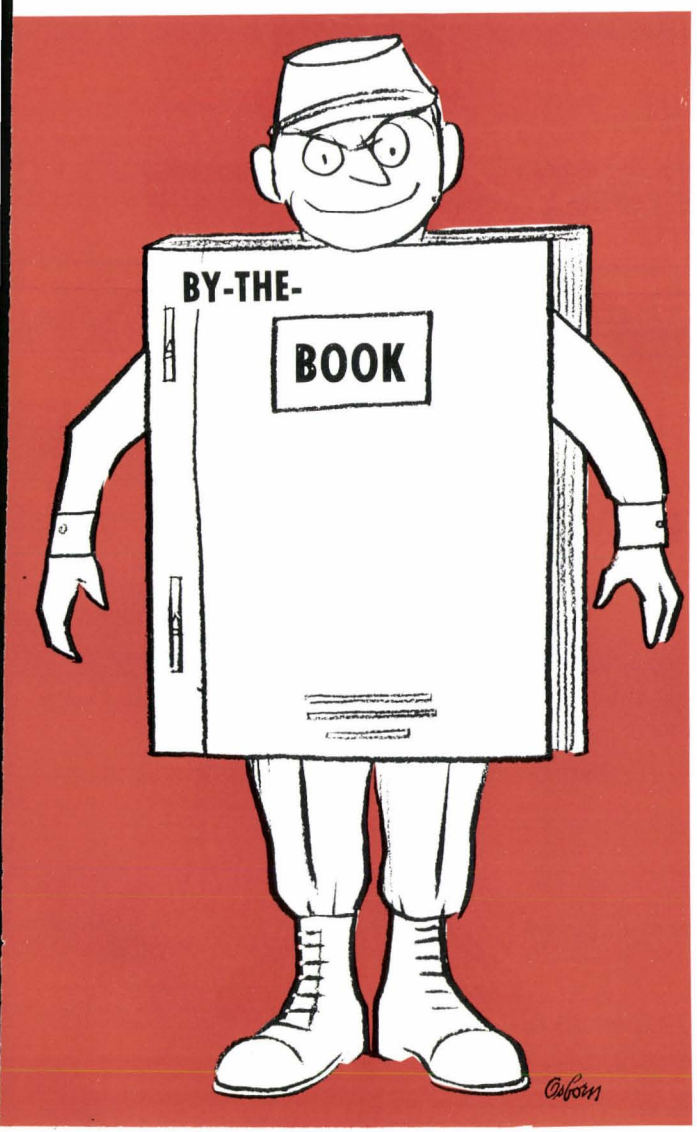
Yet these same people can fail to appreciate that when all is said and done the book for any phase of Army aviation's activities is a *tool*, to be used for a specific purpose just like wrenches, bottle openers, and keys. They will never become true book lovers until they have absorbed the basics of bookmanship, that it falls into three basic categories: the human factor, equipment, and operations—and above all, that it cannot be overlooked.

Everybody faces an emergency occasionally which calls for all the instinct, training, and good judgment he has at his command. Emergencies, however, have a way of being a lot less hairy for the pilot who knows, respects, and *uses* the book as a piece of necessary equipment. He may not have it in his hip pocket when he is suddenly confronted with a landing site with more obstacles than a steeplechase course. But he could quote it to you, chapter and verse. He knows what to do and he does it.

A pilot who has luckily come through a hairy episode which arose from the book's being ignored doesn't need to have the moral spelled out in simple terms. A mechanic who has seen what can happen when improper maintenance is the result of skipping the book has no trouble convincing himself that the book is his number one tool.

If a good many commanders, pilots, crew chiefs and the like fail to have a full appreciation of the absolute necessity of following the book to the let-

You can almost always pinpoint a specific and easily avoidable cause for any accident which has happened because the book has been overlooked, or worse, deliberately avoided.



ter, you can hardly expect the rank and file to be model bookmen. Somebody has to set an example. So the old hand who has seen the light knows the book, uses the book, and spreads the word.

And another big item. Nobody need accept everything in the book as the pure, 100-proof truth just because it is written down in black and white. There have been instances in the past in which the book has been in error.

When a crew chief, a pilot, or anybody else finds the book in error, he should blow the whistle. It doesn't have to be a major blunder such as giving instructions for installing the rotor blades upside down. Most of the time it is a matter of simple improvement in procedures or of clearing up something. As we all know, every now and then something which seemed fine in theory doesn't work out so well in practice. Or someone discovers a better way.

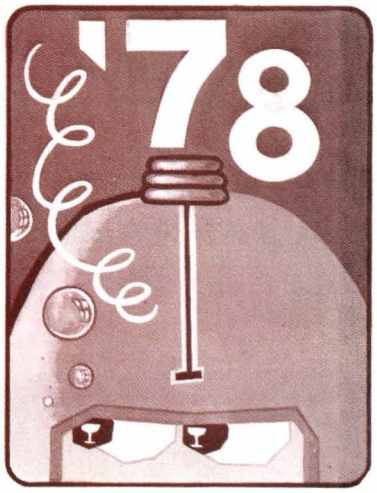
A man could spend a long lifetime trying to keep abreast of the printed material the Army has lying around and still wind up volumes behind. Keeping abreast is a matter of judicious selectivity and personal responsibility. In Army aviation, a man must decide what applies to him and the task he has on hand and then plug away at it hard and steady until he knows everything the book can tell him. It becomes a part of his essential equipment, like his helmet, his tools, or his ID card.

The man who really appreciates what the book stands for knows it won't work unless it is used *all the time*. It is no laughing matter when a man in a hurry or preoccupied with something else decides to forge ahead just this once without consulting the book he thinks he knows. Just this once may be the very occasion when a memory which has worked well in the past decides to roll over and play dead. One more good aircraft – or one more good crew is removed from the rolls.

Like most things worth doing well, knowing the book and using it properly is tough, time-consuming, and tedious. The temptation to avoid it is at times very attractive. But you owe it to your family, to yourself, and to everybody in the Army to follow regulations to the letter.

The real professional knows what rules are made for and he respects them. He follows them to the letter every time, knowing that his own safety – and that of a considerable number of other people – is dependent on orderly, uninterrupted, conscientious, step-by-step, standard, by-the-book procedures.

VIEWS FROM READERS



To The Editor, *U. S. ARMY AVIATION DIGEST:*

Perhaps it would be good to request issuance of a commemorative stamp honoring Mr. Igor Sikorsky when the 10th anniversary of his death comes – or a stamp marking the 40th anniversary of the first practical single rotor flight. The Post Office has a rule that most individuals cannot be so honored until 10 years after their death.

Frank Rushton
Educational Television
Ft. Rucker, AL 36362

Sir:

I have a question regarding simulated IFR (hooded) flight. Did the U.S. Army use or experiment with a blue tinted (cellophane?) windshield and maybe window, with amber goggles or glasses for the aviator performing the IFR practice? I seem to recall this being used in the '50s in Army fixed wing aircraft.

If it worked, wouldn't that be a better option than covering the chin bubble and part of the windshield in the UH-1, thus restricting the safety pilot's vision?

I would be interested in any comments and will be watching future issues of the *AVIATION DIGEST*.

CW3 Harold D. Wright
102 Shady Lane
Enterprise, AL 36330

If anyone knows of any such experiments please contact the *DIGEST* at P.O. Drawer P, Ft. Rucker, AL 36362.

Sir:

Army U6-A aircraft number 56-0372 recently flew its last flight as a military aircraft. The aircraft was flown by Captain Patrick M. Donaghue on 25 August 1977 at Hamilton Field, CA. It was then turned over to the Civil Air Patrol (CAP) who flew it to Amarillo, TX for reissue to a CAP unit. Total time on the aircraft was 5,854 hours. It has seen service in Ft. Riley, KS and in the Canal Zone. It was issued to the 91st Division (Tng) in 1970 and flew approximately 2,600 hours in the next several years with never an accident, incident, or even a precautionary landing. It was operationally ready an average of 92 percent during this period.

To the best of my knowledge, this was the last flyable U6-A in the Army's inventory ... an airplane that was very important in the early years of Army aviation.

Patrick M. Donaghue
Facility Supervisor
124th U.S. ARCOM Flight Operations Facility
Hamilton AFB, CA 94934

Sir:

We all enjoyed the article and the pictures on PEARL in the September 1977 issue of the *DIGEST*. With regard to the pamphlet described on page 9, though – I recommend a new title: "Wisdom of PEARLS."

Hal Webster
HQ USAREUR, ODCSLOG, S&M
APO New York 09403

— More From "L" Pilots —

Sir:

I noted with interest your article in the October 1977 *AVIATION DIGEST* regarding "L" Pilots writing in.

I was graduated from Pittsburg, Kansas in February 1944, as an "L" Pilot and from Class P-76A at Ft. Sill that same year. I flew with the 413th Artillery Group in Europe in 1944-1945, and at the end of hostilities I was on the Inn River in Austria. I joined the Washington Army National Guard when it was reorganized after World War II and remained with it until retirement in May of 1975 with the rank of Colonel in the Infantry branch.

Incidently, I have a picture of nearly all of the "L" pilots in Seventh Army taken at a party in July 1945 in Geislingen, Germany, given by Colonel Shepard, the Seventh Army's Aviation Officer during the war. I can have the photo reproduced if you have a need for it.

I own a Piper Comanche 250 and still enjoy the flying that I learned in the Army.

John F. Campbell
1306 Washington
Mutual Building
Spokane, WA 99201

Sir:

I did not see the fine print in your July issue telling us to write in if we had been Liaison Pilots but I did see the letters in the October issue that

finally got my attention.

I was appointed a Liaison Pilot at Connally AFB, Waco, TX, Class 49C-L in September 1949. I then went on to Ft. Sill, OK, Class 49-2, for the tactics course, after which I was appointed an Army aviator.

At Ft. Sill I was one of a special group of four being tested to determine if the instruction received from the Air Force was adequate to prepare a pilot to take on the Army tactics course "cold" without any further dual instruction. The idea originated with Colonel Carl I. Hutton and LTC Chuck Graft (Ret) was the monitor/instructor. I believe that's when Chuck first started to get gray.

I suppose I could be considered "semi-retired" or "semi-active duty," since I am still actively engaged in flying Army aircraft in my present position as Operations Officer at Butts Field, Ft. Carson, CO.

You may find some of my former classmates working at Ft. Rucker as DACs. I suppose the "star" of our class was my good friend Mike Lynch whose name I'm sure is already known to you folks.

My second set of "L" wings has disappeared like the first set so I am in the market for a new set; if you come across anyone with a spare please get in touch with me.

MAJ H. Edward Ziegler (Ret)
1914 Hercules Drive
Colorado Springs, CO 80906

Sir:

I read your July and October 1977 issues regarding "L" Pilots. I am now retired so here goes. I was rated a Liaison Pilot by authority: Para 2, P.O. No. 193, HQ, USAF, DAF, 2 Oct 47.

I was at San Marcos, TX from March to June 1947 and at the Air Training Department, TAC, Ft. Sill, OK from July to October 1947.

I became an Army aviator by authority: Para 32, S.O. No. 70, DA, 11 April 1950.

In the course of twenty years of flying, I also flew with the Royal Air Force and the Strategic Air Command to maintain proficiency. I got a lot of C-47 time with SAC while I was in England. I commanded the 937th Engineer Company (Aviation) (InterAmerican Geodetic Survey) in the Canal Zone from 1962 to 1965.

I retired after 25 years in June 1967.

I will be interested in future articles on the "L" Pilots. My original "L" wings were stolen and I have no more. Do you know where I could get a pair?

Keep up the good work with the *AVIATION DIGEST*, I read it every month. Well done!

LTC William C. Hale (Ret)
325 Greenwood Drive
Petersburg, VA 23803

Sir:

I am submitting the piece, "Unsung Heroes I Have Known," for possible publication.

LTC Charles W. Abbey
Chief, Rotary Wing Division
Directorate of Training
Ft. Rucker, AL 36362

Unsung Heroes I Have Known

ONE PARTICULARLY hot, clear day in the Republic of Vietnam in January 1970, my Air Cavalry troop was seeking out the "wily and elusive enemy."

As was our habit while flying, my crew and I monitored Guard (the emergency aviation radio channel). Suddenly the pastoral silence on the guard channel was shattered by a nearly hysterical voice calling for the help of any listeners in his vicinity.

The voice was a pilot of an Army UH-1H Huey helicopter which was being attacked inflight by one or more unidentified military aircraft. Gunfire punctuating the radio call was clearly audible.

As the pilot described his plight, other aviators began to answer the distress call. "This is Cowboy two-six with a flight of three snakes on the way." "This is Thunderhorse two-two plus two on the way." "Blue Max is coming!" "This is Lurch, we'll be there in zero-five!" The guy in trouble clearly was going to get some help, and soon!

It sounded as if we were about to see or hear some of the first air to air combat so far in the war in Vietnam – certainly the first involving helicopters. Then came a calm, steady voice over Guard, "This is Paris Control" (an American Air Force operated air traffic control facility in Saigon). "Everybody HOLD IT!" This new and authoritative voice then began to sort out the highly charged and excited group of air warriors. From his dark little booth somewhere near Saigon, he quietly and efficiently took control. And our highly disciplined military aviators responded.

As the adrenalin slowed and emotions cooled, some of the facts began to emerge. It quickly became clear that our distressed aviators had indeed been mistaken for invaders from a neighboring nation and had been attacked by aircraft of the Vietnamese Air Force (VNAF). The VNAF aircraft, now aware of their error, were headed for home under the watchful eye of "Lurch." Cowboy and company, their crews' visions of becoming "aces" fading behind them, addressed other duties. The Paris controller, the day's hero who undoubtedly had prevented what well might have become an international incident or a colossal "midair," went on about the business of controlling routine air traffic.

It is rare that air traffic controllers intercede in combat activities. That this unknown person did so, and so effectively, seems to me to deserve a salute (even though transmitted in the blind).

be it ever so humble...

OF ALL PHASES of flight, the homeward-bound portion leads in the number of crew errors. If an aviator is going to overextend himself or his aircraft, if he is going to take a foolish chance, it will be while he is trying to get home.

Decisions to go or not to go are a part of every aviator's life. In training, he spends a lot of time learning how to evaluate all factors affecting his flight. With all this training, and as a self-styled professional, he may imagine himself as a cool, analytical machine, weighing factors objectively before making decisions. But if his destination is the place he currently thinks of as home, he is apt to abandon good judgment and professionalism, disregard obvious dangers and make his decision on the basis of emotion. This urge to return to the nest does not depend upon high-quality living quarters, nor must there be a loved one awaiting him. The mere presence of familiar and personal things-things which remind him of loved ones-makes it his emotional home.

A few years ago, one of the most highly qualified pilots in the Army, together with his copilot, crew chief and aviation medical officer, was killed in an aircraft crash during an apparent attempt to get home on a night VFR flight under marginal weather conditions over mountainous terrain. This pilot was an instrument examiner and a graduate of the USC safety course. The accident investigation board reported the accident cause as inadvertent flight into instrument conditions leading to the crash on a peak some 20 miles off course. Actually, the most probable cause was the crew's openly expressed impatience to get on home as soon as possible. The home in this case was a sand-bagged hootch furnished with the typical canvas cot and ammunition box furniture. Hardly enough to attract anyone – except the resident. The desire to sleep in familiar surroundings, to have the use of personal articles, or perhaps to pick up the mail apparently were urges too strong to overcome.

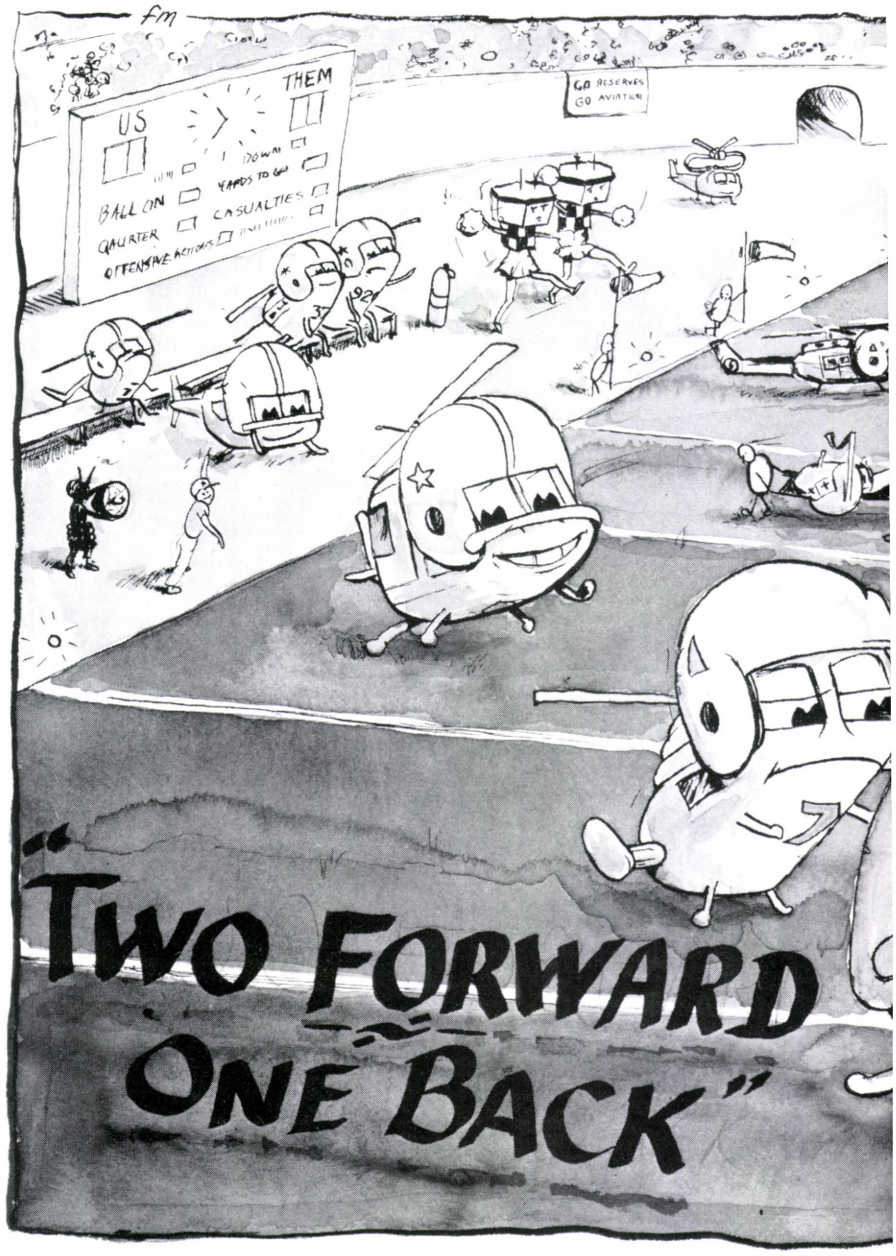
The aviation psychologist refers to this desire as "get-home-itis," and recognizes it as a strong motivating factor. The aviator must make a conscious, diligent effort to keep it suppressed. When it is teamed up with another condition known as "end slump" or "end deterioration" (the human tendency to relax near the completion of any job), the aviator finds himself strongly tempted just when he has the least resistance. Controlled experiments of aircrew performance have revealed an almost irresistible tendency to relax when home is in sight, and this leads to the greatest number of crew errors on the final leg of the mission.

If we look back over our own flying careers we will find that nearly every poor decision was made on that leg of the trip pointing home. Not only have we disregarded weather, but we also have ignored sick aircraft and radios, and seriously low fuel conditions. All these problems we have pushed aside to get on home. Most of us, at one time or another, have consciously filed and flown IFR through areas of known thunderstorms and moderate icing conditions, and have violated minimums – all for the sake of getting home. And those of us who are around to talk about it must have been lucky for we surely were not smart.

What can be done to prevent accidents caused by get-home-itis, this overextension of capabilities? First of all, the aviator must be aware that getting home is a temptation capable of overcoming his otherwise good judgment. Secondly, the commander must realize that he has much of the responsibility for avoiding this type of accident and should act accordingly. For example, he can foster a policy that accepts unplanned RONs without comment or at least without prejudice toward the crew. In addition, he can make it SOP for administrative flight crews to carry an RON kit of essentials whenever an unscheduled stop is possible. Further, it should be command policy that, where possible, all cross-country flight orders permit changes in itinerary and provide for the crews to recover expenses paid out of pocket.

If the aviator realizes that a 180-degree turn and an unscheduled stop are not against the law, he may contribute to the creation of another old pilot and the longevity of his crew and passengers – which are not all bad.

"TWO FORWARD ONE BACK"



Gerald D. Lyon
Facility Supervisor
121st ARCOM USARFFAC
Fort Rucker, AL

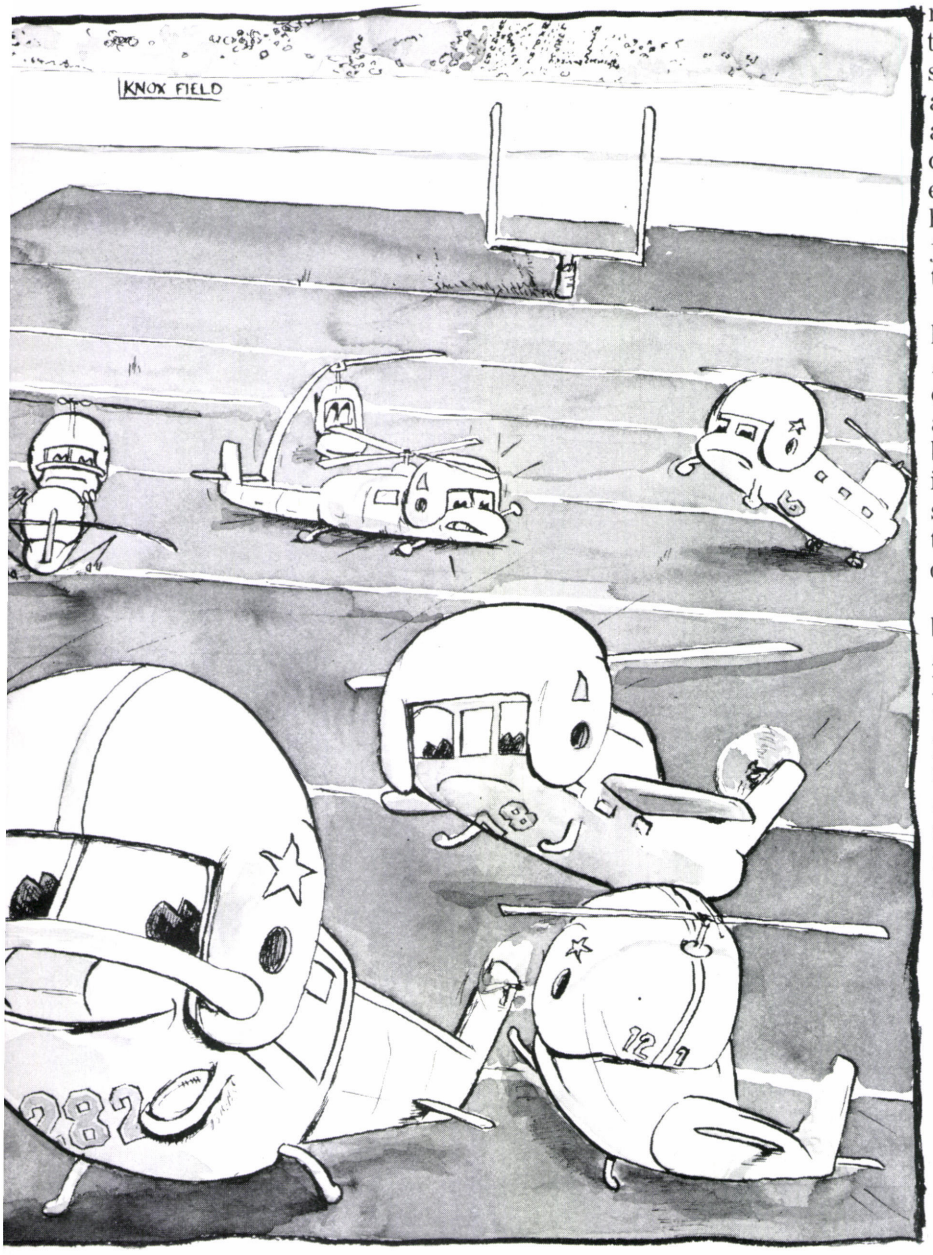
WHEN A BALL TEAM isn't playing a game, it is training for the next contest. When the Army isn't fighting a war, it is training for the next battle. As with the ball club, the best trained team generally wins. And the team that wins is usually the one with the most depth on its bench. Reserve strength always has been critical to winning whether it be in athletic competition or military tactics.

Currently, modern military strategy dictates the need for the strongest reserve force in our nation's history. With about half the players on the bench it is mandatory that these reserves be as highly trained and motivated as their counterparts in the arena. They must learn the same plays, scrimmage as hard and develop the same physical fitness as the first stringers. For in the next game, the opportunity to play probably will come early and last until the final whistle. In fact after the initial kickoff, it probably will be difficult to distinguish the subs from the varsity.

Reserve aviation, like its other military counterparts, shares this responsibility for preparedness to meet the threat. When the quarterback calls the plays in the next game, aviation most likely will carry the ball.

The aviation "campus" at the U. S. Army Aviation Center, Fort Rucker, AL is home for a highly dedicated segment of this Reserve aviation element. Knox Army Heliport is the practice field for three aviation units now undergoing training and honing their skills.

The 282nd Aviation Company with its 61 officers, 157 enlisted personnel and 29 aircraft is a highly trained and motivated assault helicopter company. Organized as a Reserve unit in June 1975, the 282nd is composed primarily of personnel employed in the Fort Rucker labor pool which gives them a head start in individual preparedness. Most of the aviators are instructors at the aviation school – coaches teaching the game plan to the prospective varsity. With 77 percent of the pilots nap-of-the-earth qualified and 81 percent instrument rated the unit is well on its way toward individual readiness. The training program for the



282nd centers on unit drill: formation flight, tactical deployment, night operations, etc. Training is meaningful and mission oriented and the players learn to operate as a team.

The 376th Transportation Company (DS/GS) is an aircraft maintenance unit with a long and colorful history. Organized in 1921 as a Reserve Motor Transport Company, the 376th was called into action during World War II where it received two Meritorious Unit Commendations for distinguished action in India. With an authorized strength of eight officers and 255 enlisted personnel the unit's primary mission is aircraft maintenance through general support level. Training realism is achieved by the 376th throughout the year by an agressive rebuild program. The unit acquires crash damaged aircraft and restores them to flyable condition. The Aviation Museum even houses a UH-1A Huey helicopter restored by the unit – just one more way of practicing the plays.

The 926th Engineer Group, headquartered in Montgomery, AL, houses its aviation section consisting of five helicopters, six aviators and nine enlisted members at Knox. Although training in an engineer unit is different in some respects many of the same tactical procedures found in other units apply.

Another aviation element based at Knox is the 121st U. S. Army Reserve Command Fort Rucker Aviation Support Facility (ASF) (157) whose mission is to provide the training base and maintenance support for the aviation personnel and equipment in the three units listed above. Staffed with 39 dual status technician/reservists the facility provides ongoing training support and day-to-day aircraft maintenance which is beyond the units' capability. The dual status role of ASF personnel means that not only do they maintain and operate the equipment through the week as civilians, but on weekends they don uniforms and train with their unit using the same equipment.

As a result of its location at the Aviation Center, many training advantages are realized. The latest tactical doctrine is available to the commanders, excellent training sites are available for tactical exercises, the closed circuit television system is used for weather briefings and access to the media center, crash rescue is available and flight following is provided.

The U. S. Army Reserve at Knox is ready – send us in, coach!

Training —

A Way of Life

CW2 Rush Wicker, USAR
282nd Aviation Company
Fort Rucker, AL

THE MISSION OF Army aviation is to support the ground force commander. Accomplishment of this mission is not an easy task, considering all the weapons systems that the enemy will employ to deny free use of airspace over the battlefield.

Numerous Army aviation publications have been written: FM 90-1, "Employment of Army Aviation Units in a High Threat Environment"; TC 1-28, "Rotary Wing Night Flight"; and TC 1-88, "Aviator's Recognition Manual"; which contain information pertaining to operations in the high threat environment. A knowledge of what is contained in these publications will benefit every aviator. However, unless the unit has an active training program where personnel put into practice the principles of employment, aviation units will be unable to perform their assigned mission on the modern battlefield.

Many commanders understand the problem and have established effective training programs. One unit that has demonstrated a desire to be prepared for the first battle of the next war is the 282nd Aviation Company, an Army Reserve unit based at the U. S. Army Aviation Center's Knox Army Heliport, Fort Rucker, AL.

Since its designation as a reserve unit on 14 June 1975, it has been developed into a combat ready unit. As is the case with the 376th Transportation Company, being located at the Army Aviation Center, there are many advantages that enable greater emphasis on unit training.

Another advantage the unit enjoys is the use of flight training facilities located at the Army Aviation Center. These include the learning center, synthetic flight trainer system (SFTS), instrument facilities and the tactical area of operation.

All these advantages can be compared to the ingredients a cook must have to make a quality pastry item. The experience of the assigned personnel, good training facilities, and an effective training program contribute to the unit's success.

A demonstration of the 282nd's capability came during its recent annual training when 12 aircrews and maintenance personnel provided aviation support for about 1,000 active, Reserve and National Guard forces in a counterinsurgency operation. Continuous aviation support for these units was provided 24 hours a day for 10 days. The support provided these units was recognized by unit commanders at all levels as being responsive and highly professional.

Unit training is not limited to the two weeks of summer camp. The unit assembles one weekend each month and performs training objectives that have been identified on previous drill periods. This training may consist of simulated air assaults of personnel, logistics or equipment. Normally, multiple aircraft operations are conducted. Dead reckoning navigation at terrain flight altitude over long distances is a common training mission for the aviators.

Night training is not just talked about; it is an essential ingredient blended into the aviation training program.

Tactical lights are set up in remote sites enabling the aviators to practice landing to minimum lights. Also, low level

navigation during the hours of darkness is practiced.

Although the unit is not authorized the AN/PVS-5 night vision goggles, some of the assigned aviators are qualified with the goggles and conduct student training with them at the Army Aviation Center.

All enlisted personnel are highly qualified, but continuous training is conducted for each military occupational specialty. Material available through the learning center is used; however, hands-on training is the primary method for improving individual skills.

Regardless of what type training is conducted by the unit, it is oriented to combat operations in the high threat environment. Personnel are aware of what is required of each individual to defeat the threat and accomplish the mission of Army aviation.

The commander of the 282nd Aviation Company is concerned about training and is effectively preparing the unit to perform its assigned mission. Based on the statement that "the way a unit trains is the way it will fight," the 282nd Aviation Company will be ready if the first battle of the next war is fought.

"376th TC"

Duncan Wortmann
376th Transportation Company
Fort Rucker, AL

KNOX ARMY HELIPORT at the U.S. Army Aviation Center, Fort Rucker, AL is the newest home of the 376th Transportation Company (Aircraft). A General Support Aircraft Maintenance Company commanded by Major James Fitzgerald, the unit has an authorized strength of 263 Soldiers. Presently 247 personnel are assigned to the 376th.

The unit dates back to 29 July 1921 when it was incorporated into the organized Reserves as the 592nd Motor Transport Company. During World War II the unit was ordered into active military service and served in India where it received two Meritorious Unit Commendations. After the war the 376th was reassigned to the Organized Reserves,* and has served in Alabama ever since.

The 376th's primary mission is to provide training to unit personnel in all phases of general support maintenance. This is accomplished during the monthly unit training assemblies and annual training (summer camp) through a comprehensive on-the-job training (OJT) program as well as various active Army and USAR military occupational specialty producing courses. Realistic training is provided at summer camp by close coordination with other Reserve units in support of their aviation maintenance requirements.

Other training has been accomplished realistically by the implementation of a restoration program. One UH-1A Huey has been completed and is on display in the U. S. Army Aviation Museum at Fort Rucker. The 376th also is engaged in two other restoration projects, a U-6A Beaver and an OH-58A Kiowa. The U-6 is scheduled for placement in the Air Force Aircraft and Armament Museum, Eglin Air Force Base, FL. These projects enable the unit to conduct an ongoing OJT program in areas not covered by normal maintenance requests. In addition these projects provide a historical exhibit for the public.

In the event of mobilization, the unit is prepared to assume its role of a General Support Maintenance Company to ensure quality support to active Army units.

* Designated U.S. Army Reserve (USAR), 9 July 1952

Adapted from ROTOR & WING

Drug reactions that would merely inconvenience the average citizen could spell disaster in the cockpit. For a flight surgeon's opinion on common drugs, read on.

Pills, Potions, and Pilots- A Delicate Balance

USAAAVS
Colonel David J. Geigerman, M.D.
Flight Surgeon
Army National Guard
Fort Meade, MD

PROBABLY, THE BEST general recommendation for flying personnel is abstinence from all drugs. However, that is not always possible and so the question arises of which drugs may be safe and which hazardous to the pilot.

In the chart on these pages, I have attempted to categorize some of the more commonly prescribed drugs, and some sold over the counter, in terms of their possible side effects and recommended flying restrictions following their use. The listing is far from all-inclusive and is intended only to suggest the extent of the problem.

Although the likelihood of a drug side effect may disappear after a particular period, this does not mean the individual is in condition to fly. In many cases, if he was ill enough to have required the medication, he may not be well enough to fly by the time the drug's effects have disappeared.

The general medical condition of the patient is always the overriding concern of the physician and flight surgeon. His first consideration is to determine whether the disease process itself, treated or untreated, renders the individual unsafe for flying duty. Drug effects are then secondary to determining flying fitness. A case in point would be a number of drugs used in the control of cancer. If it is necessary to use these drugs, the medical condition itself would be reason

Drug	Usually prescribed for (or description)	Possible undesirable effects	Flying duties after use
Gantrisin/ Sulfadiazine	Urinary tract infections	Nausea, dizziness, dermatitis, rash, hepatitis	Suspended for at least 24 hours. Medical surveillance advised for 2 weeks.
Sulfonamides such as Sulfasuxidine	Gastrointestinal tract control	Minimal toxicity. However, anyone needing these drugs is too sick to fly.	Suspended for at least 1 week.
Penicillin and derivatives: Ampicillin, Penicillin "O" and V-Cillin	Wide range of infections	Allergic reactions, swelling, rash, asthma	Suspended for 12 hours. Then permitted if there is no evidence of latent toxicity and the infection has been controlled.
Penicillin inhibitors such as Neutrapen	Penicillin reactions	Fever, pain, tenderness, allergic reactions; patient would be too sick to fly anyway.	Suspended for at least 3 days.
Erythromycins such as Erythrocin	Narrow spectrum antibiotics	Few severe effects, although diarrhea, nausea and vomiting may occur.	Suspended for at least 12 hours. Frequent medical examinations for at least 2 weeks.
Tetracyclines such as Aureomycin	Broad spectrum antibiotics	Nausea, vomiting, diarrhea, light-headedness. Possible monilia infections in females.	Suspended for at least 12 hours. Exams for 2 weeks.
Chloromycetin	Antibiotic	Same as tetracyclines.	Same as tetracyclines except flying should be suspended for 24 hours.
Streptomycin	Antibiotic	Nausea, vomiting, diarrhea, dizziness, severe ringing in the ears. Usually the infection will be enough to suspend flying.	Suspended for at least 48 hours. Exams for at least 2 weeks.
Mandelamine	Urinary antiseptic	Nausea (rarely)	Need not be curtailed.
Bacitracin/ Polymyxin	Antibiotic	Relatively nonsensitizing	Need not be curtailed when used topically. However, when taken internally, flying should be suspended for at least 24 hours.

enough to suspend flying duties.

In addition to the drugs listed in the tables, there is a variety of other chemicals that may have adverse effects on the flier, such as the insecticide DDT. While exposure to DDT may cause local irritation, flying duties can be continued in most circumstances. The same goes for insect repellants and other types of anti-insect drugs.

Special mention should be made of those involved in spraying organic-phosphate insecticides. While their use does not cause one to be suspended from flying duties, the effect of the drug on body chemistry, especially the liver, is such that this pilot should be watched by medical authority.

Not only such obvious chemicals as insecticides pose dangers to the pilot. Certain protectives and cosmetics may also lead to complications and suspension from flying. An example would be preparations used in suntanning and depigmenting such as Man-Tan or Benoquin. These may cause severe reddening of the skin, blistering, or even liver damage. Flying duties should be suspended for 24 hours after use or the presence of signs of toxicity. Frequent medical examinations should be conducted until the physician is satisfied the reaction has run its course.

Certain drugs used in the control of blood pressure can pose problems for the flier. Thiazide-type diuretics such as Oretic may permit continued flying; however, they can cause nausea, vomiting, and weakness from the deficiency of potassium. A pilot's flying duties should be restricted during initial stages of therapy; then he should be watched for evidence of any relative blood pressure depression. Orthostatic hypotension (low blood pressure) is a cause for restriction from flying. Other drugs used for blood pressure control should be cause for restriction from flying duties.

Also, use of any preparation such as Warfarin, which would interfere with blood clotting mechanisms, would be cause for restriction from flying—although anyone needing these substances should be restricted from flying on the basis of his medical condition.

Agents concerned with gastrointestinal disease such as antacids, Amphojel, magnesium oxide, Creamalin, and others can cause everything from constipation to diarrhea. At high altitudes, the carbon

Drug	Usually prescribed for (or description)	Possible undesirable effects	Flying duties after use
Mycostatin	Fungus diseases	Relatively nontoxic, however, nausea and diarrhea possible.	Need not be curtailed unless side effects are present.
Fergon/Feosol	Iron preparations used in treatment of blood diseases		Flying permitted, but should perhaps be suspended for 12 to 24 hours after intravenous use.
Vitamin B-12, liver and folic acid preparations			Need not be suspended.
Vitamin K-1		None	Need not be suspended.
Diptheria toxoid, Tetanus toxoid	Vaccines	Local pain, soreness	Need not be curtailed.
Smallpox, typhoid, cholera, influenza, polio virus, rabies, yellow fever	Vaccines	Local pain, vomiting	Suspended for 24 to 48 hours.
Pertusis	Whooping cough vaccine	Local pain, vomiting	Suspended for 24 to 48 hours.
Immune globulin, Immune sera in general		Hypersensitive reactions	Suspended for at least 24 hours.
Allergy shots			Suspended for 6 to 12 hours, longer if swelling persists.
Antihistamines such as Pyribenzamine, Antihist, Benadryl	Allergies	Drowsiness, dizziness, dry mouth, headache, nausea, vomiting, muscular twitch, fever	Restricted for at least 24 to 48 hours after usual dosage.
Dramamine, Marezine, Torecan	Motion sickness	Same effects as the antihistamines	Restricted for 24 to 48 hours.
Cortisone group	Inflammatory diseases such as arthritis	Seldom from the drug itself, at least on short-term usage	Suspended for 72 hours following the usual systemic dosage; longer if side effects are present.

dioxide liberated by sodium bicarbonate may produce bubbles that will increase intragastric pressure. In my opinion, sodium bicarbonate should be limited to ground personnel and not given to aviators. The bile salts should exhibit no such difficulties. Cathartics, softeners, and bulk substance may cause some cockpit embarrassment, but I see no reason to cause a restriction from flying. However, prudence would dictate waiting until the laxative effects have ceased.

Agents used to control diarrhea are different. Personnel using agents such as tincture of opium or paregoric should not fly until the narcotic effects have time to wear off (a minimum of 24 hours). Diarrhea itself should preclude flying for at least 72 hours.

Anyone who has given blood should not fly for at least 72 hours. Also, a crewmember should not fly for at least 48 hours after having his pupils dilated for an eye test.

After the use of any inhalation or nonintravenous anesthetic, at least 72 hours should elapse before one is ready for crew duty.

Now, we come to a general class of narcotics such as the opium derivatives, morphine derivatives and their antagonists Lorfan and Nalline, codeine and its derivatives, the methadone group, Meperidine, and Demarol (the mood ameliorating or tranquilizing drugs). At least 4 weeks should elapse following the use of any of these drugs.

Following a single dose of any of the barbiturates, at least 48 to 72 hours should elapse before flying. Continued dosages would preclude flying for at least a week after the last dose.

Last, but not least, we come to ethyl alcohol. After the equivalent of two beers, flying should be suspended for at least 12 hours. After one to four highballs, 24 hours should pass before one flies. Alcohol inhibitors such as Antabuse are not permitted for flying personnel. Anyone taking an alcohol inhibitor should wait at least four weeks after administration of the drug ceases before he is considered fit for flying.

This has been merely an outline of some of the effects of drugs on the aviator. All fliers receiving any type of drug therapy should discuss with their physician or a flight surgeon the possible effects of their drug therapy on flying.

Drug	Usually prescribed for (or description)	Possible undesirable effects	Flying duties after use
Vasoconstrictors such as Vasoxyl, Benzedrex, Tuamine	Nasal decongestants	Wakefulness, trembling, pallor, and nervousness	Restricted for 12 to 24 hours.
Benzedrine, Dexedrine	Central stimulants		Should not be used by flying personnel. Use suspends flying for 24 to 48 hours.
Isuprel	Asthma	Insomnia, tremors, and heart palpitations	Suspended for at least 24 hours after use is discontinued.
Carbachol, Urecholine	Stimulants	Intestinal cramping, sweating, diarrhea, asthma, heart arrest	Suspended for at least 72 hours.
Atropine, Belladonna, Bentyl, Tral, Probanthine	Control of hyper-acidity and symptoms of peptic ulcer when no X-ray evidence exists	Dry mouth, dilated pupils, paralyzed accommodation, difficulty in urination	Suspended for at least 1 week.
Norflex, Robaxin	Relaxation of muscle tones	Sleepiness, weakness, dizziness, even blood in urine	Suspended for at least 24 to 48 hours.
Procaine, novocaine	Local anesthetic	Local discomfort	Suspended for at least 24 hours.
Analgesics such as aspirin, Acetanilid, Phenacetin, Tylenol, Anacin	Pain relievers	Nausea, vomiting, ringing in the ears, deafness, diarrhea, even hallucinations with excessive dosages	Need not be restricted. However, use of these drugs is not recommended.
Butazolodin	Pain reliever	Nausea, vomiting, vertigo, rash, water retention	Medical condition precludes flying.
Ipecac, Nectadon, Toclase	Cough suppressants, antitussives	Mild nausea, dizziness	Suspended for 24 hours.
Chloral hydrate, Bromides, Paraldehyde	Sleep inducers, sedatives		Suspended for 24 to 48 hours.
Thorazine, Mellaril, Vesprin, Spirine, Compazine, Tigan	Tranquilizers	Weakness, chills, constipation, stuffy nose, blurred vision, dry mouth, low blood pressure	Suspended for at least 1 week.

The views expressed in this article are those of the author and not necessarily those of the U. S. Army nor the U. S. Army Aviation Research and Development Command

Army Aviation Support Systems Philosophy — FAILURE and SUCCESS

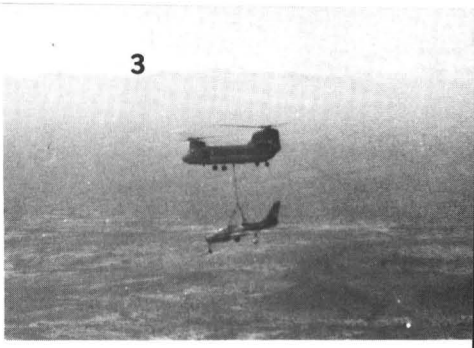
Joseph P. Poynton
Supervisory Aerospace Engineer
HQ, U.S. Army Aviation Research & Development Command
St Louis, MO

THE ARMY PRIMARILY incorporates its new subsystems through specifications incorporated into its new developments. This eliminates costly aircraft production delays associated with an unanticipated schedule slippage of minor government furnished equipment (GFE). However, innovation is not excluded as evidenced by its extensive airmobility support program. This same program affords the opportunity for multiaircraft "maverick" developments. Both avenues provide Army aviation the means for implementing new technology developments and innovations.

This article is based on my past experience in selected airmobility support programs. For the most part these programs carry a low priority relative to Army needs. Consequently, normally they require both very detailed justification and demonstration of progress and success. One unsuccessful and several successful programs will be discussed along with my observations and conclusions as to how to make a small program work, or, in one instance, what makes a failure.

Like all research, development, test and evaluation (RDTE) programs, there are successes and failures. One normally does not discuss failures, but I will be a minor exception. Items termed failures usually exceed technology capa-

Figure 1
Development of the adjustable internal cargo net seemed simple. A prototype net is shown below



(1) Dedicated workers rig sling to an F-84. (2) Initial test lift is made with crane.
(3) CH-47 Chinook carries F-84 to remote gunnery range

Figure 2

bility. For example, some years ago Army aviation had a general purpose adjustable internal cargo net development. On the surface it appeared ridiculously simple – but it wasn't. And here I made my first mistake. I assumed success. Necessary size, 180 by 180 inches, and reasonable net weight, about 75 to 80 pounds, made it operationally ineffective in terms of rigging time. It became obvious no one would use it in a combat situation and the program was terminated. A prototype net is shown in figure 1.

Interestingly, the final net tested was not the initial net design that entered test. The initial net had floor tiedowns spaced 20 inches apart which coincided with the CH-47 Chinook floor tiedown points. It became obvious in initial test that rigging tiedown time was a disaster. Working with the test personnel, we eliminated the original floor tiedowns and replaced them with "0" rings. The theory was that we could use the standard tiedown straps (which were needed anyway) to "wrap up" and secure the net base, very similar to pulling the strings on a laundry bag. Unfortunately, it didn't work.

This program provides vivid justification for the Army policy to enter test as soon as possible. Yet in retrospect I should have at least seen the signs of potential failure, if not failure itself, earlier. Thinking success I ignored both weight and complexity, and here the complexity lay in a large, heavy, adjustable net with many tiedowns.

On the positive side, we have had some notable success. As a small, low priority program, the aircraft recovery kit stands out as a major unexpected achievement. After program initiation, the Air Force entered as a joint developer. While in development, the kit was used to recover operational aircraft with replacement value in excess of $5,000,000. Total development costs were $750,000; inhouse salaries, travel, contract, test – the whole nine yards. Consequently, the kit paid for itself six times over while in development. The kit has certain unique features such as load spreaders to prevent skin buckling by the bellybands, and spreader bars which allow a "puppet type" suspension variation. In turn, the bellyband application is adaptable to almost any aircraft weighing 20,000 pounds or less.

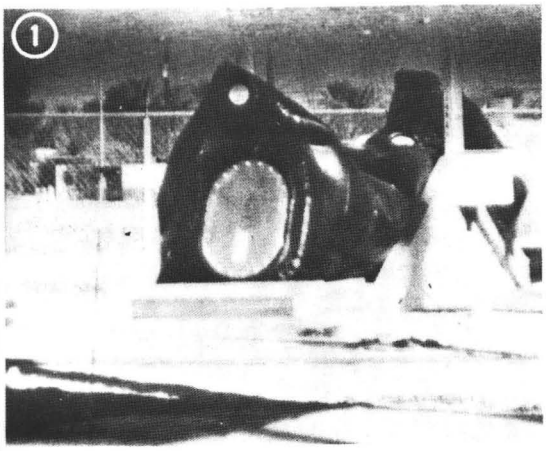
Basically, the kit consists of a sturdy container and very strong nylon slings. The slings admittedly are overdesigned which was permissible as (1) the total kit remained light enough to be manhandled, and (2) the slings themselves could be handled easily for aircraft rigging. I believe the inherent sling strength, along with an excellent project engineer, made the program. There never was a failure and the test program used both hulk and some rather expensive flyable aircraft. This generated confidence and confidence in turn generated acceptability. At the same time, we listened to the inputs of the test personnel. They suggested – and we incorporated – a very simple chain link adjustment which reduced complexity and rigging time of the bellyband slings.

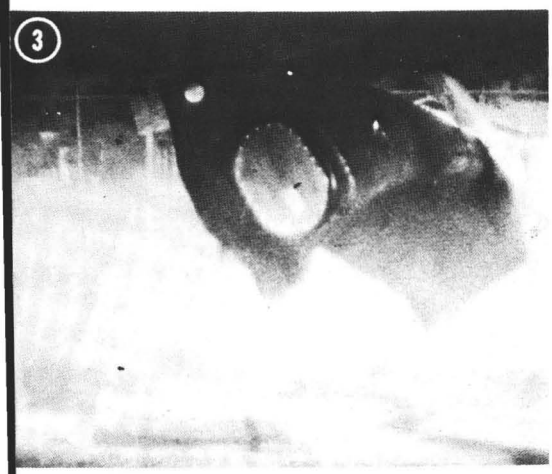
Quite probably the kit's most severe test occurred in July 1973, at one of America's most remote locations – Gila Bend, AZ. In 110-degree heat, 2-year-old slings, visibly worn from exhaustive testing, carried hulk F-84s weighing 12,000 pounds to a remote gunnery range without a single failure. Figure 2 demonstrates the small, dedicated and efficient operation.

A more major and extensively publicized program was the prototype development and qualification of the ballistic and crashworthy fuel systems instigated on priority basis to prevent thermo fatalities in otherwise survivable accidents. It has been a spectacular success. For example, by the fall of 1975, there had been no thermo fatalities or injuries in 838 survivable accidents spanning 4 years. Since then we have simply been running up the score, except for one unfortunate, debatable incident.

This debatable incident attests to its effectiveness. The debate essentially centers on whether the crewmembers would have perished from the crash impact or resultant fire. While the incident is tragic, the evaluation is far from clear cut and is marginal, or there would be no debate.

The system itself is complex and required extensive research





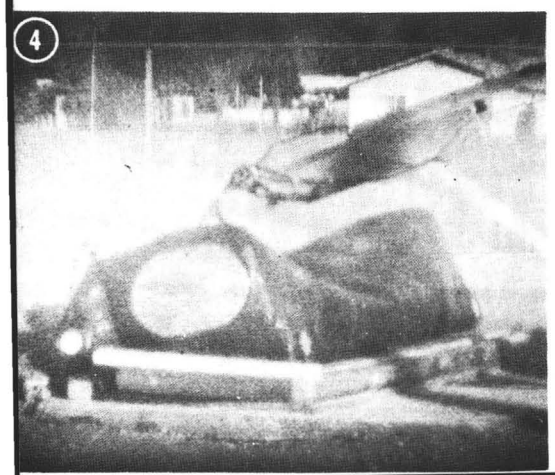


Figure 3

One of the more spectacular tests — 300-gallon fuel cell filled with water dropped 65 feet onto concrete

followed by prototype development and qualification. It consists of a ballistic cell, which will nominally defeat a 50 caliber ball shot, and is capable of withstanding a 65-foot drop to concrete while filled with water. In turn the cell is complemented by self-sealing fuel lines and strategically placed breakaway valves which fail safe upon impact, thus trapping the fuel within the lines. The cells are mounted to the aircraft structure with breakaway attachments for rapid cell separation upon impact.

In summary, the entire system self-seals upon impact. Subsystem qualification is against some of the most difficult criteria imaginable. There are some 20 qualification tests with the most spectacular being the 65-foot drop test. A water filled tank is lifted 65 feet and dropped on concrete. The criterion is very precise, it cannot leak a drop. This test would equate to driving the tank at 45 miles per hour into a brick wall – a terrific impact which would not occur in an actual aircraft accident as the crushing effect of the structure would act as a shock absorber. The severity of the test is shown in figure 3. Here the 300-gallon CH-47 Chinook tank passes qualification through the eyes of a high speed camera. More than 90 percent of the Army fleet is implemented with these systems.

Hard work and concentration of detailed review and test made this program. We began with an outstanding technology base from the Eustis Directorate, Applied Technology Laboratory. Our job was the dirty details of tailoring to individual aircraft. There were many mundane actions which could have been passed off but never were. These could be summarized in one event.

On a cold morning, in a driving rain, the project engineer and his supervisor witnessed a gunfire test. Each cell wound was minutely examined. Shoes were ruined, clothes soaked and the tank failed. It would have been so easy to have watched from a distance; no one, save ourselves, would have known. As a result of the failure the backing support was improved, the tank passed its repeat test, and the Army received a better product.

Previously I implied concern over crash impact forces. Army aviation has not been remiss in this complementing area. Shown in figure 4 are Army/Navy crash attenuated crew seats chosen for the Iranian 214A utility helicopter. Crash attenuated seats will be installed in the Army's new YAH-64 advanced attack helicopter (AAH) and the UH-60A Black Hawk (UTTAS). They are being considered for retrofit on current aircraft. Fortuitous timing coupled with budget restraints produced a productive program. It is inherently simple technically.

A variety of armor buckets can be used. The key is the frame. It uses specialized shock absorbers. If the cockpit permits, the frame can be designed, within limits, to rotate and allow the seat to line up with the impact force vector (direction of impact) and preclude side force (force interactions) which would produce binding in the attenuators.

This was the case in the 214 seat design. The technical design goal is acceptance and subsequent achievement of more than 75 percent commonality by cost. However, the whole intent of this program from its initiation was to preclude aircrew-

Figure 4

Left, crash attenuated crew seats such as these will be installed in the YAH-64 advanced attack helicopter and in the UH-60A Black Hawk

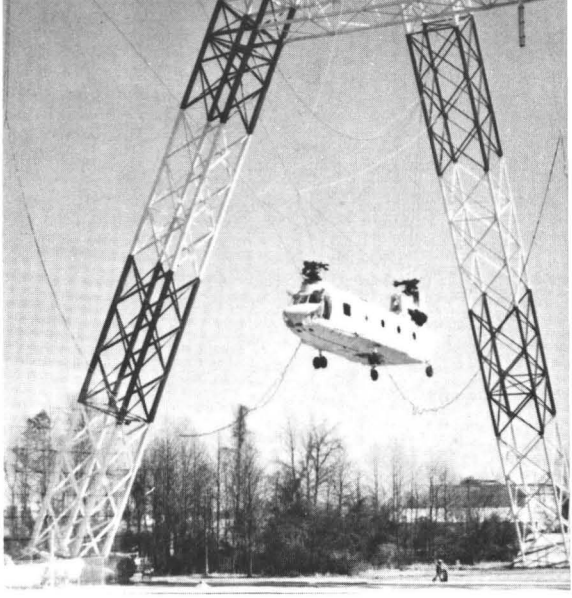


Figure 5

Right, two photos of Army/NASA crash test of CH-47 to determine behavior of major components. The seat was a "piggyback" item

members' injuries and fatalities from crash impact forces.

I believe the success of this program was due to an outstanding engineering effort which constantly adjusted the design as a result of test. From the start a realistic outlook was taken. In turn, the most severe test conditions anticipated initially were run. This realistic approach minimized the time to identify and initiate the normal small changes and adjustments that occur in a RDTE program. This realism is demonstrated in the opportunity taken to "piggyback" the seat in a 6 March 1975 Army/NASA crash test conducted primarily to determine the dynamic behavior of a large troop/cargo-carrying helicopter structure and major components in the crash environment. Figure 5 shows the CH-47C immediately before and after impact. The basic seat is shown in figure 4. Figure 6 shows the seat with dummy after impact. The seat performed perfectly. The dummy remained restrained and the seat stroked as anticipated.

I have discussed a sample spectrum of Army support programs. One was a total failure, others were successes. But what can be learned? I draw the following personal conclusions:

- Work hard and consistantly – a program has a myriad of technical and managerial requirements and you can't afford to lose pure time and fail to address all points adequately. Responsive, timely action pays dividends.
- Small details are as important as large ones – never ignore them.
- Test as early as possible – there is a world of difference between a controlled laboratory test and field usage.
- Listen to the troops – they have sound, practical ideas and want to help.
- Never be an intellectual snob – indicate your design is not locked in concrete and you are receptive to sound suggestions.
- Be flexible and so indicate – if a design needs changing, do it quickly; and make this philosophy known in early test.
- On a critical event, never delegate responsibility – personally witness it or attend it.
- Never assume a program is going well from correspondence – periodically review it in person.
- If a program is recognized as technically or operationally unachievable, recommend cancellation – carrying on a dead program only prolongs the agony and wastes money.

There is nothing inherently new about these conclusions. They boil down to hard work and an open mind. However, they make programs work. Considering the number of programs in the periodicals now in trouble, a reminder now could be quite timely.

Figure 6

Showing the seat after impact. The dummy remained restrained and the seat functioned perfectly

WHERE'S LUCKY?

STARING OUT AT the rain beating on the paved ramp, SFC Buck Stuart squirmed his 200-pound frame around on his chair. He inhaled the musky, dank odor of the room and swallowed, thinking how good a cold beer would taste. He pulled a handkerchief from his pocket and mopped the sweat from his broad face. The telephone on the table before him tinkled and he grasped the receiver. "Operations, Sergeant Stuart." He strained to hear. "Sorry, major. You'll have to speak louder. This phone's giving us trouble ....

"Yes, sir, I can hear you now. No, they still haven't found a cause for the accident. Yes, it's hard to understand, especially with that crew. The pilot had 5,000 hours and more than 1,700 in Hueys. The copilot had almost as much experience.

"Yes, sir, the weather was VFR and no other aircraft was involved.

"Maintenance? That'd be the last thing I'd suspect. John DeLoach was crew chief, you know, and they just don't come any better. He had years of experience and a fine record. Since he's been assigned here, maintenance downtime has been cut almost 30 percent. It must have been some kind of materiel failure, but the wreckage was so badly scattered, it's going to be hard to tell for sure.

"Yes, sir, three passengers in addition to the crew. I'll let you know as soon as we find out anything."

Stuart replaced the receiver and glanced up as a sergeant in flight clothes entered. "Help you?"

"I'm looking for a friend of mine who's assigned to your unit. Sure will be glad to see him again. I got a letter from him 3 weeks ago. From what he said, you have a fine unit. I never knew Lucky to get so excited about an assignment. He's been here nearly 9 months."

The sergeant walked closer to the table. "I tried to get assigned here, but it didn't work out. I would have liked working with Lucky again. I worked with him once and he taught me more about maintenance than all the schools I ever attended. And I've been through a bunch.

"Anyway, I finally made it over here. Even if we can't work together, we can see each other and talk over old times. We were born and raised in the same town. You should have seen him in high school. He was a real go-getter and smart. He could always figure things out, like when he was playing football. He really worked at it. I guess that's why he was the best quarterback we ever had. I remember one time when we were up against the toughest team in the state. They had been state champions for 2 years in a row. They were big and fast and had a pass defense that wouldn't quit. The coach kept sending in plays and we were holding our own, hitting their weaker side. We had managed to pick up enough yards for a couple of first downs when the referee hit us with two 15-yard penalties. Then, you know what Lucky did? He ignored the coach's instructions and threw a bomb on a first and 40, mind you. You know, it worked. Those were the only points

scored in that game. But, was the coach ever mad! He threatened to bench Lucky.

"Lucky was the same way in just about everything. There was always a better way, at least for him. Maybe part of it was pure luck, but it always worked out. It didn't matter what he did. Like the time he put fertilizer on his father's lawn in the middle of summer. We all laughed and told him he'd be up all night watering, or the grass would burn up. Know what? It clouded up and rained for three straight days. Everything he did always came out right. It didn't matter what it was.

"There was another time when he bought an old Cub that had been sitting in a farmer's pasture for no telling how long. The engine was gone and the fabric was shot, the little that was left after the cows had eaten what they wanted. It took $200, all the money he earned that summer, to buy that plane. We all kidded him when he towed it to his house. After he got to checking around and found out what he had to do to get it fixed up and how much it was going to cost, I think he figured maybe we were right this time. But he didn't let on. Every day he'd piddle with that plane, cleaning it until it was ready for covering. Call it what you like, but just about that time, a fellow was coming in for a landing at the airport in a stiff crosswind and lost control. He ground looped and tore both wings off his Cub. When he found that Lucky had that plane, he hurried over and paid him $350, just for the two wings. Then Lucky turned around and sold the fuselage to another guy for $100. How about that for luck? You can see how he got his nickname.

"That Cub is what gave Lucky his start in aviation. He went bugs over planes and flying after that. Couldn't wait to get in service."

The visiting sergeant drew a cigarette from his pocket. "Got a light?" He touched the cigarette to the flame and inhaled. "Thanks. Lucky's wife doesn't care much about flying. She just doesn't trust aircraft. I told her she never had to worry about him, not with his know-how and luck.

"You should meet his wife. She's a doll! And I've never seen two people more devoted to each other. Every time you see them together, it's like they just got back from their honeymoon. They have two kids, a girl and a boy. The girl's 13 and little Lucky is 10.

"Getting back to aircraft, this guy's a genius. He can troubleshoot an engine or system in his mind, like he was looking at a blueprint. Better than that, like he was inside the system. He never needed a TM. If all mechanics were like him, the Army could junk special tools like torque wrenches and air pressure gauges and save a bundle. Lucky never had any use for them.

"Just for kicks, two of us followed him with a torque wrench after he installed a new fuel manifold on a UH-1B. My buddy would set a dial type torque wrench on each fitting and start tightening. I'd watch and yell when the fitting started to turn so he could check the dial. And you know what? Every one of those fittings was torqued within limits. All were turned above the minimum and not one was overtorqued. Try that sometime!

"You know how some people kick tires? Not Lucky. He can look at one and tell you just about how much air pressure it's got.

"He was a genius at figuring out hundreds of ways to save time. Take a simple job like installing a new set of spark plugs. You know how the schools teach you to clean them in solvent, inspect them, check the gap and all that? Well, Lucky just drains some gas in a bucket, sloshes those plugs around, takes them out and in no time the gas has evaporated while he's looking them over. Next thing you know, he's putting them in. Like he says, the factory has set the gap and if a packaged plug has been damaged enough for the gap to have changed, then you can bet the insulator is in bad shape. You're going to spot that. And what if a bad plug does get installed? You'll catch it when you pull a power check.

"I recall one time when Lucky had to get a Huey ready for a flight. This was out in the field, mind you, and they were really pushing him. The commander was on his way to pick it up and get out before a front moved in. It hadn't even been serviced yet, and all Lucky had were some barrels of fuel. He hooked up the handpump to a barrel and cranked like mad. He had that Huey serviced, preflighted and ready to go 5 minutes before the commander got there. Fuel contamination? No sweat. Like Lucky says, that's what filters are for. You've got them from start to finish in the fuel system, from coarse to fine. If they can't trap what little sediment might get in from one such servicing, then what's the use of having them? All you have to do is keep up with your inspections and make sure the filters are kept clean and serviceable."

SFC Stuart lifted his hand to interrupt the long tirade and asked, "Who is this guy?"

"Didn't I tell you? It's DeLoach, Lucky John DeLoach. I sure will be glad to see him."

We'll Have No Problem Finding The Enemy?

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This is the second of a two part series. Part one appeared last month. The DIGEST thanks ARMOR magazine for permission to print this article.

THE ENEMY will hit you in such large numbers you'll have no problem finding him – he'll find you!" This statement has often been taken out of context, redirected, and used to simplify the extraordinary complexities of battle. This simplicity is desired by some to ease their understanding of an environment of infinite variables, multiple systems, and the nonquantifiable human element. The size, shape, depth and composition of the enemy force or the fact that you have no enemy in front of you are vital questions each commander must have answered in real time. These questions, when fully answered, may very well determine victory or defeat.

In a recent *REFORGER* exercise, the Orange forces had no problem finding the Blue forces. Orange forces knew precisely where the Blue units were because their own units were being overrun. This situation occurred because aggressive Blue ground cavalry scouts detected and reported a 30-plus kilometer open flank to their commander. The regiment then boldly exploited this opening because its commander could *see the battlefield* better than the "enemy" commander.

The Helicopter-Mounted Scout

In the September-October issue of *ARMOR*, we addressed a key element in the process of seeing–the ground scout. More specifically we talked about what is demanded of him, how he must operate, and what it is that makes him unique and invaluable. Let's now discuss a scout who operates from a different machine, but who must perform the same vital and demanding missions–the air scout.

Analyzing the *REFORGER* situation just described, it may be seen that it is not just an "aviation" problem. It is of interest to, and definitely will affect, the ground force. In the *REFORGER* situation, the Orange armored cavalry squadron was on the division's northern flank and could not respond rapidly enough to plug the exposed southern flank. The southern brigade was oriented on the offensive and needed all its forces to continue to attack. The lack of trained forces to provide "eyes" on the division's flank denied the commander the ability to "see" what was happening on that flank. The only unit with the training, inherent speed, and mobility to effectively screen this open flank would have been the air cavalry. On that flank, the mission success of the air cavalry, as well as that of the force, would have depended upon scouts to find and fix the enemy force in *time* and *far enough away* to enable the force commander to react. Had the commander used his scouts in this way, he would have had no trouble in finding the enemy and, more importantly, finding the enemy on his own terms.

The mission success of air cavalry in this maneuver "lesson learned" depends upon the effectiveness of a scout mounted in a different machine–the helicopter. The aeroscout is only an extension of the mission capabilities of the ground-mounted scout. This extension is through the additional mobility of the helicopter over the armored vehicle, similar to the mobility extension that mechanization provided over the mobility of the horse. However, the fundamental missions of cavalry and the scout have not changed. Fundamentals which guided cavalry scouts in the campaigns of the Civil War are still valid today. The mounts may have changed dramatically, but the need for the scout and requirements to fulfill that need have not.

Where do we find these scouts who are mounted in and

operate from the helicopter as their combat vehicle? They are located in two very different units and employed in three different roles. They are commissioned officers, warrant officers, noncommissioned officers, and enlisted men.

Air Cavalry Scouts

The image of the "Matel Messerschmitt" (OH-6) hovering in the jungle, using rotor wash to expose a North Vietnamese Army (NVA) bunker, which many saw in Vietnam, will bring to mind one type of scout – the air cavalry aeroscout. This almost legendary scout relied upon personal qualities and training not unfamiliar to any scout. These qualities were intelligence, aggressiveness, decisiveness, and total orientation on the mission. The qualities which guided the aeroscout in Vietnam are required today – in even greater amounts. Each air cavalry troop is authorized 10 aeroscouts in the aeroscout platoon. These commissioned and warrant officer scouts still carry the success or failure of their troop's mission as they did in Vietnam, but now they carry it alone.

The air cavalry troop has a second platoon, the reconnaissance platoon, whose primary mission is to scout, but in a different way. This platoon consists of four, 10-man scout squads and five utility helicopters – sound familiar? It should – the reconnaissance platoon replaced the old aerorifle platoon. In May 1976 the Department of the Army approved a change to the air cavalry troop table of organization and equipment (TO&E) which altered both the name, personnel, and mission of the platoon. This change was made to tailor the platoon to accomplish different missions in a very different environment, not because the aerorifle platoon had not done a magnificant job in Vietnam. The platoon's Vietnam missions normally required it to fight as airmobile infantry to develop a situation or to act in the economy-of-force role. These missions were accomplished in a low-intensity environment, providing the air cavalry troop with an invaluable and immediate airmobile force which fully complemented the troop's combat capabilities.

An examination of how the platoon will complement the air cavalry troop mission in a midintensity war focuses on two areas where the troop's capabilities are constrained. The highly-mobile reconnaissance and security capabilities of the air cavalry troop are limited by nature and by the combat vehicle providing that mobility. The air cavalry troop's mission capabilities are presently restricted somewhat by limited visibility, although vision equipment now in development will soon provide a 24-hour capability. The combat vehicle of the air cavalry troop does not lend itself to detailed or lengthy reconnaissance or security activities. Cavalry skills in airmobile reconnaissance and security operations are required to effectively compensate for limitations in these areas. These skills will range from stay-behind reconnaissance patrols to observation posts or listening posts (OP/LP's) thinly deployed along a screen line. For this reason, the new reconnaissance platoon is manned by 40 cavalry scout career management field (CMF) 19D's, who replace the 40 infantrymen (11B's), required when the platoon fought as airmobile infantry. When the combat environment and mission of a unit changes, its personnel skills and training must also change. The missions of the reconnaissance platoon on the modern midintensity battlefield and the important change in skill authorization are key elements in the air scout field.

The Attack Helicopter Company Scout

The other unit with a scout mounted in a helicopter is the attack helicopter company. This unit has a different mission on the battlefield than does the air cavalry troop – a major point of confusion to many. If it is accepted that when the unit's mission changes, its training skills must change, then it should not be difficult to understand the different role of the scout in an attack helicopter company.

Same Machine Different Mission

Quite simply, the air cavalry is responsible for enabling the force commander to "see the battlefield" or to find and fix the enemy. The mission of the attack helicopter unit is to assist the force commander in the conduct of the battle or to fight and finish the enemy. If we fully understand the phrase "fight outnumbered and win" we can understand that we must find the enemy on our own terms and with the minimum expenditure of forces. The forces are not available to do otherwise! A commander would quickly realize that he cannot screen or reconnoiter an area with a tank or mechanized infantry unit when in another sector he must fight outnumbered and win. This obvious fact fully applies to air cavalry and attack helicopter units. Air cavalry provides the eyes and ears required to locate the enemy, and the attack helicopter provides the muscle required to destroy the enemy *when* and *where* the force commander chooses. If these capabilities are combined into one unit, the commander will then have to make a choice: either "see" the battlefield or fight the battle – but not both.

This difference in fundamental contributions to the mission of the force commander changes the role and mission of the aeroscout compared to the attack helicopter company's scout. The air cavalry aeroscout is the focal point of the troop's mission and much of what the troop does is to complement the aeroscout. The attack helicopter company's mission success depends upon the actions its three attack helicopter platoons take to fight and finish a detected enemy. The other members of the company, most importantly the scouts, must orient on complementing the attack helicopter platoons' performance of their mission. The aeroscout performs reconnaissance and security tasks for the force as a whole, while the scout of the attack helicopter company performs these tasks solely for the attack helicopter platoons. This apparent academic difference, in actuality, is basic to the significantly different battlefield actions of two scouts in the same type machine, but with different *missions*. If the machine dictated the mission, then all M-113's would be identically employed, as would jeeps.

Attack Helicopter Company's Scout Crew

The attack helicopter company is authorized 12 scout aircraft and scout *crews*. *Crews?* Yes, each scout pilot is

authorized an enlisted scout observer to assist him in the demanding tasks of operating his combat vehicle and accomplishing his mission. When the attack helicopter company TO&E was formulated, it was recognized that the tasks demanded of the pilot in operating his vehicle *under* wires and among trees and concurrently effectively scouting for the attack helicopter platoon could overload even the best. To share the mission demands, an enlisted scout (19D) was authorized as an aerial scout observer.

It may be remembered that when we discussed the air cavalry aeroscout we never mentioned anyone to help him carry out the mission responsibilities of the troop. No other person was mentioned because there are none authorized, except as a *wartime augmentation*. A recent detailed task analysis of the duties of the aerial scout observer was conducted by the Armor School. The analysis revealed a long and complex list of critical tasks which are vital in complementing the scout pilot. The length and complexity of these tasks make the present wartime augmentation status appear ludicrous at best. We will further examine this apparent disjointed contradiction in logic later.

Armor Aviation And The Force Structure

Armor aviation units (air cavalry and attack helicopter) have been recognized for their combat value on the midintensity battlefield. The recently approved Aviation Requirements for the Combat Structure of the Army study III (ARCSA III) provides the active Army force 33 air cavalry troops and 38 attack helicopter companies. These 71 aerial maneuver units will account for more than half of the total ARCSA III force. This fact is brought out to give dimension to the discussion of the air scout. These units represent a total of 1,800 officer and enlisted scouts in the active Army force structure and over 2,100 with the wartime augmentation mentioned previously. This represents a sizeable investment in personnel and resources; therefore, a lucrative target for budgetary and systems analysts who may confuse mission with machine.

One could easily, emotionally dispatch the attacks on the scouts in Armor units, including Armor aviation units. However, if one looks to see the limited effort previously expended to train these indispensable personnel, it would appear that the Army did not consider them to be really indispensable.

Three Armor Aviation Training Initiatives

We in the Armor School and Center recognize the need for Armor aviation training. What is more important, we are doing a lot to satisfy that need. There presently is very little available in either institutional or correspondence courses to assist the Army aviation unit commander in training his unit's scouts for combat. This need was even more in focus at the Armor Center be-

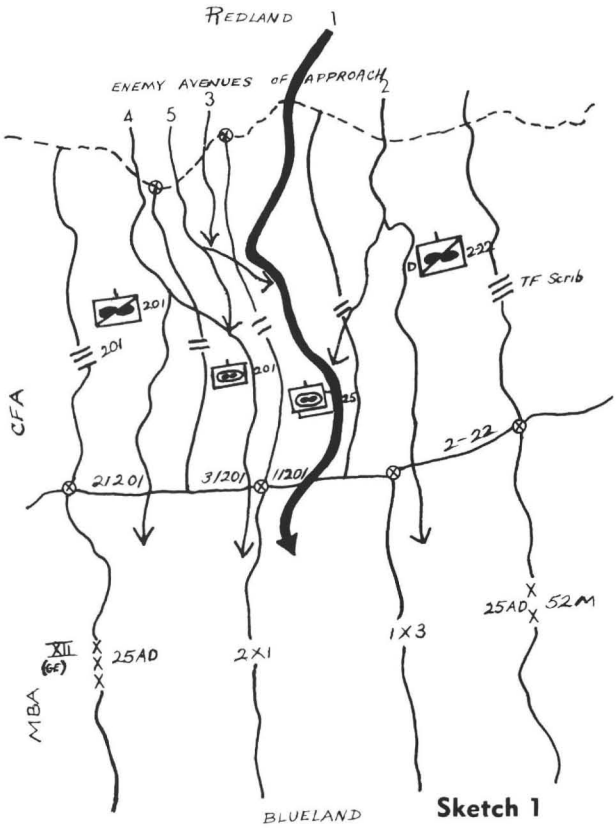
cause the Armor community is well aware of the vital role that the scout plays in ensuring that there is "no problem finding the enemy." The need for the trained scout is recognized, the value of the scout in the Armor aviation unit is understood, and the problem is under attack on three broad fronts:

- The air cavalry scout must have a trained crewmember to share the load, as does the attack helicopter scout, for the even more demanding air cavalry mission.
- The unit must receive replacement personnel for its reconnaissance platoon who are at least familiar with air cavalry and its combat vehicles.
- Armor aviation units should be provided the means to train the enlisted observer as a short term fix and be provided a trained observer in the near future.

The Air Cavalry Aerial Scout Observer

Not too long ago, in an Army-wide message, the Armor Center proposed a solution to the present incredulous augmentee status of the air cavalry aeroscout observer. The proposal was made with full realization of the Army's present personnel constraints, and that simply changing from augmentation status to an authorized status would require 330 additional unavailable personnel. The extra step of authorizing two aviators per scout aircraft, which many feel is necessary, would increase officer strength by 330 and would fly into the maelstrom of the enlisted aviator proposal. The fact that the air cavalry scout requires an additional crewman to accomplish his mission more effectively, however, appears indisputable. The recent change from the aerorifle to the reconnaissance platoon is the key to the problem. The aeroscout observer must be trained in all reconnaissance tasks, knowledgeable in cavalry missions, and mission-oriented toward a combat environment. Where could personnel with the requisite training and personal qualities be made available to commanders to meet the requirements for aeroscout observers?

By using trained personnel who are presently available, the conflict between personnel constraints and operational requirements could be solved. Ten selected positions from the reconnaissance platoon would be made augmentation positions. These 10 spaces would then provide the manpower to give the units their authorized aeroscout observers. This move would provide the much-needed second crew member for the aeroscout without a net increase in manpower. This tradeoff in authorized TO&E spaces is not to be considered a measure of the importance of the reconnaissance platoon. The platoon is vital to the effective execution of the air cavalry troop mission. This proposal, however, will fill critical positions that require substantial training by using other critical positions requiring relatively less training to be effective. In other words, we must make the augmentee training load manageable for the unit



Sketch 1

and still ensure all members of the unit are trained when they enter battle. This proposed change to the basic TO&E is presently in the process of submission.

Training The Aerial Observer/Scout

How does the commander train the observer presently authorized in the attack helicopter company, and that should be authorized in the air cavalry troop? Several units have expended much of their limited local resources to develop training courses designed to meet the vital requirement for trained aeroscout observers. These units are doing a good job in filling the recognized need, but they are only a small portion of the total Armor aviation community. A complete exportable training package, to enable the unit to train aeroscout observers, is presently being developed by the Armor School. This package will provide the unit with lesson plans, training aids, and performance-oriented examinations. With a minimum amount of resource dedication, the unit will be able to train individuals or groups with an authorized course of instruction. Graduation from this course will award crewmember's wings, pay, and a skill identifier to personnel who can meet the challenge. The exportable training package should be available for test-unit validation towards the end of this year and be ready for Army-wide use in 1978.

Steps are also being taken to provide a long term solution to the problem of trained enlisted scout observers. A plan is being studied by the Armor School to select volunteer graduates from the 19D training course for further training as aeroscout observers. These personnel would be given additional instruction on the different skills required of a scout operating in a helicopter. This instruction would also include inflight training with the scout pilots at Fort Rucker. This long term solution would provide the unit commander with trained scouts who are ready from the outset to assist in mission accomplishment, without requiring major training efforts by the gaining unit.

Finally, what is being done to familiarize potential reconnaissance platoon members with their duty requirements? Trainees in the reconnaissance course are presently receiving a brief exposure to employment by an air cavalry troop. A more extensive familiarization is desired; therefore, plans are under way to provide the replacement reconnaissance scout a better understanding of air cavalry and his role in its missions. Plans are for more extensive training in air scout responsibilities during normal 19D training.

Officer Air Scout Training

The commissioned and warrant officer scouts are also to receive long-overdue, mission-oriented training. Changes have been accomplished in two areas significantly affecting the training received by the officer scout prior to his assignment (in flight school) and during his assignment (in the Aircrew Training Manual).

Previously, the Initial Entry Rotary Wing (IERW) course taught by the Aviation School produced a generalized "aviator," qualified in the UH-1 and assignable to any of the widely diversified "aviation" units. Graduation from IERW basically meant that the graduate could operate a UH-1 in the air without undue hazard to himself or others. The gaining unit was required to provide mission-related training to the aviator, whether it was a Corps flight detachment, or an assault helicopter, air cavalry, or attack helicopter unit. Training for a scout had to start from "square one," including unit qualification in the OH-58, which was the type aircraft used for his mission. This situation, which was unusual and inefficient from the unit's standpoint, is soon to be changed for the better with the "tracked" IERW. In this major modification to IERW, the Aviation School will train the student for a specific mission and in a specific machine. This specialized training is similar to the one station unit training (OSUT) concept and will occur in the second part of IERW. The first part of IERW will still be general basic aviation training. What this means to the Armor aviation unit commander is that the aeroscout pilot he receives from the IERW training program will be qualified in the OH-58 and be knowledgeable of the mission of the aeroscout.

Aircrew Training Manuals

The other significant action this year is the establishment of the Aircrew Training Manual (ATM). The ATM will replace the "annual minimums" which have hung like an albatross around the neck of aviators probably since the days of Wilbur and Orville. The old "minimums," dictated by AR 95-1, applied equally to all aviators in the Army without respect to the combat mission of the aviator or the aviator's unit. The answer "but that's the way we've always done it!" did not suffice, as it always had before, to the question: "Why?" when asked by DA last year. The ATM keys not only on the

specific machine the man is operating, but, more importantly, on the mission he and his unit are to perform in combat. When fully established, the "minimums" flown by an aeroscout will be directly related to his combat effectiveness in his unit.

As proponent for the aircraft, the OH-58 ATM and the AH-1 ATM were prepared in draft form by the Armor School. ATM's for other aircraft were prepared by the respective proponent TRADOC training centers. A DA briefing team, composed of members of each of the proponent centers, traveled throughout the Army to explain the ATM and its concept and test implementation this fiscal year. Under the ATM system, the unit commander regains control of individual training in his unit from the old AR 95-1. He will have an individual training program that is related specifically to tasks in his unit's ARTEP. The ATM will enable him to ensure that every dollar expended in training will improve his unit's combat capabilities. Machine similarity was not allowed to standardize training at the expense of the mission when the Armor School prepared the OH-58 ATM. It was fully recognized that the OH-58 in a combat support aviation unit, division artillery, or brigade aviation unit is not employed in the same manner as the OH-58 in combat aviation, air cavalry, or attack helicopter units. For this obvious reason, the tasks, conditions, and standards of training in the OH-58 ATM were specifically tailored to the *mission* of the unit to which it belongs.

The Scout In Action

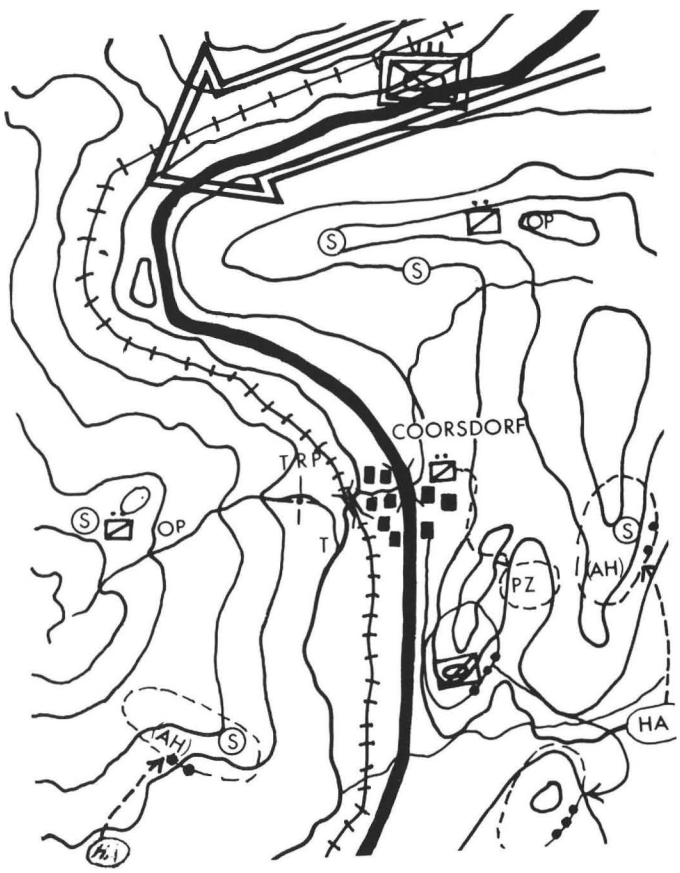
At this point, it would be prudent to note that other nations (England, France, Germany, and the Soviet Union), each quite familiar with the European battleground, are engaged in massive combat helicopter programs. Assuming the rest of NATO and the Soviet Union are correct in their assessment of the role of the combat helicopter, and that the helicopter can operate effectively on the midintensity battlefield, we again come face-to-face with the value of the scout – and in effect – air cavalry. As an example, the following scenario may shed some light on the employment capabilities and the specialized training required of an Armor aviation scout.

Allied forces are in a defensive posture preparing for the expected assault from Redland. The 201st Armored Cavalry Regiment, with its organic air cavalry troop and attack helicopter company, has established a covering force for the 25th Armored Division, "Ol' Hell on Paper." This sector contains the major enemy avenue-of-approach into the heart of Blueland. (See sketch 1.) The 25th Commander has reinforced the covering force area (CFA) with both of his organic attack helicopter companies with the provision that the units are not to fall below a certain strength level. This will enable them to assist in fighting his battle in the main battle area (MBA). The air cavalry troop is also in the CFA as part of the division's armored cavalry squadron, prepared to revert to division control on order. These actions have provided the CFA commander three attack helicopter companies and two air cavalry troops to assist him in his mission. *(The inherent speed and employment flexibility of their combat vehicles will allow Armor aviation units to operate in both the CFA and in the MBA.)*

The Redland forces attack. (They have to of course, or we would have no scenario.) The Redland's Nastykov Front crosses the border behind a tremendous artillery preparation in an advance-to-contact. In one sector, that of the 3/201st ACR, the artillery was so intense and accurate that it succeeded in neutralizing several key positions overwatching avenue-of-approach 5, which feeds the main enemy axis of advance. The squadron commander has lost all contact with his troop in that sector. The only thing he can be sure of is that the artillery preparation was of such intensity as to warrant a sizeable Redland effort on avenue-of-approach 5. He is blind in that sector. He knows the squadron is presently involved in fighting a major battle on avenue-of-approach 3. He has already employed the attack helicopter unit placed under his operational control. The company is still required in assisting his units in defeating a larger-than-expected Redland thrust. He contacts regiment and requests control of the air cavalry troop working the regiment's left flank.

On his arrival, the air cavalry troop commander is instructed to move to this "blind" sector and reestablish the squadron's influence in that sector. *(One of the many values of the mobility of an Armor aviation unit is that it can rapidly move away from artillery fires, especially preparation fires. Yet the units, in this case, can*

Sketch 2



just as rapidly move back to key positions when the fires are lifted or shifted. This reestablishes surveillance of an area almost as soon as the last round has impacted, without having to weather the awesome effects of a Redland artillery preparation.

Aeroscout teams and the reconnaissance platoons immediately move to the threatened area. One section of aeroweapons is also dispatched with the scouts to provide immediate direct fires if required. Once in the sector, the scout platoon leader establishes contact with a platoon of the troop originally assigned to that sector. Although the platoon escaped being hit by the preparation, it has been unable to reestablish contact with its troop's elements. The platoon has engaged and destroyed several Redland reconnaissance vehicles, but has had no further enemy contact. The aeroscout platoon leader knows the enemy avenue-of-approach and directs his scout teams to positions from which they can observe what is going on and, just as importantly, what is *not* going on.

One of the teams, upon occupation of their position, realizes its close proximity to the avenue-of-approach and dismounts its scout observers. The observers carefully gain the crest of the hill and establish an observation post. (See sketch 2.) One aeroscout remains in close proximity to the temporary observation post to serve as a radio relay. The other scout ranges to the flanks and rear, providing security for the OP while on the watch for more Redland reconnaissance elements. The observers quickly detect what appears to be lead elements of a motorized rifle unit moving down the valley. This information is immediately transmitted to the aeroscout who quickly moves to a location where he can contact squadron headquarters.

The troop commander, engaged in reorganizing the surviving ground cavalrymen into a new battle position, monitors this spot report. He knows he does not have the combat power to stop an enemy advance along this avenue, but he also knows he will be able to extract a heavy toll for its use. The scout teams are instructed to maintain enemy contact and begin adjusting artillery fires on the advancing enemy force. Other scouts are given missions to reconnoiter for the upcoming troop battle.

Two reconnaissance squads are directed to prepare a railway bridge and a highway bridge near Coorsdorf for command destruction. (See sketch 2.) The other two squads are preparing observation posts from where they can monitor enemy movement in the valley after other friendly forces have withdrawn. These squads have been tasked to remain behind to enable the friendly force commander to continue to "see" this vital sector. Aeroscouts have reconnoitered safe withdrawal routes and have selected rendezvous points for the squads' pickup early the next morning. Meanwhile, other scouts are reconnoitering attack helicopter battle positions in anticipation of the enemy's advance into the killing area being prepared by the troop commander. This information is briefed directly to the aeroweapons section located in two secure holding areas that were also selected by the aeroscouts. This information will also be of tremendous assistance to the attack helicopter unit when freed from the other threatened sectors to reinforce the air cavalry troop.

Harassed by continuous and accurate artillery fire, yet unable to pin down any friendly defenses, the enemy force commander speeds up his advance to be clear of the Coorsdorf bridges before they can be destroyed. He begins to feel secure when the lead company reports crossing the bridges. Suddenly this feeling of security is blown away, along with the bridges and the ZSU-23-4 that was on one of them. The reconnaissance squad leader reports what he has accomplished and begins moving his squad to their pick-up zone behind the town of Coorsdorf.

To cover the extraction of the reconnaissance squad, the troop commander has ordered the ground cavalry to open fire when his aeroscout reports the enemy's movement past the target reference point established for the ambush. The aeroscout, who is in direct contact with the leading enemy elements, gives the warning order and pays particular attention to the surviving ZSU-23-4. When the enemy force crosses the "trigger point," the ground cavalry is prepared and fires several volleys into the formation making the other ZSU the proud owner of one of the projectiles.

At last the enemy force commander has an enemy he can fight because the muzzle flash and smoke have revealed the defender's position. He directs his organic artillery to begin suppression of the position as he maneuvers his attacking force across the difficult stream.

This logical action was anticipated and reported as it happened by one of the reconnaissance squad's observation posts. The troop commander ordered the first aeroweapons section to attack the maneuvering enemy force and provide cover for the ground cavalry as it moves to its subsequent battle position. The aeroscout is read into the immediate situation by the reconnaissance squad as he moves to the preselected attack helicopter battle position overlooking the stream. In the battle position, the scout must ensure there are no unnoticed enemy elements which could affect operations and that the position will enable effective tube-launched, optically-tracked, wire-guided (TOW) missile engagement of the enemy. He contacts the alerted aeroweapons section and calls them forward to the battle position. While the aeroweapons are moving, the scout maintains near-continous visual contact with the enemy force. When the section arrives, the aeroscout gives the section leader the latest enemy situation, the general attack azimuth and range to the target array, and points out the best firing position for engagement. Before the section engages, the aeroscout provides continuous local security to the attack helicopters.

* * *

What was just described is in no way all-inclusive, but just a small portion of what Air Cavalry with well-trained scouts can add to a battle. Now we have to man and train the force to do the job. As noted earlier, we're addressing the manning problem while major steps have been taken and are being taken to improve training – training which will ensure that the scout and his air cavalry unit can meet the tremendous battlefield responsibility of ensuring that the commander and his weapons have "no problem finding the enemy."

Scout Aviator Selection

In The Dual Track 175-40 Initial Entry Rotary Wing Course

CPT John W. Rodgers
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Training Management Division
Department of Resident Training Management
Fort Rucker, AL

THE INITIAL Entry Rotary Wing Course (IERW) is now a "dual track" course in which 25 percent (maximum of 10 students) of each class will be tracked into aeroscout training during the last phase (Combat Skills) of the course.

For the first time, units in the field will be provided a pilot with a knowledge of the basics of aeroscout tactics. The remaining students will proceed through the UH-1 Huey Combat Skill track.

One of the more important tasks generated by this new program and covered below was to develop a selection procedure for aeroscout pilots.

A systematic analysis has not been completed on the aeroscout specialty; however, from doctrinal research and interviews with aeroscout pilots, instructor pilots, and commanders at Forts Rucker, AL; Hood, TX; Lewis, WA; and Campbell, KY the following description of a successful scout pilot has emerged.

- Must desire aeroscout duty.
- Must understand and be able to direct employment of combined arms elements.
- Must be capable of flying the aircraft safely while performing a variety of other tasks concurrently.
- Must rapidly and accurately interpret maps and terrain, and navigate with accuracy and with minimum inflight reference to maps or electronic navigation aids.
- Must communicate quickly and fluently with multiple air and ground stations.

The next step was to find a method to evaluate each student in terms of the attributes listed above. It was found that a separate but similar procedure already had been developed for attack helicopter pilots by personnel of the U. S. Army Research Institute (ARI) at Fort Rucker. This procedure has shown increasing reliability in assessing the potential of prospective AH-1 Cobra pilot trainees to become successful attack helicopter pilots.

ARI researchers believe the procedure can be modified and used effectively as a part of the overall scout selection process. At this point it should be noted that, normally, the reliability of such a system must be validated over a fairly long period. However, ARI believes that – based on the data gathered while developing the attack pilot selection process – this procedure will give immediate results that

are at least better than random selection. Continuing improvement in predictability can be expected with subsequent validation and refinement.

The selection prodecure is composed of three phases. *First*, U.S. Army Aviation Center (USAAVNC) identifies officers who have attended a combat arms basic course and/or officers and candidates who have served in a combat arms ground assignment. Also, USAAVNC identifies those categories of students, such as female students and Medical Service Corps students who automatically are excluded from consideration.

Second, Military Personnel Center (MILPERCEN) screens these USAAVNC class rosters to determine those students ineligible for aeroscout training. Examples of obvious ineligibles include officers or warrant officer candidates (WOCs) scheduled for post-IERW Aviation Materiel Management training or scheduled for "turnaround" training such as fixed wing; and finally those students MILPERCEN considers ineligible for other reasons. This action should be completed not later than the second week of training. To initiate the second phase, as a result of the total screening process, MILPERCEN provides USAAVNC a list of those officers/WOCs eligible for aeroscout consideration. These students are observed and evaluated to determine their potential as successful aeroscouts. The instructor pilots (IPs), tactical officers (for WOCs) and academic instructors will be requested to

One consideration in scout aviator selection by the USAAVNC is this data and self-evaluation form completed by IERW students

Student Pilot _____ Rank _____
Last First MI

IERW Class _____ Date _____
Number Day/Month/Year

1. Have you completed a commissioned officer's combat arms basic course or an enlisted combat arms MOS? ___Yes ___No If yes, briefly describe the course._____

_____

2. Have you served in a combat arms ground assignment? ___Yes ___No If yes, briefly describe your duties. _____

_____

3. How would you rate your sense of direction (think of your experiences in exploring, finding your way about, and navigating)?

poor	below average	average	above average	excellent
____	____	____	____	____

4. How would you rate your ability to perform under stress (think of your experiences in dealing with many tasks at once, meeting deadlines, and handling threatening situations)?

poor	below average	average	above average	excellent
____	____	____	____	____

5. Following graduation from flight school, what type mission do you want to fly?

_____no preference _____gunship _____utility

_____aeroscout _____lift _____other (explain) _____

6. How would you rate your knowledge of the following missions:

	poor	below average	average	above average	excellent
a. aeroscout	____	____	____	____	____
b. gunship	____	____	____	____	____
c. lift	____	____	____	____	____
d. utility	____	____	____	____	____

7. What comments do you have concerning the assignment of student pilots to different tracks (utility vs OH-58) during flight training? (Use back of page, if necessary.)

Next Month:

complete forms on all students in each class (see illustration). Based on the evaluation of the rating forms, recommendations are prepared for each officer and WOC class and submitted to MILPERCEN before the students of the applicable IERW class have completed 15 weeks of training.

Phase III consists of MILPERCEN matching the eligibility list with requirements for military occupational specialty (MOS) 100GS/ASI IR. If this requirement equals the IERW output (10 personnel), the nominees are selected from the Aviation Center list. If the MOS and skill identifier requirements based upon field unit requisitions exceed 10, MILPERCEN will select the 10 most critical, once again using the Fort Rucker list. If MILPERCEN requirements are less than 10, the 10 aeroscout pilots will be assigned in the following priority:

(1) MOS 100GS/ASI IR (OH-58 requirements)

(2) Divarty MOS 100G (ASI ID requirements)

(3) Other divisional MOS 100G (ASI ID requirements)

ARI personnel began experimental assessment of students in August 1977 corresponding with the first class to be trained under the 175/40 IERW program. Data and operational information will be used to analyze and refine the selection procedures in subsequent classes.

The new program is envisioned to fill the needs of field units to have at their disposal aviators skilled in the basics of aeroscout tactics.

MG James C. Smith, Commander, USAAVNC, Reviews The Aeroscout Training Program

The MILPERCEN "eligibles" are observed and evaluated by instructor pilots or tactical officers and by academic instructors using this form as a guide

Student Pilot _____ Date _____
Last First MI Day / Month / Year

Instructions:

1. Evaluate this student pilot in terms of the following characteristics:

	not observed 0	poor 1	below average 2	average 3	above average 4	excellent 5
a. Map Use	___	___	___	___	___	___
b. Sense of Direction	___	___	___	___	___	___
c. Performance Under Stress	___	___	___	___	___	___
d. Teamwork Ability	___	___	___	___	___	___
e. Ability to Divide Attention	___	___	___	___	___	___
f. Tactical Knowledge	___	___	___	___	___	___
g. Target Identification Skills	___	___	___	___	___	___
h. Skills in Terrain Analysis	___	___	___	___	___	___
i. Verbal Expression	___	___	___	___	___	___
j. Leadership Abilities	___	___	___	___	___	___
k. Flying Ability	___	___	___	___	___	___
l. Aggressiveness	___	___	___	___	___	___

2. Evaluate this student pilot in terms of his overall potential to become a successful pilot. Determine where he would rank in a typical group of 25 students (with 1 being the highest rank and 25 being the lowest rank). Under REMARKS, write a brief description to justify the numerical rank you assigned. State the characteristics (desirable and/or undesirable) of this student that impressed you most.

Standing within a typical 25-student group (Circle one)

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

REMARKS:

3. Rater Information

For Flight Instructor and Academic Instructor:
How many hours have you instructed this student pilot? _____
For TAC Officer:
How many weeks have you trained this student pilot? _____

Rater's Name _____ Rater's Job _____

Warrant Officer Helicopter Training Course Study

LTC Robert M. Furney
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Directorate of Training Development
Fort Rucker, AL

A PROPOSAL that the "Enlisted aviator program as a concept be deleted from further consideration" headed a list of 27 recommendations that the U. S. Army adopted last month. The decision was based on the findings of a special warrant officer (WO) task force study group.

The study pertained to more than 13,000 warrant officers in 85 warrant military occupational specialties, but aviation warrants are affected most and will receive the greatest benefit from the study.

The task force was formed last June, mainly to study the problem of skilled technician warrant officers being forced out of the Army under the "up or out" system. One alternative considered was replacing aviation warrant officers with enlisted Soldiers, but that proposal was rejected in a field survey by the warrant officers corps as well as Army leadership and major commands which depend upon aviation support.

According to the study, the enlisted aviator program concept was rejected primarily because of high training costs, the Army's determination to maintain quality aviators and the desire to keep warrant officer retention rates at a high level. Currently, about 61 percent of all warrant officers are retained while only about 27 percent of enlisted technicians remain in the Army.

The main reason for this, the report states, is that many technical skill jobs pay much more on the civilian market then the Army pays enlisted members. Thus, replacing warrant officers with enlisted aviators would reduce the Army's retention of aviators who are in increasing demand on the civilian economy.

Other reasons cited for maintaining the aviation warrant program include "...morale, program acceptance, pay, command relationships, enlisted versus officer duties, and sociological factors..."

"...The aviation study group approached the problem with the basic assumption that an enlisted person can be taught to fly an aircraft, either helicopter or fixed wing," the report said. "However, the flight training is a necessary prerequisite for the aviator to accomplish the combat mission.

"Although the warrant officer candidates are trained and upon graduation are capable of accomplishing the tasks necessary, they demonstrate leadership, control and instant judgment/decisionmaking processes; they demonstrate the necessary attributes of leadership similar to an Officer Candidate School candidate short of graduation. It is the decisions, responsibilities, leadership and that of a directing, coordinating and participating member of the combined arms team for which the warrant officer aviator is now trained – not just to manipulate a piece of hardware..."

To enhance warrant officer retention, other approved recommendations by the task force study group include bringing the Army of the United States (AUS) temporary promotion requirements in line with regular Army promotion laws. Selection rate for WO4 in fiscal year (FY) 77 was only 58.1 percent and 73.9 percent for WO3 promotions in the primary zone. This will be changed to a minimum of 80 percent promotion from the primary zone, according to the report.

Two other major changes resulting from the study are to improve formal warrant officer training and to extend service obligations for all to four years after completion of flight training.

Other recommendations approved by the Army will:

- Include a warrant officer member on Army of the United States promotion boards.
- Have promotion boards consider those duties and assignments in the next higher grades which pertain only to warrant officers.
- Select more enlisted persons into the aviation warrant officer program and reduce the number of persons entering the program without prior enlisted experience. (The study disclosed that the majority of those leaving aviation warrant officer service are those who enlisted for the program as compared to those drawn from in-service.)
- Increase Reserve component WO strength and readiness to support the active Army aviation warrant officer program.
- Bring attack helicopter units to 100 percent strength by giving them personnel assignment emphasis.

The approved changes will take place during the next three years, commensurate with budget considerations.

A proposal to provide formal instructions to raters in preparation of warrant officers's efficiency reports was the only recommendation rejected by the Army.

Because of the expected increase in more complex and technical equipment in future years, the Army is projecting a need for a beefed up warrant officer corps. Since last fiscal year the demand for warrant officers already has risen while strength authorizations have decreased. The Army was 500 warrant officers below its aviation requirements last year, and an additional 1,000 aviation warrant officers are projected for FY 1980.

EPMS CORNER

Enlisted Personnel Management System

Things To Come In Aviation Maintenance

SFC Douglas E. Allen
Aviation Career Advisor
U. S. Army Military Personnel Center

AS THE DAYS ROLL by we often ask ourselves what lies ahead in our aviation maintenance careers. Since foresight is not as good as hindsight we don't always know where we are going or where we came from. The following items of interest may help us see what we can look forward to.

New Military Occupational Specialty (MOS) For UH-60 (Black Hawk) Repairers. MOS 67T is authorized to be awarded to Soldiers qualified to maintain the Army's new utility tactical transport helicopter, the UH-60 Black Hawk. Formal school training will be available in the future; however, the date for the initial class has not been announced. Training will be available for personnel on active duty as well as for recruits enlisting for 67T. The details on 67T were released in letter of notification E-86 dated 13 September 1977. This information will be included in Change 10 to AR 611-201 which will be implemented on 1 October 1978.

Standards Of Grade Authorization Changes. With the implementation of enlisted personnel management system (EPMS) the aviation maintenance career management field underwent some major changes in standards of grade authorization. Prior to EPMS the grade authorizations in the aviation maintenance MOS would not permit a proper fill level by grade. In most cases the E5 authorizations were higher than the total E1 through E4 authorizations. Because of this misalignment in authorizations, too few Soldiers were available for promotion to E5.

Under the new standards of grade authorization the number of E5s authorized has been greatly reduced. The E4 authorizations were increased as well as E3 and E2. Authorizations for E6 and above remained unchanged.

We ask ourselves what impact this will have on us. Really no harm has been done because we couldn't get sufficient E5s to fill all the E5 positions. Now that we are back to a peacetime environment and promotions are not as fast as during the Vietnam era, our average E4 has as much experience as our average E5 had in 1970. We know that the stripes on a Soldier's sleeve don't always dictate the experience and knowledge level. Under EPMS we hope to see it happen that way.

The changes came about because the Armed Forces were directed to reduce the strength in the upper five enlisted grades to 63 percent along with congressional restraints on the ratio of first term Soldiers authorized versus the careerists authorized within the services.

We should see some benefit in the form of an orderly flow of promotions. We should also see a more realistic fill rate at unit level.

Within the next year the changes should be transmitted to unit level to be reflected in tables of organization and equipment (TOEs) and tables of distribution and allowances (TDAs). Keep in mind that the overall strength of your MOS was not reduced by the changes in standards of grade authorizations and no one loses any stripes because of it.

A review of your MOS as shown in Change 7 to AR 611-201 should give you some insight on grades authorized for different duty positions.

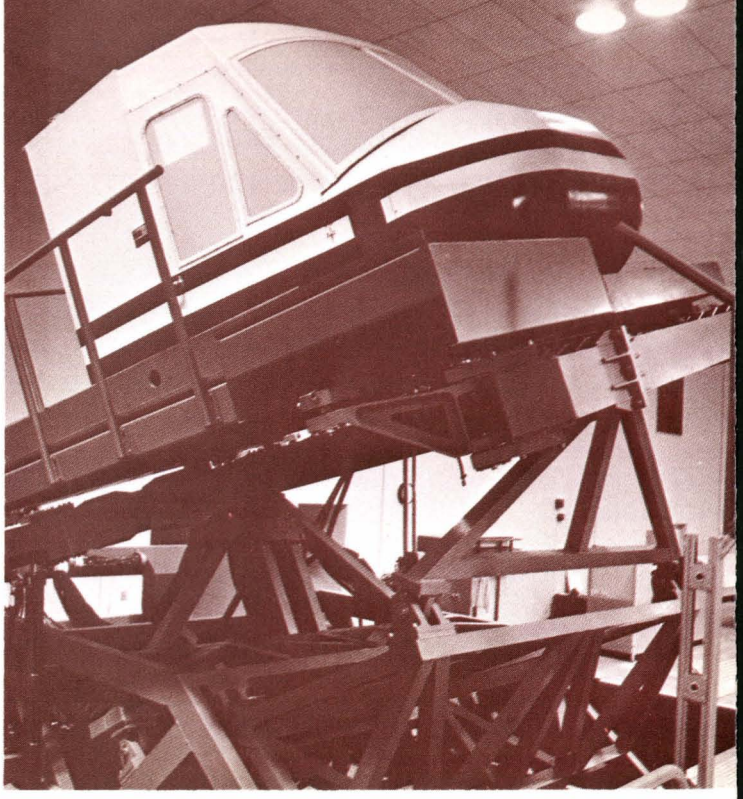
Skill Level Three Training. Training has started at the United States Army Transportation School, Ft. Eustis, VA, for several aviation maintenance MOSs to prepare personnel to perform at grade E6. Technical inspector skills are taught along with supervisory duties to prepare the noncommissioned officer (NCO) to perform in all facets of the MOS. AR 611-201 authorizes technical inspector positions at grade E6 in most aviation maintenance MOSs.

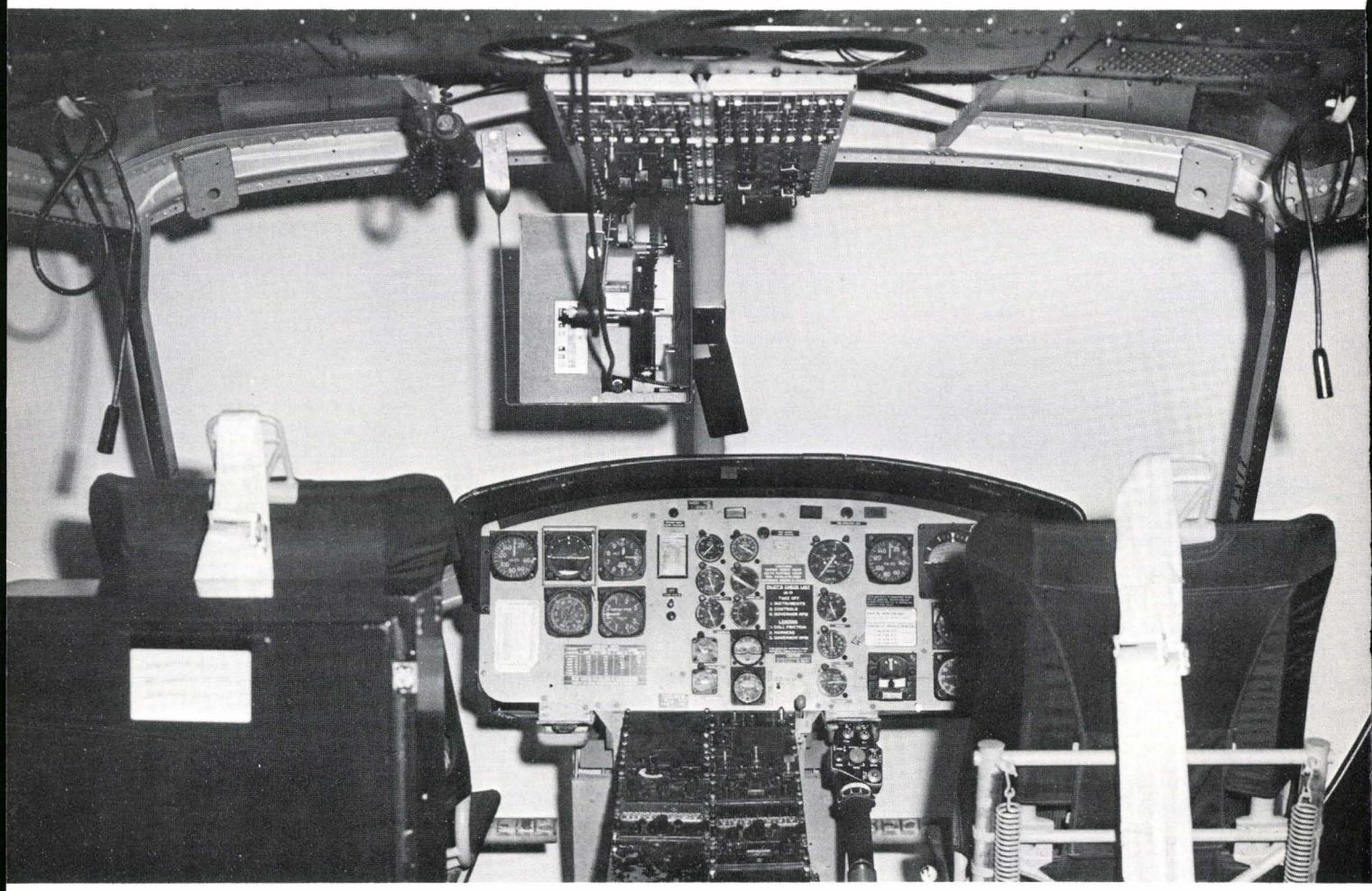
Quotas for skill level three training may be available through your local G-3. Why not have your personnel staff NCO (PSNCO) see about getting you in school, if you meet the pre-

Continued on page 51

ANNUAL AWARD
Monthly Winner
CONTEST

JUST PUTTING IN TIME?





USAAAVS
CW3 Curtis J. Casey

FOR MANY YEARS the Army lagged behind the airlines and other services in the use of flight simulator devices. But the SFTS has changed this disparity and, with flight experience and data gathered through training in these devices at Fort Rucker, the Army has decided to use the flight simulator in the field.

Despite its realism and technical and training advantages, many people see the SFTS as just an expensive piece of equipment in which to acquire IMC training. After a few sessions in the SFTS they are becoming bored and are just "putting in time," achieving little worthwhile training. I think this is due primarily to the lack of an effective syllabus or training program. As a result, the Army loses on its investment in terms of use, training, and the opportunity to improve pilot performance.

Above left: Simulator shown in flight motion. Below: simulator cockpit interior and console instructors inserting training program

The SFTS was originally considered an instrument training vehicle. It can be programmed with 104 emergencies and/or malfunctions and it is in this area that the SFTS may prove even more effective as a trainer in terms of standardization and safety. A strong SFTS program coupling instrument and emergency procedure training should yield positive results in terms of safer pilots and fewer accidents.

Fort Hood, with their four flight simulator devices in operation since April 1977, conducted an informal study on the effectiveness and potential of the SFTS. The study was based on 24 aviators assigned to the 13th Aviation Battalion who were undergoing initial SFTS checkout. The average flight time of the group was 1,558 hours.

After a briefing on the operation of the SFTS, programming malfunctions, and console operator interface with the SFTS, the checkout was undertaken in two 1.5-hour periods with two pilots alternating pilot/copilot duties. The first period consisted of familiarization with the SFTS, handling, use of programmed tapes, and malfunctions. The second period dealt with tracking, holding, radio procedures, and approaches.

The study, conducted over a 6-week period, produced the following information:

- Concern for aircraft control preempted further actions dictated by the operators manual, i.e., fuel off, battery off, transponder to emergency, Mayday call, etc.
- Pilots performing copilot duties did not assist the pilot in diagnosing the malfunction, making radio calls, or accomplishing any tasks required by operators manual emergency procedures.
- One hundred percent of the pilots failed to close the throttle during engine failure emergencies, reducing it to flight idle only.

All emergencies were conducted from a minimum altitude of 2,000 feet agl and emergency procedures were discussed before malfunctions were inserted. In all cases, the pilots knew of the emergency and had discussed operators manual procedures with the IP before malfunction activation.

Conclusions drawn from the study were:

1. Habit patterns reinforced during standardization/evaluation autorotations were carried forward into the emergency situation environment.

2. Although pilots may be able to tell an IP what to do in case of a particular emergency, if a pilot has never encountered that emergency, he has difficulty performing motor skills other than those he perceives as essential to his survival – in this case, aircraft control and autorotation. The stress of the moment causes the pilot to focus his attention on the immediate, forsaking other requirements.

For example, 85 percent of the group who encountered low side governor failure lost more than 1,500 feet of altitude during the attempt at the maneuver. All eventually achieved a good steady-state autorotation but were tardy in applying the emergency governor and, once having achieved throttle control of N1 and N2, failed to realize they had 10 psi torque and were still descending. They became preoccupied with joining the needles and keeping a proper heading and altitude to the detriment of arresting their descent by increasing collective. Yes, this did occur during IMC, making the problem difficult. But the pilot in IMC is more apt to scan his instruments than one who is in VMC. Under the latter conditions, the pilot will be preoccupied with the task of looking for a safe landing area. Comments from pilots in the study group confirmed this premise.

3. Not only is the copilot caught up in the stress of the moment, but he is unsure of his role during an emergency. Again using the example of low side governor failure, both pilots were shown the effectiveness of giving the pilot feedback concerning airspeed, rotor, N1, torque, and heading. When the malfunction was inserted the second time, all of the pilots responded with the proper procedures and had the aircraft climbing with 500 feet less loss of altitude. This was certainly a dramatic change over the first attempt, especially when the pilot's reaction time was essentially the same. The difference in altitude was the result of the pilot's response to the data being provided. Additional attempts on the same or similar malfunctions yielded further evidence that the copilot was not sure of his role in the emergency. He was not certain how assertive to be or what tasks he should be doing. At the end of three to four periods in the SFTS, however, members of the group were using operators manual procedures to deal with low side governor failures and had arrested descent within a 300-foot loss of altitude. The group also acquired excellent cockpit coordination in accomplishing their respective duties.

All the pilots in the group were enthusiastic about the SFTS, although several of them were very skeptical as to its effectiveness at the beginning of the program.

From this study, a formal SFTS program was developed. The program uses the simulator as an adjunct to the annual standardization and pilot-in-command evaluation. This will provide not only a realistic environment to encountering emergency procedures conducted during standardization-evaluation rides, but will expose the pilot to emergency situations that cannot be conducted in the UH-1 due to their catastrophic nature. Motor skill response will reinforce and enhance retention of operators manual procedures. It is estimated that a cost effective savings of 1.5 hours per evaluation will be achieved if oral exam limitations and emergency procedures are conducted during a scheduled SFTS period.

The program takes into account the limited time of the IP. After initial checkout, the program is monitored by the IP with the pilots being responsible for accomplishing the tasks required for each period. At the end of period eight, an IP evaluation of the progress of the aviators is made to ensure training goals are being met and faulty habit patterns are not being developed. A pilot may request the assistance of an IP any time during the program.

Each session in the SFTS consists of two 1.5-hour periods. The first period is devoted to emergency procedures and the second to IMC training. During these periods, pilots alternate as pilot and copilot with the latter programming malfunctions or other required tasks with the console operator.

The goals of the program are to develop an aviator who will be able to effectively cope with any emergency that may beset him in the UH-1, to competently perform duties under IMC, and to perform as an integral part of the cockpit team in any situation.

This program is currently operational within the 13th Aviation Battalion. The projected results cause us to be very enthusiastic about the potential of the device. I believe we have only scratched the surface in its benefits to Army aviation.

CW3 Casey was an SIP with the 13th Aviation Battalion, Fort Hood, when he wrote this article. He has recently finished the Instrument Flight Examiners Course at Fort Rucker and is assigned to the 704th Military Intelligence Detachment, Korea.

From AEROSPACE SAFETY

USAAAVS

Captain John G. Taylor III
USAF/RAF Exchange Program

BEWARE Of The VORTEX RING

FIXED WING AIRCRAFT create a downwash as a by-product of lift. Helicopters also produce a downwash, known as induced flow. Although this induced flow is always present around the periphery of the rotor, under certain airflow conditions it can add to the already existing tip vortices causing these vortices to intensify. Coupled with a stall spreading outwards from the root end of the blade, induced flow can result in a sudden loss of lift and a subsequent loss of height. This is a condition known as "settling with power" or "vortex ring." It is somewhat like flying in one's own wake.

The purpose of this article is not to publish any great new discovery about settling with power, but to remind each helicopter pilot of its conditions, symptoms, development, recovery and most important its prevention.

The conditions in which vortex ring can develop are:

- A combination of low indicated airspeed (below 20 knots), and a high rate of descent (greater than 400 ft per minute).
- A downwind approach.
- Application of power when recovering from a low airspeed autorotation without first increasing airspeed.
- A misjudged and consequently fast approach which requires a flare to be maintained in the final stages of the descent.

The symptoms of the development of vortex ring are:

- Rudder and stick shake.
- Random yawing.
- Rapid increase in rate of descent.
- Cyclic stick less effective.
- Random rolling and pitching.

Note: Stick shake and random yawing can occur in turbulent conditions on steep approach; therefore, it is essential to cross-check airspeed and rate of descent to distinguish between turbulence and the onset of vortex ring.

We know when vortex ring is likely to occur and what it feels like; now we will look at its development. For hovering, and low rates of descent, the velocity of the induced flow through the disc exceeds the rate of descent itself, and an induced flow pattern similar to that shown in figure 1 is obtained. In this state all flow through the rotor is downward (relative to the rotor). If collective pitch is reduced to begin a rate of descent sufficient for the rate of descent airflow to equal the rate of induced flow (see figure 2), the airflows at the root of the blades cancel each

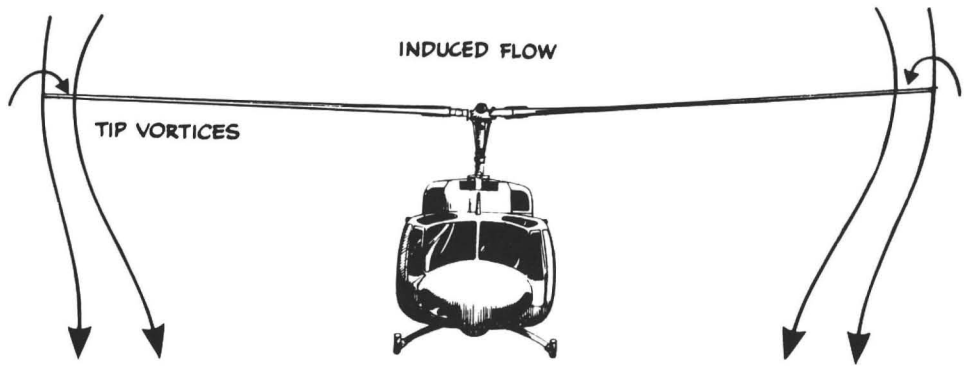


Figure 1 Hover

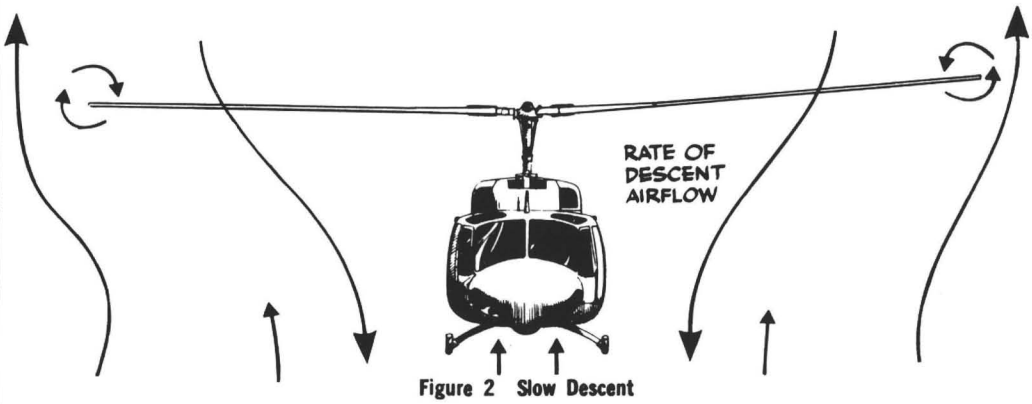


Figure 2 Slow Descent

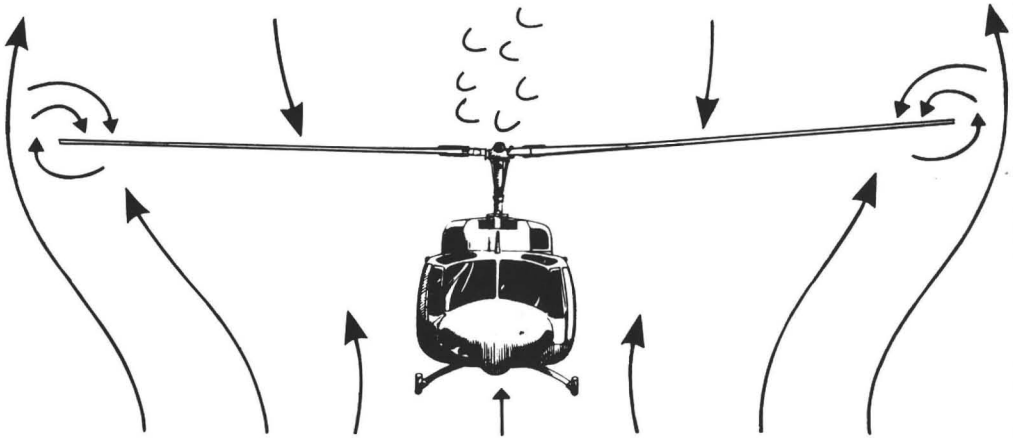


Figure 3 Vortex Ring State

other, causing the angle of attack of the blades to increase in an attempt to maintain lift. At the tips of the blades the conflicting airflow outside and inside the disc will intensify the tip vortices, further increasing the induced flow.

If the collective pitch is lowered further, the rate of descent will again increase (figure 3); the process will be repeated, and eventually a condition will be reached where the root end of the blade will reach its stalling angle of attack. At this stage, lift is decreased both at the tip of the blade, due to the vortices, and at the root of the blade, because of its stalled condition, leaving little area in between to produce the lift necessary to balance the weight. Any further increase in the rate of descent resulting from lowering the lever will further reduce the area of the blade that is effectively producing lift. Once a condition is reached where the lift becomes insufficient to balance the weight, then the rate of descent will rapidly increase, to as high as 6,000 fpm[1] on some types of helicopters.

Wind tunnel experiments show that the vortices form and intensify in a most erratic manner, subjecting each blade inboard from the tip to large and sudden variations in angle of attack. Dissymmetry of lift occurs and the helicopter will pitch, roll and yaw to no set pattern, making control extremely difficult. In fully developed vortex ring, raising the collective pitch lever will only aggravate the condition by increasing angle of attack and, instead of slowing the rate of descent, will cause it to increase.

We've seen that raising the lever only aggravates the situation. How, then, do we recover? To recover from vortex ring it is necessary to change the airflow conditions which are causing it.

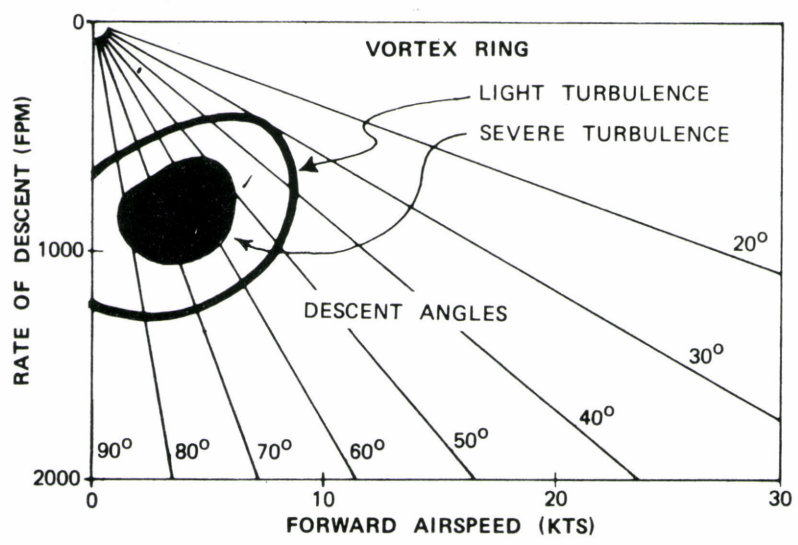


Figure 4

NOTE: Several interesting conclusions can be drawn from figure 4. First, the vortex ring state can be avoided by descending on flight paths shallower than about 30° (at any speed). Furthermore, for steeper approaches it can also be avoided at sufficiently slow or sufficiently fast speeds. In both cases the turbulent wake created by the vortex ring is not remaining in the vicinity of the rotor and causing problems. At very shallow descent angles, the wake is shed behind the helicopter. At steep angles, it is below the helicopter at slow rates of descent, and above the helicopter at high rates of descent.

To recover:

1. Change the disc attitude to achieve forward flight or bank the aircraft, so that the induced flow no longer opposes the rate of descent airflow, and then wait until the airspeed has increased to a safe figure (above 20 knots) before increasing power.

2. Enter autorotation, but it may be impossible to keep the rotor from overspeeding and a full recovery will require a considerable loss of height.

Since a helicopter pilot spends much of his flying time below 1,000 feet and recoveries take altitude, we must really concentrate on prevention. Below are listed points which every helicopter pilot should know:

- It is in the low airspeed condition that vortex ring will occur. Ensure, if power is required to arrest any descent or sink, that it is applied before that low airspeed condition is reached (see figure 4)[2].
- The most likely time for the indicated airspeed to be unexpectedly low is when turning downwind or making a downwind approach.
- Know where the wind is and monitor the airspeed indicator closely when maneuvering at low speed.
- Remember that the onset of vortex ring will be encountered earlier at high gross weights and high density altitudes, because of the higher angles of attack required.

In the operational environment and with many other factors to think about, it is unlikely that all these points of aerodynamics will be foremost in our minds. For that reason it is useful to know of them and to consider them from time to time on the ground, so as to retain our instinct for "BEWARENESS" OF VORTEX RING.

[1]Royal Air Force Air Publication 3456A, ***Principles of Flight***, Part 2, Section 1, Chapter 5.

[2]Royal Air Force ***Air Clues***, Volume 30, Number 9, September 1976.

ATC action line

UNITED STATES ARMY AIR TRAFFIC CONTROL ACTIVITY

THE NOTES ON approach charts are sometimes extensive and complex. Can something be done about this?

You bet. Charting standards recently have been modified in this regard, especially when an adjustment involves noted minima. Figure 1 page 49 shows the old noted method while figure 2 shows the new. Surely you'll agree that readability is improved and even more so if your bird has a 3 to 1 vibration.

You may also note other changes. The initial approach fix (IAF) is added; previous omission. Feeder Route (Nodine) data changed; refined calculations. Sector altitudes changed to minimum safe altitude; new terminal instrument procedures (TERPS) policy applicable when sectors differ not more than 300 feet. Lighted obstruction of 1,266 feet added; new data. Hurst intersection added; improved terminal routing service. CAT C and D visibility increased; TERPS, 3rd Edition, change in high performance minima due to high height above touchdown (HAT). Helicopter alighting point symbol changed; runway paved and copter marking not painted at that point. Airport sketch updated; building site shown, ramp enlargement shown, landing displaced threshold shown (tree encroachment), drawing standard modified. Tower frequency added; part-time tower now in service. This is the reason for duplicate altimeter setting minima. The local setting previously was provided by the airfield advisory service desk.

Charts normally are state-of-the-art updated when procedures are changed for any other basic procedural reason.

Readers are encouraged to send questions to:

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

Recognition Aid For Attack Pilots

LTC Joseph W. Moffett
TSM-AH Office
Fort Rucker, AL

IN HIS BOOK *Stuka Pilot*, the ace German tank destroyer, Hans-Ulrich Rudel, describes tank killing as a very individual matter. His view from the cockpit was that enemy and friendly ground positions were often so fluid and intertwined that he was able to identify friendly ground troops only by making an extremely low pass (5 to 10 meters) above the ground. He and his fellow pilots experienced the same difficulty in distinguishing enemy and friendly armored vehicles. They solved part of the recognition problems by collecting scaled models of enemy tanks in their operations room. These models were examined constantly and discussed with respect to best method and angle of attack. Vulnerable points were color coded.

More than three decades later, American pilots are faced with the same recognition problem. Instead of the Stuka's 175 knot airspeed, our A-10s are experiencing attack speeds of about 300 knots. Our attack helicopters, although moving slower than the A-10, also are encountering instant recognition problems.

Help is available! The U. S. Army Training Support Center produces a variety of graphic training aids to assist in solving the recognition problem. Three dimensional plastic scale Soviet armor vehicle models are ideal for squadron and troop recognition and tactical discussions. They include a T-62 Medium Tank No. DVC-T 17-81; a BMP Infantry Combat Vehicle No. DVC-T 17-82; a ZSU-23-4 Self - Propelled Antiaircraft Gun No. DVC-T 17-83; and a 122 mm Self-Propelled Artillery No. DVC-T 17-84. Estimated cost for each is $20. Air Force subscribers should initiate their request by writing Commander, U. S. Training Support Center, ATTN: ATTSC-LO-L, Fort Eustis, VA 23604. Interservice reimbursement will be arranged. Army subscribers refer to TRADOC Pam 71-9, "Catalog of TASO Training Devices," 10 October 1976, and order through the local Training Aids Services Officer (TASO).

Figure 1

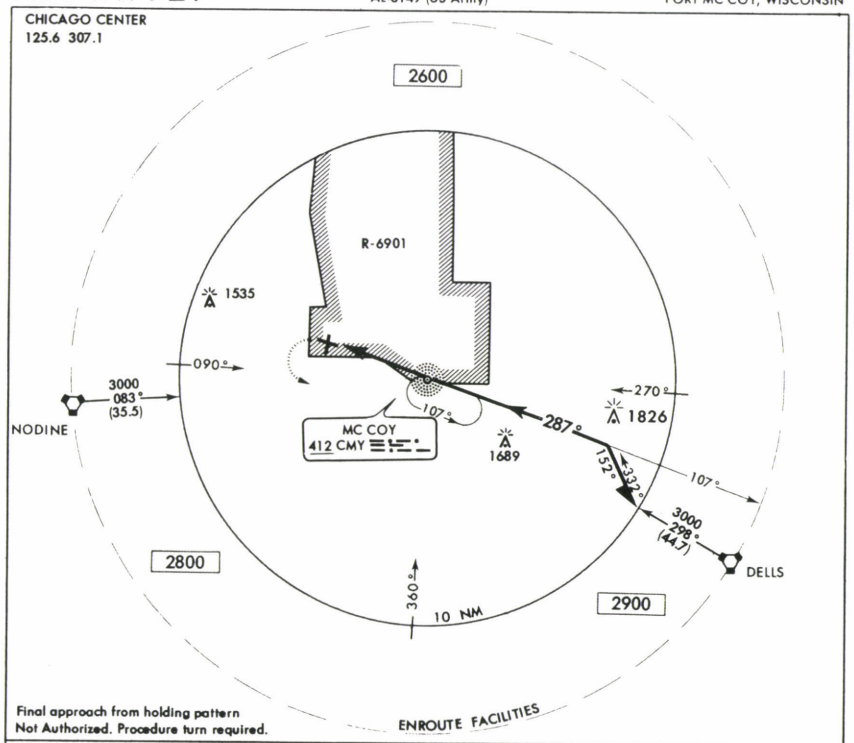
Orig

NDB RWY 29

AL-6149 (US Army)

MC COY AAF
FORT MC COY, WISCONSIN

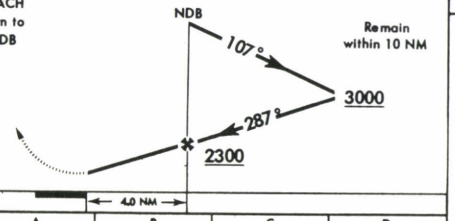
CHICAGO CENTER
125.6 307.1



Final approach from holding pattern
Not Authorized. Procedure turn required.

ENROUTE FACILITIES

MISSED APPROACH
Climbing left turn to
3000 direct to NDB
and hold



ELEV 840

CATEGORY	A	B	C	D
S-29	1580-1 748 (800-1)		1580-1¼ 748 (800-1¼)	1580-1½ 748 (800-1½)
CIRCLING	1580-1 740 (800-1)		1580-1½ 740 (800-1½)	1580-2 740 (800-2)

When local altimeter setting not available use La Crosse, WI altimeter setting and the fol applies: 1. Increase all MDA's 80'. 2. Increase visibility Str-in Cat B to 1¼, Cat C to 1½, Cat D to 1¾. Circling Cat B to 1¼.

▼
△ NA

MIRL Rwy 11-29

FAF to MAP 4 NM					
Knots	60	90	120	150	180
Min: Sec	4:00	2:40	2:00	1:36	1:20

NDB RWY 29

43° 58' N - 90° 44' W

FORT MC COY WISCONSIN
MC COY AAF

Figure 2

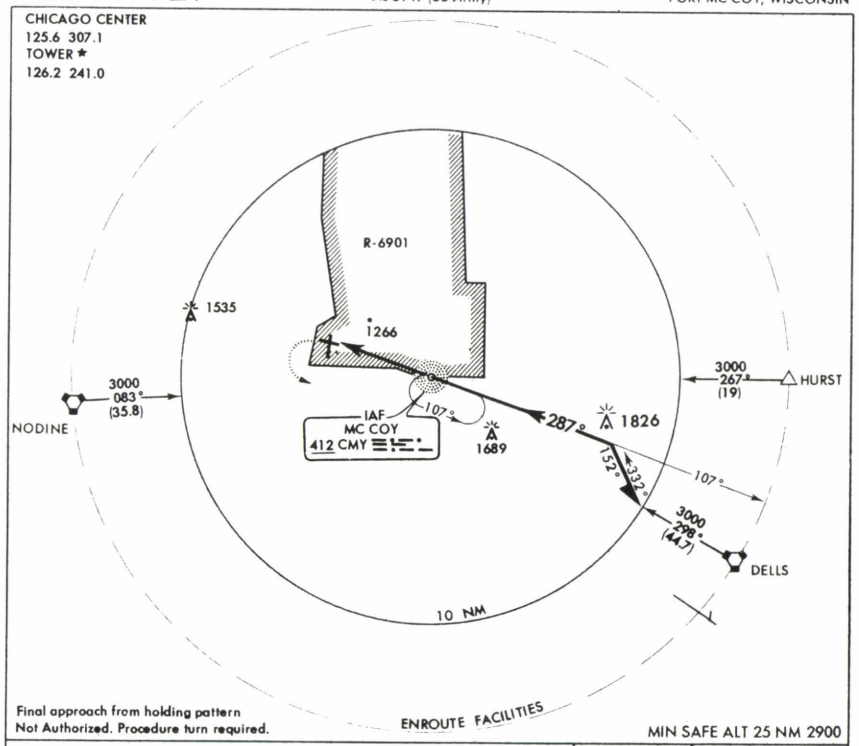
Amdt 1

NDB RWY 29

AL-6149 (US Army)

MC COY AAF
FORT MC COY, WISCONSIN

CHICAGO CENTER
125.6 307.1
TOWER ★
126.2 241.0

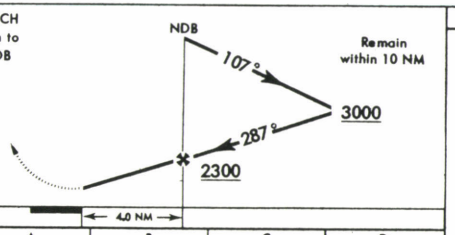


Final approach from holding pattern
Not Authorized. Procedure turn required.

ENROUTE FACILITIES

MIN SAFE ALT 25 NM 2900

MISSED APPROACH
Climbing left turn to
3000 direct to NDB
and hold



ELEV 839

CATEGORY	A	B	C	D
S-29	1580-1 749 (800-1)	1580-1¼ 749 (800-1¼)	1580-2¼ 749 (800-2¼)	1580-2¾ 749 (800-2¾)
CIRCLING	1580-1 741 (800-1)	1580-1¼ 741 (800-1¼)	1580-2¼ 741 (800-2¼)	1580-2¾ 741 (800-2¾)
LA CROSSE, WI ALTIMETER SETTING MINIMA				
S-29	1660-1 829 (900-1)	1660-1¼ 829 (900-1¼)	1660-2½ 829 (900-2½)	1660-3 829 (900-3)
CIRCLING	1660-1 821 (900-1)	1660-1¼ 821 (900-1¼)	1660-2½ 821 (900-2½)	1660-3 821 (900-3)

▼ △ NA

MIRL Rwy 11-29

FAF to MAP 4 NM					
Knots	60	90	120	150	180
Min: Sec	4:00	2:40	2:00	1:36	1:20

NDB RWY 29

43° 58' N - 90° 44' W

FORT MC COY WISCONSIN
MC COY AAF

OPMS CORNER

Officer Personnel Management System

Aviation Personnel Update

Major Thomas M. Walker
Aviation Management Branch
U. S. Army Military Personnel Center

OPMS ALTERNATE specialty designation for Year Group 1971 managed officers. Officer Personnel Management Directorate (OPMD) has started a file review to determine the OPMS alternate specialty qualifications of all captains in Year Group 1971. Some factors that were considered include the time officers have served in various OPMS specialty areas, how well they performed when serving in duty positions in other than their primary specialty, and their civilian and military education. Year Group 1971 officers should have had the opportunity to cite specialty preferences on forms provided by military personnel offices (MILPOs). Final designation of an alternate specialty is based on three criteria: Army needs, the individual officer's experience and education and the officer's personal preference. Army requirements must be the primary consideration in making final designations. This means that the majority of aviators in this year group can, because of high utilization rates, expect to receive Specialty 15 (Aviation) as their primary or alternate OPMS specialty.

Command and General Staff College (CGSC) Nonresident Course. A revision to Training and Doctrine Command Supplement 2 to AR 351-20 effective in December 1977 establishes new eligibility criteria/application procedures for the CGSC nonresident program. The old program, with the one-week Leavenworth phase, has been discontinued. *All* phases can now be completed through correspondence.

The new program:

- eliminates age restrictions;
- increases minimum years of commissioned service from 7 to 8 years;
- extends the upper limit for enrollment from 17 to 18 years commissioned service; and,
- requires all applications for company grade officers to be submitted through Career Management Divisions for approval/disapproval. Completion of the nonresident course does not preclude selection to attend the resident course; however, nonresident graduates have the option to waive attendance.

Reporting of ACIA operational flying duty credit. Effective 1 October 1977 operational flying duty credit is computed at Department of the Army (DA) based on aviator assignments reported through Standard Installation Division Personnel System (SIDPERS). Operational flying duty credit will be awarded only when aviators are reported as filling valid operational flying positions. Aviators should personally contact their Military Personnel Offices (MILPOs), to ensure that they are reported correctly to DA via SIDPERS. The DA Form 2-1 and the Officer Record Brief (ORB) show the current duty position recorded on the SIDPERS file and officer master file (OMF) respectively. These two documents are all that is necessary to verify reported duty positions. Operational flying positions (15A, B, C, D; 51C; 71; or 67J) are defined in AR 570-1, "Commissioned Officer Aviation Position Criteria." Aviator involvement markedly enhances the accuracy of the operational flying data reported to DA from the field.

Who is responsible for professional development? There are at least three parties involved in professional development: Military Personnel Center (MILPERCEN), field commanders and the individual officer concerned. MILPERCEN accesses, trains, manages and assigns officers to support field requirements. Field commanders are encouraged to monitor closely the length of time an officer spends in one position and then rotate officers, whenever possible, between positions in their specialty or specialties – if they already

have two designated. Lieutenants should be given duties in their assigned primary specialty to reinforce skills gained in the basic officer course and functional military training. Officers are responsible to perform each duty to the best of their ability, continually seeking to improve the overall accomplishment of the organization's mission. In this regard, commanders should encourage officers to do their part by periodically auditing (at least annually) their ORB and report any error in the prescribed manner to HQDA (AR 640-2-1). In addition, officers should review their official military personnel file (OMPF) periodically to assure its completeness and accuracy.

With conversion of the OMPF to microfiche, review can be accomplished by mail. Any required changes/updates are to be submitted to MILPERCEN through the servicing MILPO.

Enlisted Personnel Management System

EPMS CORNER

Things To Come In Aviation Maintenance

Continued from page 41

requisites. You should be an E5 on the E6 promotion list or E6. You should be recommended by your unit commander and hold the primary MOS for which you are requesting skill level three training.

Remember, this is not an MOS producing course but it is a skill development type course.

MOS 93E, Meteorological Observer Is Now Controlled By Transportation /Aviation /Maintenance Branch. Operational control of MOS 93E has been transferred from Field Artillery Branch to the aviation section of Transportation / Aviation / Maintenance Branch at Military Personnel Center (MILPERCEN). They are not officially incorporated into career management field (CMF) 67 but that is being considered. Since we fly our birds through the same airspace the meteorologist predicts weather in, we have a lot in common. Let's help the 93Es feel at home in their new branch. Welcome aboard.

Assignment Manager Changes. Due to a workload imbalance some changes have been made in the aviation assignment section. The assignment team is still under the supervision of Ms. Wilma Chance. All the team members still are onboard; however, the MOSs they manage have changed in some cases:

Mr. Dale Martin – 67W, 67Z
Ms. Cheryl Sanker – 67N
Ms. Libby Saunders – 67V, 67Y
Mr. Don Todaro – 67G, 67U, 67X
Ms. Frances Rawlings – All 68 series
Ms. Eva Witt – 71P, 93E, 93H, 93J

These changes will have no adverse effect on your future assignments. The aviation assignment team is responsible for about 22,000 personnel in grades E1 through E8. Their mission is to get the right Soldier to the right place at the right time.

How Proficient Are You In Your MOS? Are you aware of all the duty positions available in your MOS? Are you knowledgeable and experienced in all areas of your MOS? AR 611-201 lists the positions authorized in all grades.

Performing in the different facets of your MOS may help you excel in your MOS and advance to the next higher grade. This experience could also help you prepare yourself to perform as an aircraft maintenance technician if you plan to apply for appointment to warrant officer in the future. Your commander may be able to lend some assistance in this area.

Don't forget about the correspondence courses available through the different service schools. They provide you the opportunity to become knowledgeable in several areas. Whether it is related to your particular job or just an area you would like to know more about, they have a lot to offer.

Your future in aviation maintenance is going to depend on what you did yesterday, what you will do today and tomorrow. Promotions are not a reward for past performance. Promotion selections are based on a Soldier's potential to contribute to the good of the service.

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

Refuel Your Survival Fire Starter?

Never tell one of our Army aircrewmembers that it cannot be done. The fire starter, NSN 9920-00-999-6753, was not originally intended to be refueled; it was procured as a throwaway item when empty. The manufacturer does stock a refueling kit (i.e., Lifesaver fire-starter A-31, ISO butane fuel 602, refill kit, from Lifesaver Products Inc., Van Nuys, CA 91401, cost about $2.00).

One of our enterprising contemporaries in Europe sent in a suggestion on refueling the fire starter as follows:

"The fire starter can be refueled using either Scripto or Newport brand butane refueling kits available at your local Post Exchange. When using the Scripto brand, adapter "D" can be used if the small flange near the end is trimmed off with a knife.

When using the Newport brand, the white or grey adapter should be put on the can first, then the blue adapter on top of the white or grey one."

CWU-27/P Single-Piece Flight Suit

I hear that the CWU-27/P is authorized for use by Army aircrewmembers. However, I am unable to locate the National Stock Numbers (NSNs) for this suit.

CTA 50-900 will eventually list the CWU-27/P with NSNs and corresponding suit sizes. In the meantime the following list should help. However, unless your unit has received special authorization from DA for the one-piece flight suit, the one-piece Nomex flight suit will not be issued unless the two-piece flight suit is not available in your size. In that case the one-piece flight suit will be issued.

National Stock No.	Suit Sizes
8415-00-491-0898	36 Small
8415-00-491-0901	36 Regular
8415-00-491-0902	36 Large
8415-00-491-0914	38 Small
8415-00-491-0915	38 Regular
8415-00-491-0925	38 Large
8415-00-491-0955	40 Small
8415-00-491-0956	40 Regular
8415-00-491-0959	40 Large
8415-00-491-0972	42 Small
8415-00-491-0983	42 Regular
8415-00-491-0986	42 Large
8415-00-491-0993	44 Small
8415-00-491-1001	44 Regular
8415-00-491-1002	44 Large
8415-00-491-1003	46 Small
8415-00-491-1009	46 Regular
8415-00-491-1017	46 Large
8415-00-491-1033	48 Regular
8415-00-491-1037	48 Large

HGU-4/P Sunglasses

My sunglasses, NSN 8465-00-753-6261, have one of the lenses broken. Can you tell me the NSN of a replacement lens and where do I requisition one?

There are no replacement lenses for your HGU-4/P sunglasses. And this is for a very good reason. When each set of sunglasses is assembled, a matched pair or set of lenses is selected. The set of lenses is selected for color uniformity and tested to ensure that the lenses are flawless and not distorted. So if your sunglass lenses become excessively scratched or broken, turn them in for a new pair.

A Fairy Tale!

Once upon a time an Army aviator departed on a mission. The aviator had all available aviation life support equipment (ALSE) including a survival kit which contained food and drugs.

Along the way the aviator met with fierce conditions, losing control of the aircraft — which crashed. Alas, the poor aviator was killed. The death caused by the crash may have been more humane than what would have happened if the aviator had survived the crash.

The post-crash investigation determined that had the aviator survived, the outdated food in the survival kit was contaminated and could have caused an agonizing death if eaten. The outdated drugs contained in the kit for his eyes had become toxic and could have caused blindness if used. A fairy tale —— No! This is a true story.

The above true incident only emphasizes the need for trained specialists to inspect and maintain your "aviation life support equipment."

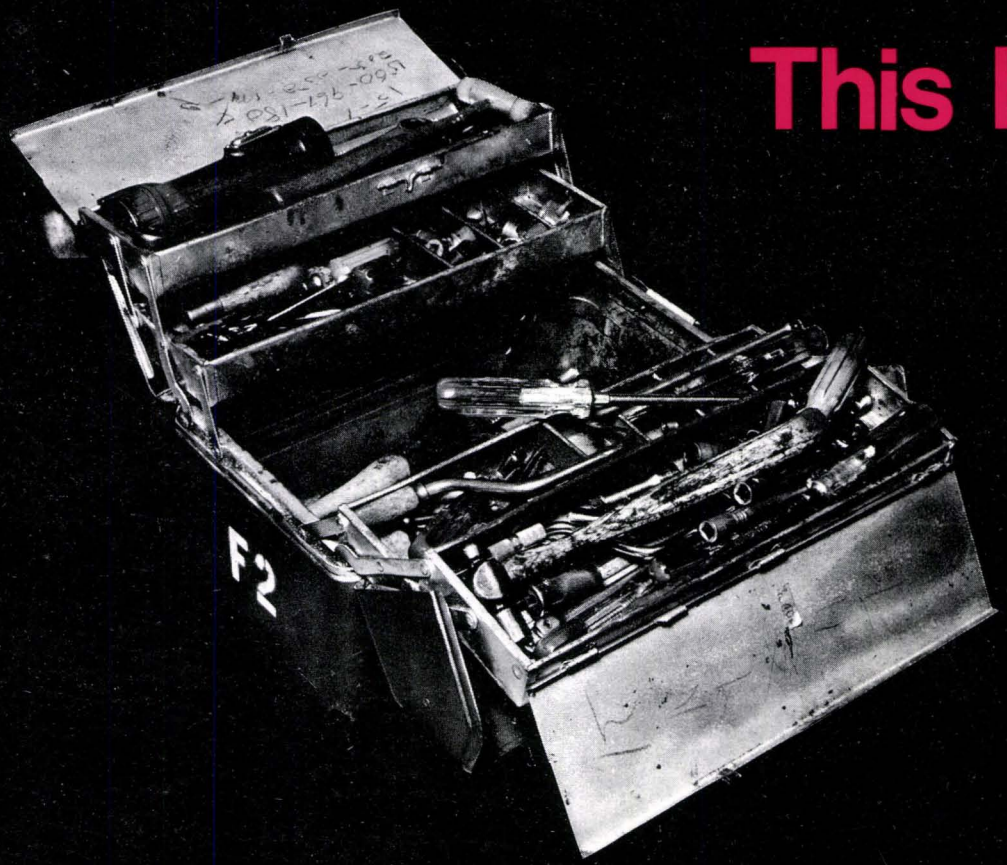
Did You Know?

Did you know that TM 55-8465-206-23 (Organizational and Direct Support Maintenance Manual – including repair parts and special tool list for Army aircraft survival kits) has been changed to TM 55-1680-317-23&P?

Evy
Brown

Photo by L.B. Epstein

Copies of this poster are available by writing:Commander U.S. Army Agency for Aviation Safety ATTN: IGAR-PG, Fort Rucker, AL 36362



This box contains FOD

Count your tools!

USAAAVS