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UNITED STATES ARMY

DECEMBER 1983

AVIATION DIGEST

AN ARMY ASTRONAUT EARNING HIS WINGS

DECEMBER 1983 • VOLUME 29 • NUMBER 12

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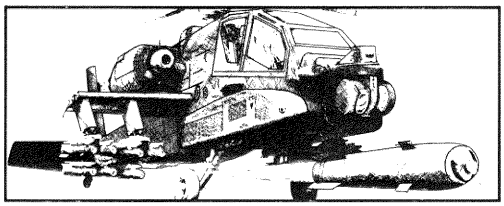

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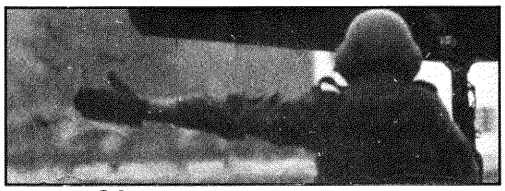

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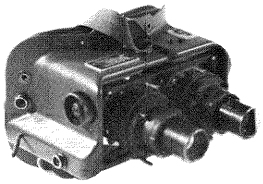

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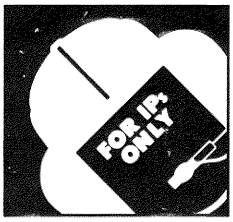

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Richard K. Tierney
Editor

Honorable John O. Marsh Jr.
Secretary of the Army

The mission of the *U.S. Army Aviation Digest (USPS 415-350)* is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

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. Use of the masculine pronoun is intended to include both genders unless otherwise stated. Material may be reprinted provided credit is given to the *Digest* and to the author unless otherwise indicated.

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This publication has been approved by The Adjutant General Headquarters Department of the Army, 10 September 1982, in accordance with Army Regulation 310-1.

Active Army units receive distribution under the pinpoint distribution system as outlined in AR 310-1. Complete DA Form 12-5 and send directly to CDR, AG Publications Center, 2800 Eastern Boulevard, Baltimore, MD 21220. For any change in distribution requirements, initiate a revised DA Form 12-5.

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I WISH ALL of you happy holidays and good fortune in the New Year.

This issue at the close of 1983 leads with "An Army Astronaut Earning His Wings," about LTC Bob Stewart, the Army's first astronaut; he is scheduled to go into space in late January. The author, MAJ Thomas Vollrath, describes Stewart's duties on the mission that include two satellite deployments and the highlight of the flight when he and Navy CAPT Bruce McCandless will space walk on two separate occasions with no tether (umbilical) attaching them to the spaceship.

Current plans for "AH-64 Apache Aviator Training" by CPT Richard Scales tells of the devices needed to help aviators master the new attack helicopter system. A combat mission simulator, simulated laser target and HELLFIRE training missile are just a few of the aids that will enable the Aviation Center to include combat skills training for the first time in the resident aircraft transition training program.

CW3 Jon Langione alerts us to weakly defended FARPs and what could happen there. His entertaining story has a surprise ending—most important though—it's a situation we need to avoid.

All Army aviators—and particularly rotary wing, because of their low level, NOE and terrain flying—must be aware of the hazards of collision with hang gliders and ultralight aircraft. "It's a Bird, It's a Plane—It's a Lawnchair" warns of the estimated 30,000 ultralights now flying and the hundreds of thousands expected later in this decade. These aircraft must operate by visual reference to the ground and, because of their sheer number, aviators have to be vigilant.

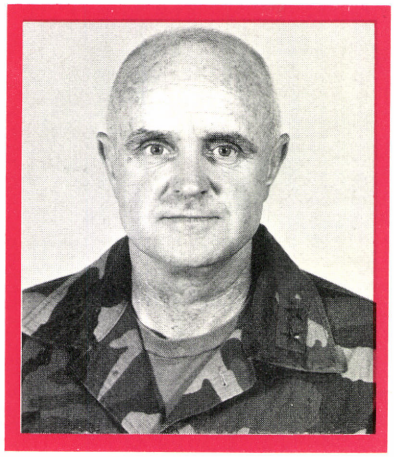
Proper command emphasis is described and translated into a truly workable program in the article by CPT Mark Carey. He outlines a successful way to solve aviation POL problems in his article "9th CBAA—POL: Aviation's Achilles' Heel."

"Unaided Night/Night Vision Goggles Training..." by CPT James Sikes states the plan and methods used, beginning with just two NCARNG aviators, to get all of their Guard aviators plus several from other states qualified N/NVG; this effort improved their overall combat effectiveness while increasing pilot proficiency.

"Weathered In" by CPT Reid Trummel relates his experience when he was restricted by AR 95-1, "Aircraft will not be intentionally flown into known or forecast extreme turbulent conditions." A new change to the regulation will revise the restriction to *known* severe turbulence; "forecast" has been deleted.

CW3 Dennis Dura thinks through his more than 20 years as an aviator to recall what really taught or influenced him most during his career. "For IPs Only" is actually for all aviators; the author describes an IP, how he should teach, and why the IP must be honest as well as accessible to aviators to discuss in confidence their mistakes without their suffering ridicule.

These and other excellent articles on a variety of subjects are offered here to help you remain "Above The Best."



Major General Bobby J. Maddox
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AN ARMY ASTRONAUT EARNING HIS WINGS

Major Thomas L. Vollrath
Mission Operations Directorate
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photographs courtesy of NASA

SOME 23 YEARS after the Army's Mercury-Redstone rocket helped boost National Aeronautics and Space Administration's (NASA's) first astronaut into space, NASA's Space Shuttle Challenger will boost the Army's first astronaut into space. It's been a long wait for the Army and Lieutenant Colonel Robert L. "Bob" Stewart but the Space Shuttle Challenger (OV-99), scheduled for lift-off from Kennedy Space Center in late January 1984, promises to be one of the most challenging and ambitious space shuttle flights to date. This article documents how the Army's first astronaut will earn his wings on the flight of Space Transportation System (STS)-11.

Although the crew of STS-11 will accomplish many tasks, the primary objectives for the flight will be to deploy two communications satellites and to conduct a dress rehearsal for critical portions of the Solar Maximum Satellite repair mission to be flown 3 months later on STS-13. The mission is being flown with the objective of reaching, capturing, repairing and restoring to operation the Solar Maximum Satellite which was launched on 14 February 1980 and has since encountered difficulties. STS-13's success is highly dependent upon the accomplishment of many of the tests scheduled for STS-11.

The crew for STS-11 was selected earlier this year and will include four other astronauts besides LTC Stewart, who will serve as Mission Specialist 2. The Flight Commander (CDR) is Mr. Vance D. Brand, who is a space veteran having first flown on the Apollo Soyuz Test Project mission in 1975 and more recently commanded STS-5. Navy Lt Cdr Robert Gibson will serve as CDR Brand's pilot while Dr. Ron McNair has been designated Mission Specialist 1 and Navy CPT Bruce McCandless will serve as Mission Specialist 3. Lt. Cdr Gibson and Dr.

McNair both joined the astronaut corps in 1978 along with LTC Stewart (see *Aviation Digest,* June 1978 and August 1979). CAPT McCandless has been in the program since 1966.

At about 191 hours, STS-11 will be the second longest space shuttle flight on record (STS-9 will be about 215 hours). Even though LTC Stewart will see the sunrise and sunset every 90 minutes on-orbit, some semblance of order in their circadian rhythm is maintained by establishing 9 flight days with about 16 hours of scheduled activities and 8 hours of sleep in each. The 191 hours for STS-11 was established by the number of tasks that need to be accomplished during the mission which is rapidly starting to be called "the astronauts dream flight" with two satellite deployments, two rendezvous and two extravehicular activities.

In addition to these major activities, STS-11 will carry a student experiment which will investigate the effects of weightlessness on arthritis and several payloads which are called by such exotic acronyms as SPAS, ACES, MLR and Cinema 360. SPAS (Shuttle Pallet Satellite) will be a reflight of the Messerschmitt-Bolkow-Blohn payload that flew on STS-7 with identical experiments. Ron McNair and Bob Stewart will both be involved with SPAS operations on flight day 7.

While flying the space shuttle, Bob Stewart and the rest of the STS-11 crew will use a Flight Data File which is NASA's version of a checklist, dash 10 and flight plan. Altogether, this Flight Data File contains some 23 separate documents weighing in at about 85 pounds. Once on-orbit, the primary flight document is the Crew Activity Plan which schedules the activities for each crewmember during the flight.

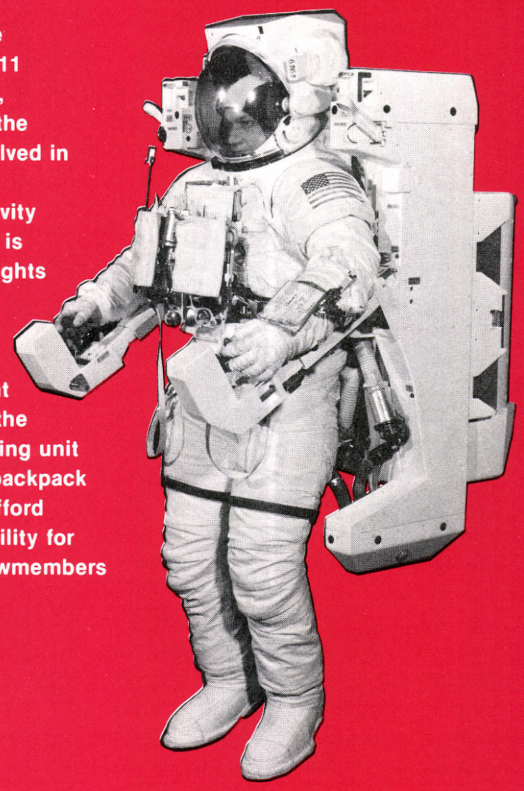
The launch of STS-11 is scheduled to place the shuttle in an orbit that will meet the trajectory/targeting requirements for deployment of the two satellites and still maximize the conditions required for landing at the end of the mission. The trajectory that Bob will fly is the result of many iterations of planning and will place STS-11 in a 165 x 165 nautical mile orbit with a 28.5-degree inclination (minimum achievable from the Kennedy Space Center). This inclination is the angle between Bob's orbit plane and the plane of the equator and will take the ground track of STS-11 as far north and south as 28.5 degrees latitude (e.g. Kennedy Space Center, FL, and Yarragadee, Australia).

The crew of the Space Transportation System (STS)-11 *(clockwise from top, center):* Dr. Ron McNair, CAPT Bruce McCandless, Navy Lt Cdr Robert Gibson, Mr. Vance D. Brand, LTC Robert L. Stewart

Immeditely following ascent, one of the primary objectives is scheduled to be met with the deployment of the WESTAR satellite owned by Western Union. Mission Specialist Ron McNair is prime for this deployment with Bob Stewart assisting him in the operation. WESTAR is a geosynchronous satellite (once in its correct orbit it will appear to remain stationary or hover over the same point on the earth's equator). Although the majority of the heavy work will have been accomplished when it is deployed by the shuttle, WESTAR still has a long journey to its final orbit. The deploy sequence will be similar to other Payload Assist Module (PAM) deployments used on STS-5 and STS-7. The PAM deployments include spin up of the satellite to 50 revolutions per

minute; a spring assisted kick out of the cargo bay (4 ft/sec) and a solid rocket motor ignition on the spacecraft some 45 minutes later. This burn will lift the satellite from the 165 nautical mile circular orbit to a 22,300 x 165 nautical mile orbit. After servicing on this transfer orbit a second burn will be commanded from a ground station circularizing the orbit at 22,300 nautical miles. Bob and Ron's mission will be successfully done after the satellite is correctly deployed from the payload bay. Flight day two will be a repeat of this sequence, only this time with the PALAPA satellite communication system for the Republic of Indonesia. This time Bob will be the prime mission specialist for the deployment with Ron assisting.

If one activity can be singled out on this mission as a highlight for Bob Stewart, it would have to be the extravehicular activity (EVA or "space walk") which is scheduled for flight days 5 and 7. Two separate times Bruce McCandless, designated EV 1, and Bob Stewart designated EV 2, will don their space suits, exit the spaceship middeck via the airlock and spend a total of some 10 to 12 hours walking in space.



Astronaut Bruce McCandless, STS-11 mission specialist, displays some of the paraphernalia involved in a Space Shuttle extravehicular activity (EVA) mission. He is shown with EVA lights and television equipment, a miniwork system with an assortment of EVA tools and the manned maneuvering unit (MMU), a special backpack system that will afford much greater mobility for Space Shuttle crewmembers performing EVA.

The EVA space suits that Bob and Bruce will use are called extravehicular mobility units (EMUs). They are independent systems that provide environmental protection, mobility, life support and communications for the shuttle crewmembers to perform space walks while in orbit. Three space suits will be carried on the spaceship mission, with consumables provided for three two-man, 6-hour walks. The extra suit is being carried as a backup in case Bob or Bruce's suit has a problem. The third unscheduled space walk is reserved for other spaceship contingency situations.

Though similar in design and capabilities to those used during Apollo and Skylab, the shuttle space suits emphasize improved reliability with minimum maintenance and pre-EVA checkout requirements. Customized suit fitting requirements have been reduced by use of standard-sized components that combine with interchangeable sizing elements to fit a full range of crewmembers.

The EMU consists of a space suit assembly that includes the basic pressure-garment components, a primary life support system, a backup life support system for emergency use, an ultrahigh frequency radio communication system, and the displays and controls required to operate them. The weight of the charged EMU is 265 pounds.

The life support system consumables are supplied in sufficient quantity to provide 7 hours of independent life support, only 6 hours of which are available for nominal space walks. The remaining hour is for pre-space walk and post-space walk overhead and a one-half hour reserve.

Unlike the first shuttle space walk on STS-6, when astronauts Story Musgrave and Donald Peterson remained tethered at the payload bay, Bob and Bruce will take turns test flying one of the two manned maneuvering units (MMUs) while completely detached from the spaceship.

Astronaut Robert L. Stewart, wearing an extravehicular mobility unit (EMU), is actually underwater to simulate the weightless environment of space. He is assisted by a number of divers in the Johnson Space Center's weightless environment training facility (WET-F).

The MMU is a self-contained propulsive backpack designed to increase the spaceship crew's space walking mobility by extending the range of their activities from the cargo bay to other portions of the spacecraft, to appendages of payload protruding from the cargo bay, or to other spacecraft. It attaches to the space suit and can be donned and doffed by one unassisted crewmember. Gaseous nitrogen is used as the propellant with redundant design to ensure that no single credible failure can disable the unit.

The manned maneuvering unit has complete six-degree-of-freedom control authority with spacecraft-type piloting logic, enabling it to perform a full range of translation or rotation maneuvers either singly (i.e., one at a time) or in combination. Control inputs are through two hand controllers; the right-hand controller allows three-degree-of-freedom rotational inputs while the left-hand controller allows translational inputs. The maximum range of the MMU is about 1,000 feet. On this flight, however, its range will be limited to about 300 feet.

The manned maneuvering unit will be used on STS-13 to grapple and stabilize the Solar Max Satellite for repair. It will have a 35 mm still photo camera actuated by the astronaut. During the flight testing, Bob and Bruce will be wearing color TV cameras mounted on their helmets. The purpose of the STS-11 manned maneuvering unit orbital tests is to verify hardware peformance and crew operations. The test will also demonstrate the manned maneuvering unit's related capabilities that will be required for the Solar Max Satellite Repair Mission on STS-13.

Current planning for the second space walk on flight day 7 calls for SPAS-01 to be raised out of the payload bay by the remote manipulator system and moved to a position overhead about 5 to 10 feet from the forward bulkhead where it will be rotated at 1 degree per second. The SPAS will remain attached while Bob and Bruce conduct repeated dockings using the other MMU with an attachment device to duplicate the attitude and dynamics of the Solar Max Satellite docking to be done on STS-13.

In addition, Bob Stewart will be the first astronaut to "ride" the manipulator foot restraint (MFR). The MFR provides restrained access to EVA worksites within reach of the remote manipulator system, and storage for tools and equipment used at the worksite. While Bob rides in the foot restraint, Ron McNair will move him about the payload bay on the end of the remote manipulator system. Bob will execute a series of tests designed to determine the upper limit to loads induced by a crewman. In addition, he will evaluate a servicing system to be used in the future to refuel satellites. Bruce will evaluate the tools and procedures to be used in repairing the Solar Max Satellite.

Weather permitting, flight day 9 will afford the crewmembers of STS-11 an opportunity for yet one more first—a landing back at their starting point, the Kennedy Space Center. STS-7 had been scheduled for a nominal landing at the Kennedy Space Center, but was forced to land at Edwards Air Force Base, CA, due to weather. Based upon his earlier work at NASA as an entry specialist and as an ascent/entry CAPCOM (Capsule Communicator), Bob Stewart has been assigned as the center seat crewman and will be on the flight deck for both ascent and entry. Acting as a flight engineer, he will have a center seat view of both ascent and entry. At about 190 hours into the mission of STS-11 and some 9,000 miles from the Kennedy Space Center, the deorbit burn will occur. Challenger will descend toward Earth encountering atmospheric effects at 400,000 feet. External insulation protects the spaceship from the heat generated by friction with the atmosphere; however, radio communication is temporarily interrupted. At 70,000 feet terminal area energy management is initiated to provide the proper airspeed, altitude and heading for Challenger's approach and landing. Using special navigation aids, STS-11 will land with conventional landing gear on the 15,000 foot runway at Kennedy Space Center. When Challenger touches down, LTC Bob Stewart will become the first Army aviator to earn astronaut wings.

AH-64 APACHE AVIATOR TRAINING

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THE SOPHISTICATION of the AH-64 Apache has dictated that its introduction to the field be conducted differently. In the past when fielding new helicopters, the U.S. Army Materiel and Readiness Command (DARCOM) formed a new equipment training team (NETT). This NETT received training from the contractor, finalized the program of instruction and then accompanied the new aircraft to each receiving unit. Once at the unit, the NETT trained the unit trainers who, in turn, trained the remaining unit personnel. Because of the state-of-the-art sophistication and complexity of the Apache and the

nonavailability of suitable areas to train the operation and employment of the new weapons systems, the U.S. Army Aviation Center stressed, and DARCOM agreed, that it will be necessary to train the aviators and maintainers at resident training bases. This article deals specifically with current planning for the training of Apache aviators.

Training Devices

Training devices will be an integral and indispensable part of the training. Operational Test II (OT II) demonstrated that certain Apache aviator skills require the use of complex devices to aid in training. Prototype devices were used during OT II and have been redesigned as a result of OT II training analysis. These devices do not merely substitute for aircraft hours; they provide skill training that otherwise would not occur. Some of the devices used to aid in the initial qualification and sustainment of AH-64 aviators are as follows:

- The AH-1S Pilot Night Vision Sensor (PNVS) surrogate aircraft is an AH-1S Cobra equipped with an AH-64 PNVS system and will be used to train flight techniques using thermal image sensors and flight parameter symbology.
- The combat mission simulator (CMS) is an AH-64 total system simulator that incorporates a motion base along with out-the-window and sensor visual systems. This device can be used to train all AH-64 aviator tasks that are not associated with the aircraft exterior. Additionally, the capability exists to task load a crew not only with their primary mission functions but also with all associated and concomitant duties and outside distractions to simulate the battlefield.
- The cockpit, weapons and emergency procedures trainer (CWEPT) incorporates a sensor visual system and replicates both pilot and copilot gunner cockpits. It will be used to train engine start, run-up and shutdown pocedures; emergency procedures; weapons firing procedures; PNVS symbology; and crew integration.
- The pilot selected task trainer (PSTT) is essentially the same as the back seat of the CWEPT and will train only the back seat tasks trainable in the CWEPT.
- The target acquisition designation system (TADS) selected task trainer (TSTT) replicates the copilot gunner TADS switches, controls and the optical relay tube used to operate the weapons systems and Doppler navigation system. This device will be used to train weapons system switchology and engagement procedures along with Doppler navigation techniques.

	Quantity	
	Aviation Center	Forces Command
AH-1S PNVS Surrogate	11	0
CMS	1	4
CWEPT	4	0
PSTT	0	1 per Bn*
TSTT	4	1 per Bn*
CST	1**	0
HDM	96	48 per Bn*
HTM	20	15 per Bn*
SLT	7	3 per Bn*

*"J" Series TOE attack helicopter battalion.
**One set of panels and three mainframes.

FIGURE 1: AH-64 aviator training devices.

The classroom systems trainer (CST) consists of a mainframe (which houses the device controls and computer) and nine interchangeable panel sets. Each set presents a graphic replication of separate aircraft systems, associated controls and switches. This device will be used to train the "how" and "why" AH-64 aircraft systems work.

- The HELLFIRE dummy missile (HDM) is an inert replica of the HELLFIRE missile. This device possesses the same aerodynamic and weight characteristics as the actual missile and will be used to train HELLFIRE loading, rearming procedures and flight under high gross weight conditions.
- The HELLFIRE training missile (HTM) is a HELLFIRE dummy missile with a live HELLFIRE laser seeker attached and will be used in conjunction with the aircraft to train all HELLFIRE missile firing procedures up to but not including missile separation from the aircraft.
- The simulated laser target (SLT) is a portable ground based training device that emits a continuous eye-safe laser signal. When eye-safe laser ranges are not available, this device will be used in conjunction with the HTM to train remote designation HELLFIRE missile launch procedures. Figure 1 indicates the proposed distribution of the training devices described above.

Instructor and Key Personnel Training (IKPT)

The primary purpose of IKPT is to train the trainers. IKPT begins with PNVS training that was developed

by and is currently being conducted at the Aviation Center. This training will continue through June 1984 when the remaining portion of IKPT will begin. During transition training, the contractor will provide instruction in operator tasks and supporting skills. These classes will be presented to Aviation Center instructor pilots, classroom instructors, maintenance personnel, maintenance test pilots and training device operators. Figure 2 is a graphic illustration of the IKPT program of instruction for the AH-64 program. In addition to the training normally associated with IKPT, combat skills training will concentrate on the tactical employment techniques unique to the AH-64 weapons systems and sighting devices. Also during this phase, Aviation Center instructor pilots, some of whom were OT II participants, will train themselves and have the opportunity to finalize tactical training scenarios they themselves wrote for OT II. This combat skills training program will provide Aviation Center training developers with the only opportunity to observe and use the AH-64 aircraft in an environment that allows the full operation of all weapons, sighting and laser systems. The data collected from this training program will be indispensable in finalizing the instructional techniques necessary to integrate training devices into the Aviator Qualification Course.

Aviator Qualification Course (AQC)

The AH-64 AQC is scheduled to begin in January 1985. The proposed program of instruction consists of 80 flight hours, and is a combination of AH-64,

FIGURE 2: AH-64 Instructor and Key Personnel Training Program Of Instruction.

PNVS	TRANSITION	COMBAT SKILLS
24 flight hours 17 academic hours	38 flight hours 95 academic hours*	18 flight hours 44 academic hours

*Estimated, under development by Hughes Helicopters Incorporated.

FIGURE 3: AH-64 Aviator Qualification Course and Instructor Pilot Course Program Of Instruction.

AQC 14 Weeks—80 flight hours
IPC 2 weeks—12 flight hours

No Fly Academic Only 5 days	PNVS Qualification AH-1 Surrogate 20 days 24 flight hours	Transition Flight 10 days 13 flight hours (undetermined CMS hrs)	Pilot Terrain/ Pilot Gunnery 8 days 10 flight hours (undetermined CMS hrs)	CPG/TADS Gunnery 12 days 15 flight hours (undetermined CMS hrs)	Combat Skills Mission 15 days 18 flight hours (15 CMS hrs)	IPC/M01 10 days 12 flight hours (CMS hrs)
17 ACADEMIC HOURS		95 ACADEMIC HOURS*			44 ACADEMIC HOURS	18 ACADEMIC HOURS*

*Estimated, under development by Hughes Helicopters Incorporated.

AH-1S PNVS surrogate and CMS time. The program is scheduled for 14 weeks and has about 156 academic hours. Figure 3 shows a general breakdown of the AQC program of instruction.

The first phase of the AH-64 AQC is PNVS qualification. During this instruction, students will learn how to fly using thermal sensor and flight symbology information only. During much of this training, the students' cockpits will be sealed using blackout curtains, forcing them to use only the sensor and symboloy as references for controlling the aircraft. Information gained from OT II and other testing indicates this phase will be the most critical. An individual who successfully completes PNVS training will be almost assured of completing AQC.

During the next phase, students will receive basic flight transition training and basic gunnery training. This phase includes 38 flight hours with a minimum of 3 hours being in the CMS. This phase will also provide hands-on training with the CWEPT, TSTT, HDM, HTM and CST. This transition phase will include basic gunnery, terrain flight, nap-of-the-earth flight techniques and Doppler navigation operations. If this course were designed like other transition courses, resident training would be completed at this point, leaving tactical employment techniques training (combat skills) for the gaining unit to pursue. However, the complexity of the AH-64 has dictated that combat skills training be conducted at the resident training base. The AH-64 AQC program will therefore include combat skills training.

During the combat skills phase of AQC, students will fly 18 hours, 15 of which will be in the CMS, and will learn how to employ their previously learned operator skills in a simulated tactical threat environment. The combat skills training program will consist of 13 tactical employment scenarios designed to train the students on the employment of the total system in a simulated combat environment. Students will also receive additional training in the CWEPT.

As stated previously, the training devices are critical to the total systems training of an AH-64 aviator. The range safety fans at Ft. Rucker, as at most other Army installations, are not large enough to accommodate the TADS laser and the HELLFIRE missile except under very restrictive firing conditions. Without the CMS, complete combat skills training cannot occur. The current delivery schedule does not provide Ft. Rucker with a CMS for the first 9 months of AQC. Major adjustments in the program of instruction will shift as much training as possible to the CWEPT and the AH-64. Throughout this initial 9-month period, some training objectives will not be satisfied for about the first 30 graduates sent to U.S. Army Forces Command. It will be necessary to either return these aviators to Ft. Rucker for CMS training when it becomes available or complete the training at the fielding base.

Instructor Pilot Course (IPC)

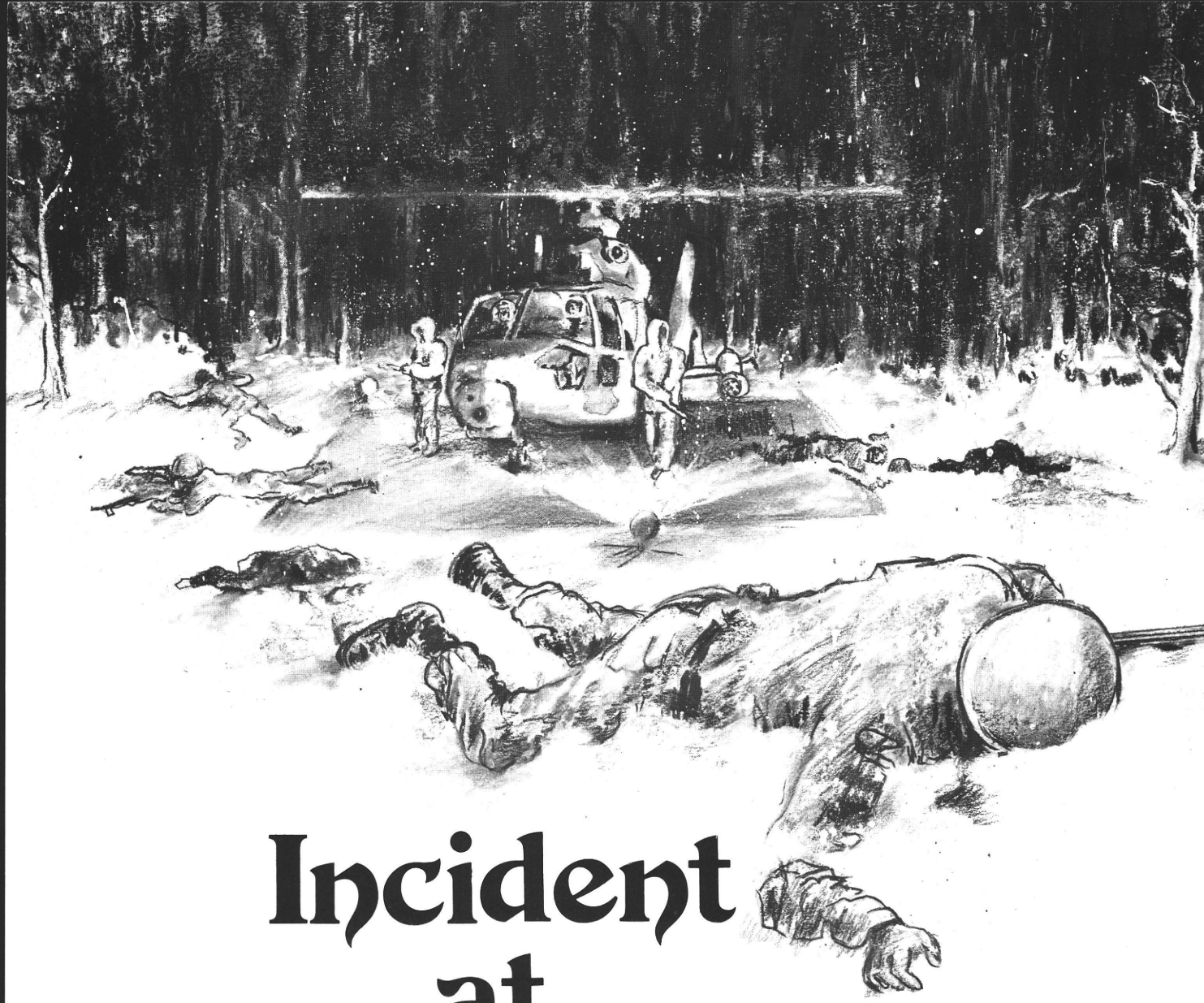
Through fiscal year (FY) 87 qualified AH-1S instructor pilots, designated for duty as AH-64 instructor pilots and who complete AQC, will attend a 2-week add-on IPC consisting of 12 flight hours. Beginning in FY 88, this add-on IPC will be replaced by a full-scale 40-hour IPC to train previously qualified AH-64 Apache aviators.

Fielding Base Unit Training

Each newly qualified AH-64 Apache aviator will be assigned to a new unit at a fielding base, currently designated at Ft. Hood, TX. Some AH-64 units will be formed from existing AH-1 units and others will be completely new units with new equipment and personnel. As each AH-64 battalion receives its last assigned aircraft, a 90-day intensive training cycle will begin. This training will concentrate on crew, team, company and battalion operations and will culminate with a battalion ARTEP (Army Training and Evaluation Program). Once each battalion completes its training cycle, it will deploy to its final location in either the continental United States or outside the continental United States as a fully proficient, combat ready AH-64 Attack Helicopter Battalion.

Capstone

The complexity of the AH-64 and the tactics by which it will be employed clearly dictate that all the necessary crew tasks be trained in a combination of the aircraft and other training devices. For the first time, aircraft transition training at the Aviation Center will include combat skills training into the resident training program. This will result in an AH-64 AQC student who is tactically, technically and combat skills qualified at graduation. The increasing complexity of weapons systems in Army Aviation will probably dictate that this same training program will probably be the model for future Army Aviation training programs.



Incident at Wadi El-Kiref

240040 Nov 85

SNOW WAS FALLING for the third straight evening. The blanket of white served as a cover for the operations van; a camouflaged shroud. The door was pushed open, automatically dousing the lights. The lights flickered on as the door was shut, revealing the troop commander and a colonel. They stood there, blinking, allowing their eyes to adjust to the lights. "What did weather give us for tomorrow," the commander questioned the operations officer.

"More snow," came the reply.

"That's all right, I've got six more mine fields to sow tomorrow. Now, what's this about refueling?"

"To begin with," the operations officer started, "refueling didn't reply to the last communications check, for both the frequency change and the hourly check."

"That makes them 40 minutes late," replied the commander, looking at his watch. "I'm going down there," he stated as he picked up the field phone. "First sergeant, tell my driver to get my vehicle, we're going to the refueling point...yes, in the snow."

"The first sergeant is from the coast of Georgia, he doesn't care much for the snow. I'll keep trying to contact them and will stay in contact with you on the way down there," stated the operations officer.

"I'll make a radio check before I start," replied the commander. As he pushed the door open the lights extinguished. The colonel and he descended the metal steps as he thought to himself, "How I hate these problems in the winter!"

240651 Nov 85

Dawn broke as the disappearing sound of rotor blades beat through the dense snowfall that covered the area.

The vehicle parked near the refueling area. The colonel and the troop commander stepped out and shuffled through the ankle-deep snow. They stopped short of the night landing pad. Two portable lights were barely flickering through the snow, blinking in rhythm. Before them were the four members of the hot refueling crew, face down in the snow, specks of red showing through the white glaze.

The ground around the fuel bladders was bare where the fuel spilled. The bladders were cut; split by an axe or machete. The hose coupling on the tanker was simply disconnected, to allow the fuel to spill out.

"They didn't blow it up. Didn't want to make noise," stated the commander.

"They were good...very good," uttered the colonel, glaring at the carnage.

CW3 Jon F. Langione
229th Attack Helicopter Battalion
101st Airborne Division (Air Assault)
Fort Campbell, KY

The scene, perhaps a bit dramatic, displays the efforts of one team. A small unit, a flight crew and a helicopter; together this strike force has put another airmobile unit out of business, by hitting it, logistically.

Although only a short-lived offensive operation, the use of small raiding parties to neutralize frontline support operations is feasible. After all, what protection can be afforded a forward refueling site? Can troops from infantry, armor or cavalry units be spared to protect the site? That is extremely doubtful. The combat arms, the line troops, are already committed. No commander is going to release his reserves or vacate part of his front for the protection of small support and service elements.

Troop and company level aviation unit commanders are left to their own devices for protection. Therefore, the enemy could keep an aviation battalion on the ground by destroying five refueling sites. Destruction of two refueling points could severely degrade the entire air assets of an armored cavalry regiment. Perhaps the effect would only reduce the unit's capabilities for 12 hours or a day or until corps support, or even an adjacent unit could react. Those crucial hours could be all that the enemy needs.

During the winter of 1979, Company D (Attack Helicopter), 82d Aviation Battalion conducted an extensive night exercise, whereby three platoons of five AH-1S (ECAS) each, assaulted a forward logistics complex, in a Mideast scenario.

The principle weapon used was the 20 millimeter gun, totaling 11,250 rounds used to neutralize flammable stocks, fuel storage and to serve as protection against small arms fire.

The operation was conducted against a support unit based upon how a U.S. unit would be displaced and situated for operations close to the forward line of own troops. The forces the attack teams assaulted were the same as could be expected to protect U.S. installations; internal guard elements which are support troops serving as their own security.

Company D attacked low level, under the electronic air defense umbrella, at night, in foul weather—using these elements that provide maximum benefit to the attacker; especially from the air. This raid was conducted to support the kickoff of a dawn ground attack.

The amount of damage, and size of the base attacked, determine the length of time the forward forces could be hampered by the loss of logistics support. Perhaps, all that is needed are those few precious hours for the enemy to effect the breakthrough.

240705 Nov 85

The troop commander and the colonel walked toward the helicopter. Snow was layered upon their wool great coats. "They must have thought it was one of our aircraft. It appears as though two of the crew were waiting with the hose to begin refueling. They were completely surprised...this is a new threat we must guard against. How did these soldiers, these air assault soldiers, come in under our radar? They must be crazy."

"No," began the colonel, "they are well-trained fighting men. You might as well know captain...this was not the first raid, nor the only raid last night. We were hit all along the Rokosovsky Front. Marshal Kregski has alerted the Sixth Guards of the First Shock. You are to coordinate refueling with the First Company. I doubt that they will be able to help you for several hours."

"I had no idea these soldiers were deployed this far forward. I thought we were well beyond their fuel range," said the troop commander.

"You thought wrong, captain," said the colonel abruptly. "But you are not the only one...report to me the minute you are able to get fuel."

"What unit did this, comrade colonel?"

"The American Eagle Division...with a helicopter named after a bird."

"It seems they have a fetish for birds," the captain reported.

"It seems, comrade captain, that they have given you the bird, talons and all."

"Hangar Talk" is a quiz containing questions based on publications applicable to Army Aviation. The answers are at the bottom of the page. If you did not do well, perhaps you should get out the publication and look it over.

FM 1-400
Aviator's Handbook

CW3 Gary R. Weiland
Department of Combined Arms Tactics
U.S. Army Aviation Center
Fort Rucker, AL

1. Only _____-based hydraulic fluid is used in the hydraulic systems of Army aircraft.

a. alcohol
b. castor oil
c. mineral
d. vegetable

2. When flying in latitudes above ____ degrees, the free gyro mode for the radio magnetic indicator is recommended.

a. 50
b. 60
c. 70
d. 80

3. Contour flight is characterized by ____ airspeed and ____ altitude.

a. constant, constant
b. constant, varying
c. varying, varying
d. varying, constant

4. Ideally, in an autorotative landing to a rough sea, a helicopter should touch down ____ wind ____ of a swell.

a. into the — at the bottom
b. with a tail — on the reverse slope
c. into the — on the reverse slope
d. into the — at the top

5. In an arctic survival situation, old sea ice (bluish in color) provides a salt-free source of drinking water.

a. True
b. False

6. In a desert survival situation, you should eat sparingly if your water supply is less than 2 quarts per day.

a. True
b. False

7. What is the *moment* for an item of cargo that weighs 50 pounds and is placed at fuselage station 100 in an aircraft?

a. 20 inch-pounds
b. 200 inch-pounds
c. 500 inch-pounds
d. 5,000 inch-pounds

8. What flying duty symbol is entered on DA Form 2408-12 to record flying time for a flight surgeon?

a. M
b. MS
c. MD
d. FS

9. A panel marker is a standard component of the SRU-21/P survival vest.

a. True
b. False

10. The Term "DANGER CLOSE" is included in a call for artillery fire when the target is within ____ meters of any friendly troops.

a. 600
b. 800
c. 1,000
d. 1,500

ANSWERS:

1. c; page 1-22
2. c; page 1-23
3. c; page 2-2
4. d; page 2-50
5. a; page 4-7
6. a; page 4-17
7. d; page B-3
8. a; page J-1
9. b; page 1-12
10. a; page 3-9

PEARL'S
Personal Equipment And Rescue/survival Lowdown

Pam Bellman photo by NoelKenya Atkins

Note: ALSE phone numbers have changed. Call AUTOVON 693-1218/9; Commercial (314) 263-1218/9.

Emergency Locator Transmitter

Headquarters, Department of the Army continues to support emergency locator transmitters (ELT) for Army aircraft in remote or isolated areas and other areas where a bona fide need exists. The article on ELTs initially appeared in the *Aviation Digest's* PEARL's section in August 1981 and has subsequently appeared in FLIGHTFAX and in other PEARL's articles. The ELT has been approved for Active Army, Army Reserve and Army National Guard aircraft on a case by case basis. Those aviation units and commands that have previously submitted ELT installation requests should furnish a copy to this office marked for DARCOM Project Officer, Aviation Life Support Equipment (DRCPO-ALSE). Those commands or aviation units that have a requirement for ELTs should request authority to install ELTs. Any additional requirements of original submittals should be updated in order to expedite the approval action which is not vested to the DRCPO-ALSE, 4300 Goodfellow Boulevard, St. Louis, MO 63120. Action officer for this project is Mr. Edward Daughety, DRCPO-ALSE, AUTOVON 693-1218/9/Commercial (314) 263-1218/9.

SPH-4 Helmet Components

The U.S. Army Support Activity, Philadelphia (AP5) advises that materiel obligations exist for the following components. Recommend these components be removed from unserviceable helmets for use prior to disposal of the helmets.

NSN	Item
8415-00-490-1197	Visor Lens Assy., Clear
8415-00-490-1196	Visor Lens Assy., Natural Gray
8415-00-411-0115	Visor Housing Assy.

In addition all usable and repairable components should be removed from unserviceable helmets and used. Damaged shells are not repairable and should be pocessed for disposal.

Further, we anticipate that materiel obligation releases will be effective for the following components by the time this article appears.

NSN	Item
8415-01-017-5709	Cushion Backing
8415-01-056-0700	Earcup Retainer
8415-01-111-9027	Ear Pad Assembly
8415-00-933-9280	Lock Visor
8415-00-410-4669	Track Visor, Left Side

Cold Weather Sleeping Bag

During a recent aircraft accident, the aircrew was forced to use the cold weather sleeping bag, NSN 8465-01-131-7921. The sleeping bag performed very nicely during the cold night for sleeping, and the aircrew was soon rescued. Upon return to duty, the aircrew being cost conscious began to explore how to repack the sleeping bag for future use. The bags cost more than $600.00 each and this certainly would be cost conscious.

Admittedly the bag is considered "expensive," but it was designed for survival and if it helps to save one life it has done its job. These bags are vacuum packed by a commercial contractor; the field does not have access to vacuum packing equipment. For the sleeping bags to be properly repackaged they would require cleaning and have to be shipped back to the commercial source. Shipping costs, packaging and administrative costs could exceed the cost of a new sleeping bag. REMEMBER—the sleeping bag has served its purpose, it was designed for survival and it has done its job. Remember, since it is aviation life support equipment, if it is involved in an aircraft accident, it should be sent to USAARL, ATTN: ALSE Retrieval

Program. Otherwise it can be used for display or training.

Forest Penetrator Seat

The U.S. Navy Aviation Supply Office (ASO), Philadelphia, PA, has furnished the following information pertaining to the forest penetrator seat, P/N K26-1000-9, NSN 2RH4220-00-199-7353LX: The Navy Air Rescue Facility (NARF), Jacksonville, FL, letter serial 318, code 620, dated 31 August 1983 (NOTAL) advises subject item being received with loan assembly, P/N K26-1017-1 and strap, P/N K26-1020-1 attached; these P/Ns are not required in accordance with NAVAIR Drawing K26-1000. P/N K26-1017-1 and P/N K26-1020-1 should be removed prior to turn-in to the ASO. Seat assemblies reworked at NARF, Jacksonville, FL, will be placed in "A" condition. Users will furnish the two part numbers above. We are offering this information in the event that any Army unit is using this particular forest pentrator seat. Action officer is Mr. Edward Daughety, AUTOVON 693-3307, should additional information be required.

Thermal Protection

Aircrew personnel should wear fire protective gloves and keep their flight suit sleeves rolled down during *ALL* phases of flight. General William D. Spruance (retired USAF) has an excellent briefing on thermal protection. The general is available to brief aircrews; however, he does require a "pick-up" or invitational travel orders to offset his travel expenses. His presentation is an excellent motivation device for old and new heads and we strongly recommend him for aviation life support meetings where that little "extra" is needed. We are writing a letter to him to determine his availability. If you can arrange the transportation or fund his travel, I know your unit will benefit from his excellent "eyeopening" briefing.

MACRIT

In case you are wondering what the acronym MACRIT is and where it fits into the ALSE program area, here is the bottom line. A Manpower Authorization *crit*eria study is being "launched" to document the time, energy and people required to perform the job of ALSE in the Army. By the time you read this article you may have already been visited by our contractor and product assurance team representatives. They are visiting installations to gather this data for the DARCOM project officer for ALSE with the objective of fully supporting the need for a career ALSE military occupational specialty (MOS). Sixteen sites are currently to be visited under the sample data collection program (SDCP) which the COBRO Corporation manages for U.S. Army TSARCOM through the Directorate For Product Assurance. The "door" is opening wider in support of the need for this critical career field. Please be sure to let the information collectors know exactly what problems you are encountering and the time it takes to inspect, maintain, repair and order ALSE. All of this information will eventually lead to an ALSE career management field and dedicated MOS.

For those sites not visited, don't give up the ship; we are developing a form which you can use locally to substantiate the time it takes you on ALSE. This information will be centrally collected for the ALSE career management field for a dedicated MOS.

Reference Data

Our office receives many calls inquiring about the proper national stock number, federal supply code for manufacturers (FSCM), etc. We don't discourage these calls if you are out in left field, but you should also know how to go about getting such information yourself. Go through your proper administrative or publications control channels so you don't get yourself into hot water; they know how to set up an account number for you or your organization. You will find the following fiche a valuable asset in your quest for ordering data.

Federal Supply Code for Manufacturers

- United States and Canada NAME TO CODE AND CODE TO NAME SB 708-41/42 H4-1/H4-2
- LOGISTICS REFERENCE NO. TO NSN MCRL-1
- NIIN TO LOGISTICS REFERENCE NO. MCRL-2
- FSCM AND LOGISTICS REFERENCE NO. TO NSN MCRL-3
- CONSOLIDATED MANAGEMENT DATA LIST ML-C BASIC

You will probably be required to fill out DA Form 12-34, Block 178 and DA Form 12-21, dated November 1981, Blocks 19, 20, 21, and 22 for the above items. Your activity will then request your order from the U.S. Army Adjutant General Publications Center, ATTN: Distribution Management, 2800 Eastern Blvd., Baltimore, MD 21220.

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

WHAT DO LEONARDO da Vinci and the guy in the lawn chair at 16,000 feet have in common? Well, unless the guy in the chair also happens to be an artist, it's probably the urge that earth-bound man has always had to soar with the eagles. One thing is different though, da Vinci was in little danger of a mid-air collision unless he happened to hit one of the eagles.

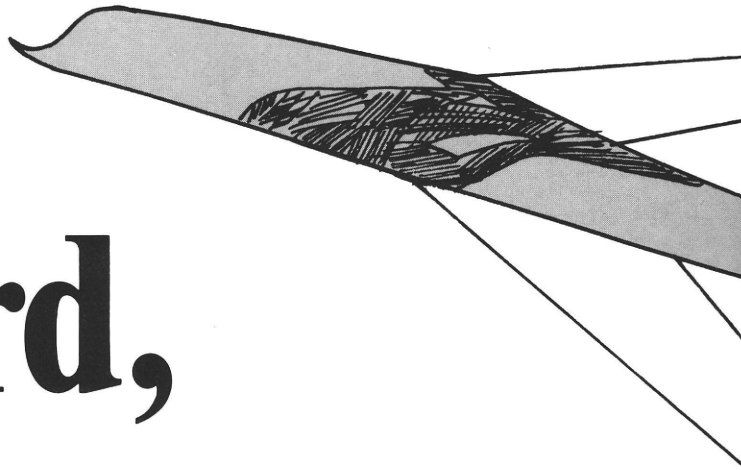
Until the Wright brothers launched their engine-powered "Flyer" from Kitty Hawk in 1903, air space pretty much remained the domain of birds—and would-be birds in their foot-launched glider contraptions. However, in the 80 years encompassing the "age of flight" the skies have filled with so many civil, commercial and military aircraft that the relatively small number of mid-air collisions is little short of miraculous. The potential for disaster is always present: the Federal Aviation Administration reports a yearly average of 140 near misses by general aviation and military aircraft.

Foot-launched gliders and many of the experimental light aircraft were relegated with the clipper ship to the romance of the past—until the 1970s. That is when the venturesome spirits who cross the oceans in one-man sailboats, jump out of airplanes for the sheer joy of it or zip around in an astonishing assortment of wheeled vehicles, rediscovered the class of aircraft now called the "ultralight." The number of ultralights in use is estimated at 30,000 and projections by the end of the 80s are for hundreds of thousands claiming a share of air space.

Until very recently, the FAA allowed hang gliders and ultralights to operate without regulation. There had been no reports of mid-air collisions between ultralights and aircraft, but there had been reports of near misses. By 1982, the rapid increase in popularity of the sport and participation by some operators who were unfamiliar with even the basic rules of flight made some kind of regulation necessary. Sports flyers had to be protected from other aircraft and prevented from becoming a further hazard to regulated flying operations.

Federal Aviation Regulation Part 103 controls the ultralight category of aircraft. Ultralights are defined as a vehicle which:

- is designed for single occupancy only



it's a bird, it's a plane—it's a lawn chair?

U.S. ARMY SAFETY CENTER

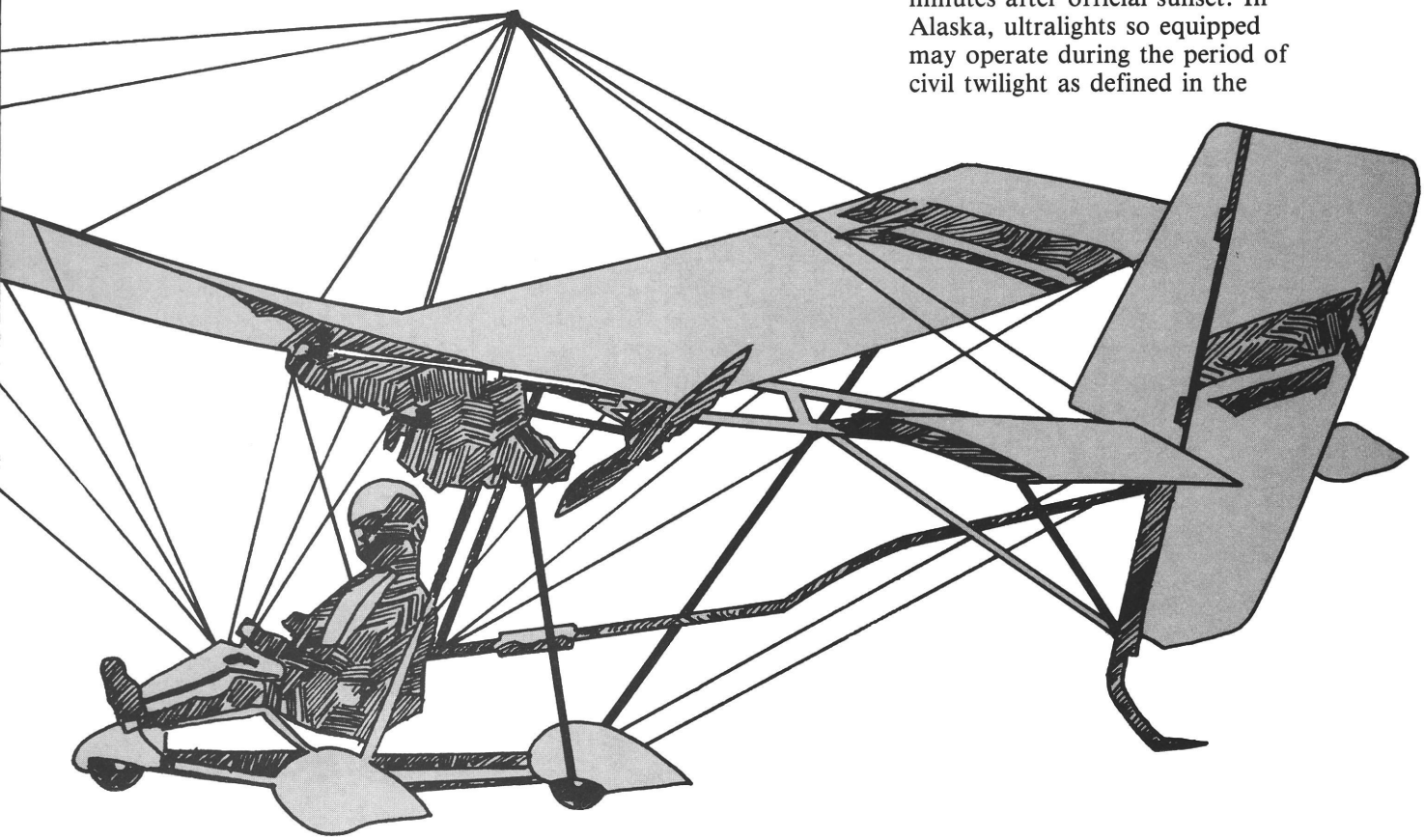
- is intended for sport or recreational use only
- does not have an airworthiness certificate
- if unpowered, weighs less than 155 pounds
- if powered, weighs less than 254 pounds, and
  - has a top speed of no more than 55 knots in level flight
  - has a power-off stall speed no greater than 24 knots
  - has a fuel capacity not exceeding five U.S. gallons

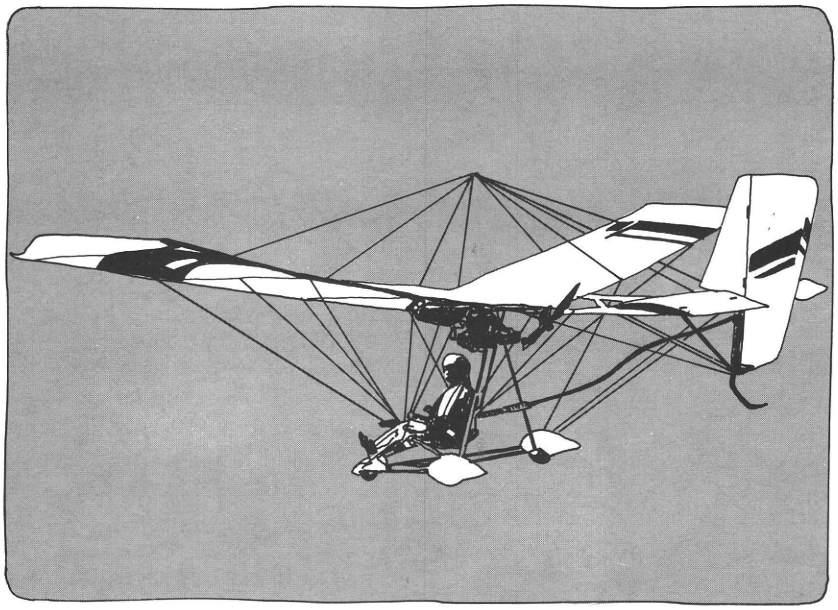
The FAA has recently issued exemptions to the limitations of Part 103. The exemptions were granted in the interests of safety and a reduced accident rate by providing training for ultralight operators. Three organizations will be allowed to operate two-place ultralights for the purpose of giving instruction only. The three authorized organizations are:

- Aircraft Owners and Pilots Association (AOPA) Air Safety Foundation, Ultralight Division
- Experimental Aircraft Association (EAA)
- U.S. Hang Glider Association

Anyone operating a two-place ultralight under Part 103 without such authorization for exemption is subject to a $1,000 fine for each violation of a section of the regulation. Flying vehicles which meet the definitions of Part 103 remain free of federal regulation in regard to design, construction, maintenance, airworthiness, registration, or pilot certification. The FAA has shown a willingness to let private individuals, under the leadership of industry and cooperative groups, "self-regulate" the sport. The Air Safety Foundation has established national ultralight standards for pilot competency and a program for vehicle registration. Standards for vehicle airworthiness are also being developed. The foundation, which is dedicated to advancing general aviation safety, plans a network of registered ultralight pilot examiners to train ultralight pilots. Training will include both written and flight tests.

Ultralights may operate only during daylight hours or if equipped with an operating anticollision light visible for at least 3 statute miles, such vehicles may operate during the twilight periods 30 minutes before official sunrise and 30 minutes after official sunset. In Alaska, ultralights so equipped may operate during the period of civil twilight as defined in the





Air Almanac. Operations during this additional period must be in uncontrolled airspace.

Ultralights must yield right-of-way to all aircraft and to unpowered ultralights. They may not operate over congested settled areas or where there are large gatherings of people, such as sports stadiums. They may not be operated within an airport traffic area, control zone, terminal control area, or positive control area unless the operator has obtained prior authorization from the air traffic control facility having jurisdiction over that airspace. Ultralights must be operated by visual reference with the ground surface.

Operation of ultralights is limited in terms of airspace access. The ultralight operator who wants to ensure avoidance of military or special use airspace can obtain necessary information from sectional, terminal area, IFR, wall planning, and DOD area planning charts.

Prohibited areas include security sensitive airspace from the surface up to a specific altitude. The White House, Presidential homes and vacation retreats are among the areas where no aircraft are allowed without authorization.

Restricted areas may contain military activities which are hazardous to civilian aircraft. Access requires prior permission from the controlling or using agency, usually the FAA or the military service. Such areas are normally near a military installation.

Military training routes are special routes for combat training activity. They can be as much as several dozen miles wide and high speed and low altitude aircraft activity can be expected.

Military operations areas are airspace of defined vertical and lateral limits used to separate certain military activities from IFR traffic and to identify VFR traffic where these activities are conducted. Prior permission for VFR or ultralight flight is not required but these areas can be hazardous because of high-performance military aircraft and density of traffic. Vigilance is necessary.

Warning areas have hazards similar to restricted areas. They are not designated restricted because they are outside the 3-mile limit over international waters.

Alert areas can have a high volume of military activity and while they are not restricted, they may be extremely hazardous to ultralight operators. Everyone flying in these areas must exercise extreme caution to avoid collisions.

There is an ever-present danger of collision when ultralights operate in the same air space as other types of aircraft. The lawn chair "pilot," who soared to 16,000 feet with the aid of 42 helium weather balloons, paid a $1,500 fine for infractions of federal air regulations. During the 90 minutes of his flight, he intruded hazardously into federal airways and was spotted near several commercial jet aircraft.

Not only is there a danger of mid-air collisions between ultralights and aircraft, they are extremely sensitive to turbulence. Ultralights are vulnerable to wake turbulence from high speed aircraft and to wingtip vortices from even small aircraft.

Ultralight operators are responsible for ensuring that they comply with all aspects of the FAA rules regarding their vehicles. However, if you operate military aircraft in an area where such vehicles are growing in popularity—particularly along the seacoasts and other recreational areas—you can do some things to "fly friendly" with these sports enthusiasts. Preventing a collision can be as much in your interest as that of the hang glider or ultralight operator. If you only look at it from a purely selfish point of view, if a 25-pound bird can smash your windscreen and endanger your aircraft and your life, consider the effects of collision with a 200-pound man flying a 250-pound ultralight.

Through organizations like the Aircraft Owners and Pilots Association, Experimental Aircraft Association, Professional Ultralight Manufacturers Association, U.S. Hang Gliding Association or local distributors of equipment for the sport, you can find out about ultralight clubs in your vicinity. If there is a group in your area, use avenues such as your public affairs office and speakers' bureau to make them an offer they won't want to refuse. Go to a meeting and tell them about the potential for mid-air collisions of your aircraft and their ultralights. Be sure they know where you operate—locations of stagefields, ranges and field training areas. Explain the mental concentration of aviators engaged in certain flying activities and warn them about how easily a helicopter engaged in terrain flying could encounter a low-flying ultralight without warning. Talk about the effects of wake turbulence and rotorwash on their light vehicles. Find out where they operate, and when, and pass the information on to your aviators. A little friendly dialogue between users of air space could save a life—and the life you save could be your own.

Ultralights are more likely to be a hazard in warm regions or in the summer months, but there is at least one exception. If you happen to be getting in some flying time near the end of this month—keep a sharp lookout for a fat old gent in an 8-reindeer powered ultralight. He may not know the FAA rules so don't expect him to yield right-of-way. We suggest you make way just this once—if you cause any undue delay it just may be your house that he doesn't get to. ***Have a happy holiday and above all a safe New Year.***

REFERENCES

"Fined Flying Object," **FAA General Aviation News,** May-Jun 1983

Furr, J., Capt, USAF, "Ultralight...Ultrasafe?" **Combat Crew,** Jul 1983.

"Occupied Air, Keeping Clear of Military Aircraft," **FAA General Aviation News,** Jan-Feb 83

"The Ultralight Solution," **FAA General Aviation News,** Sep-Oct 82

"Ultralight Flight Instruction," **FAA General Aviation News,** Jul-Aug 83

"Ultralight Programs Given Interim FAA Approval," **FAA General Aviation News,** Mar-Apr 83

USEFUL SOURCES OF INFORMATION

1. **Airman's Information Manual** Basic flight information, air traffic procedures.
2. **Pilot's Handbook of Aeronautical Knowledge** General information on aircraft systems, instrumentation, aerodynamics, weather. Obtain price and order information for these two items from:
   Superintendent of Documents
   Government Printing Office
   Washington, DC 20402
   (202) 783-3238
3. **Sectional and VFR Terminal Area Charts** Visual navigation aids, terrain depiction, radio aids, airports, obstructions, controlled airspace, restricted areas. TCA charts show detail of terminal control areas.
   Sectionals—$2.75 each
   TCA Charts—$2.75 each
   Order items (3) and (4) from:
   National Ocean Survey
   Distribution Division C-44
   Riverdale, MD 20737
   (202) 436-6990
4. **Ultralight Rule**/(Far Part 103)
   DOT/FAA, AFO-820
   800 Independence Ave., SW
   Washington, DC 20591
   (202) 426-8194
5. **Trade Organizations:**
   EAA
   P.O. Box 229
   Hales Corner, WI 53130
   (414) 425-4860

   AOPA, Air Safety Foundation
   421 Aviation Way
   Frederick, MD 21701
   (301) 695-2000

   PUMA
   1080 Linda Vista
   San Marcus, CA 92069
   (714) 744-1514

   U.S. Hang Glider Assoc.
   P.O. Box 66306
   Los Angeles, CA 90066

POL

Aviation's Achilles' Heel...

September 1981 (AH-1S)—"Aircraft landed at forward arming and refueling point (FARP) during field exercise. Aircraft was being refueled from a 500-gallon collapsible drum. As fuel was dispensed, aircraft engine flamed out due to water-contaminated fuel. Petroleum, oils and lubricants (POL) personnel did not perform the aqua-glo fuel test at FARP prior to dispensing."

December 1981 (OH-58A)—"30 gallons of JP-4 from hot refueling point were added to the aircraft fuel tank. The pilot noticed the fuel guage needle going over 600 lbs. The fuel filter segment warning light came on and the aircraft engine failed. POL personnel were not following the requirements of FM 10-68 in performing the required fuel inspections (aqua-glo test), allowing water to accumulate in fuel. Recommendation: Closer supervision of POL personnel."

... and how to overcome it.

Captain Mark D. Carey

Captain Carey was assistant brigade S4 for the 9th CBAA when he wrote this article. His major duties were POL financial management and automotive maintenance. He has since left the service.

76W ground guides aircraft out of brigade hot refueling point.

IN THE PAST 3 fiscal years, 15 of 23 POL/aviation related mishaps have occurred as a direct result of fuel contamination. The above two examples are documented occurrences obtained from the U.S. Army Safety Center. POL equipment readiness has often taken a backseat to aviation maintenance, and effective training appears scarce.

The way to solve aviation POL problems is through proper command emphasis. The challenge is how to convert the term *command emphasis* into a viable, working program. The 9th Cavalry Brigade (Air Attack) (CBAA) at Ft. Lewis, WA, has implemented a multilevel program to upgrade its POL maintenance posture, training and quality assurance. It has been so effective that a recent Aviation Resource Management Survey inspection noted that Ft. Lewis had "the best POL program in FORSCOM." If you are interested in how we turned a constant problem-child into an effective operation, read on.

Status Reports

For the year prior to this writing, squadron/battalion commanders have been submitting to the brigade commander a weekly maintenance status report of POL equipment. The information includes equipment authorized, on hand, operational and deadlined. For deadlined equipment, document or direct support job order numbers are included. The brigade S4, principal "watchdog" for the commander, has been able to influence "down time" by coordinating with direct support maintenance for higher priority on job orders and through indirect coordination with U.S. Army Troop Support and Aviation Materiel Readiness Command representatives for expeditious release of repair parts not available on post.

Staff Assistance Visits

The brigade commander has been effectively using his S4 as his "eyes and ears," and his command presence is being felt at the lowest level. Every quarter the brigade S4 reviews each checklist in the 3/5 platoon and inspects equipment. Results are provided to the platoon, squadron/battalion commander and the brigade commander. Overall ratings are either SAT or UNSAT.

POL EQUIPMENT PROCEDURES CHECKLIST — DATE

BUMPER #	SER/EQUIP #	ORGANIZATION	PRODUCT

METER READINGS		
A. AT END OF SHIFT	B. AT START OF SHIFT	C. TOTAL METER ISSUE (a-b)

PRESSURE DIFFERENTIAL		
A. INLET	B. OUTLET	C. DIFFERENTIAL (a-b)

AMOUNT OF FUEL (GAUGED)				
A. AT START OF SHIFT	B. TOTAL RECEIVED	C. AT END OF SHIFT	D. GAUGED ISSUES (a+b)-(c)	E. 3643 ISSUES

QUALITY ASSURANCE				
AQUA-GLO READING	DATE LAST MILLIPORE TEST	COLOR, BRIGHTNESS, CLARITY	DATE IN LINE FILTER LAST CLEANED	DATE FILTER LAST CHANGED

PREVENTIVE MAINTENANNCE CHECKS
(Initial when completed)

ITEM	PROCEDURES	BEFORE OPNS	DURING OPNS	AFTER OPNS
Auxiliary engine *(If Applicable)*	Inspect for leaks and cracks in fuel, oil and exhaust lines.	____	____	____
	Inspect spark arrestor for cracks, burn-out spots, holes, and tightness.	____		____
	Inspect for unusual noises.		____	
	Check for level of oil.	____		____
	Inspect fuel shutoff valve and sediment bowl for leaks, dirt, and damage.	____		____
Gasoline can/tank *(If Applicable)*	Check for leaks, dents, or damage. Check for fuel. Add fuel if needed.	____		____
Battery *(If Applicable)*	Inspect for tight connections and corroded terminals. Check the electrolyte level.	____		____
Filter/Separator	Inspect for leaks and damage.	____	____	____
	Check and record pressure differential each time you use the vehicle.	____		
Filter/Separator dump valve or manual water drain valve	Open valve and drain water. Leave valve open until fuel appears.	____		____
Fire Extinguisher	Inspection controls, nozzles, tubing, connections, and mountings for leaks, corrosion, and damage. Check date of last weight test. Check to see that extinguishers are sealed.	____		
Grounding assembly and nozzle bonding wire	Inspect for cable breaks, frays, tight connections, and firm mountings. Check clamps.	____		
Hoses, hose reels, and nozzles	Inspect for bulges, blisters, tears, cuts, gouges, soft spots, tightness and leaks.	____	____	____
	Check for hose dust cap and/or plugs.	____		
Line strainers	Inspect for leaks (weekly). Inspect for leaks (quarterly)	____		
Manhole and filler cover assembly	Inspect for loose or missing parts and tight mountings Check the pressure on the vacuum relief vent.	____		
	Check manhole cover gasket. Insure hatches are provided with locks.	____		

HFL FORM 1 Sep 82 197

Equipment Procedures Checklist

Because vehicle dash 10s do not include procedures for checking POL dispensing equipment, the basic guidelines were taken from FM 10-71 to develop a new equipment procedures checklist (above). In addition to maintenance checks, space was allocated for filter/separator pressure differential checks, aqua-glo readings and visual checks. The continuing problem of fuel accountability was also addressed by comparing gauged readings against DA Form 3643 issues for daily reconciliations.

A form by itself can never solve a problem because it is only as good as the people filling it out; so, a great deal of noncommissioned officer supervision was required to make it work. Command emphasis was evident when one soldier received an Article 15 for

willfully falsifying the document, indicating he had performed an aqua-glo test when actually he did not. Serious? Yes. And so is an aircraft mishap due to fuel contamination.

Hot Refueling Concept

Ft. Lewis does not have a permanent refueling facility, so one was initiated by the 9th CBAA. Each week a different squadron/battalion rotates its organic equipment and personnel through the hot refueling point. This has been an excellent opportunity for undisturbed training in setting up the forward area refueling equipment (FARE), ground guiding, refueling and conducting quality control checks. In addition to the FARE getting exercised, the concept has freed other squadrons/battalions to conduct maintenance on their own equipment during normal duty hours without constantly being on the flight line with their refuelers.

The program accomplished more than was intended. Numerous problems (leaking closed circuit refueling nozzles and FARE pumps, missing components, cracked hoses, frayed bonding and grounding wires, unserviceable fire extinguishers, damaged filter/separators, and unserviceable helmets, goggles and gloves) were identified during weekly inspections by the brigade S4. Copies of the inspections were left at the hot refueling site and with the unit and brigade commanders, thus assuring a continued command emphasis. Additionally, a list of common deficiencies noted was distributed so problem areas would not be duplicated by other units. The training and equipment has been enhanced to such a degree that weekly inspections are generally completed with "no deficiencies noted." On several occasions pilots were given classes at the hot refueling point to get a better understanding of their roles during the refueling process.

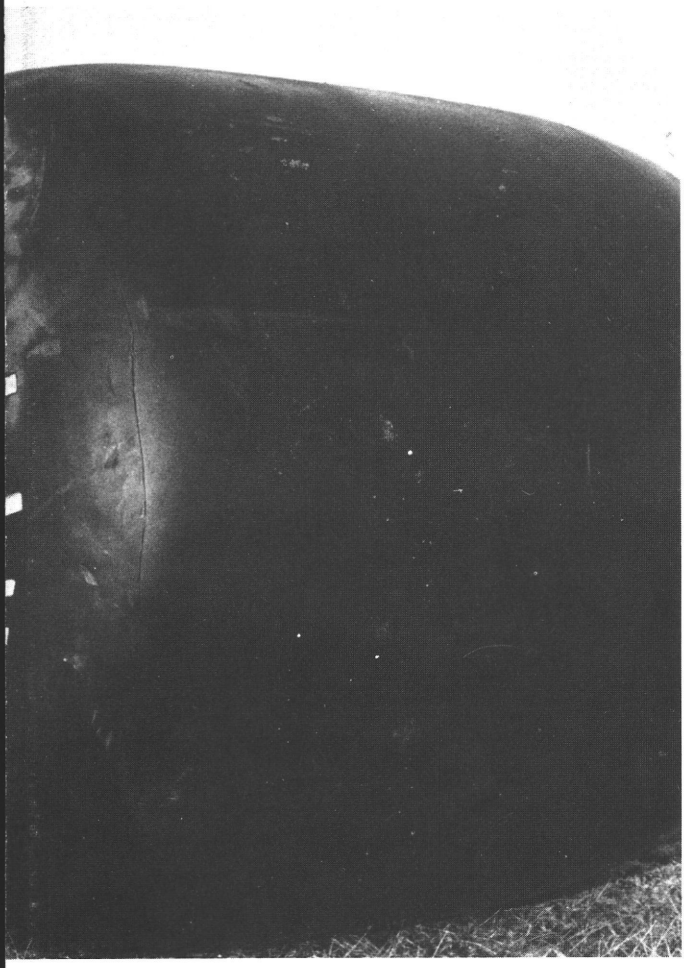
ABOVE: 500 gallon collapsible drums are part of FARE system being erected during the 9th Cavalry Brigade's POL competition.

Quality Assurance Program

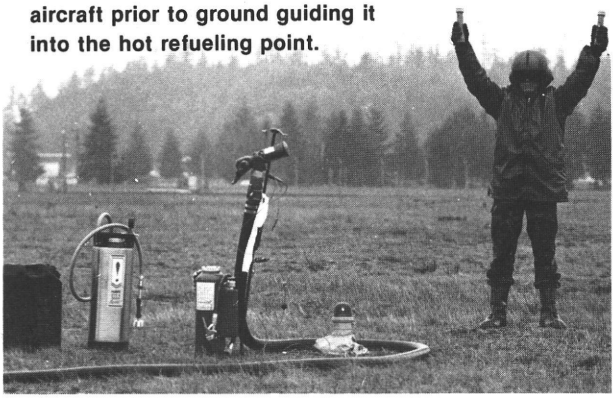
The 9th CBAA has developed a quality assurance program that has consolidated the control of filter/separator millipore fuel samples at the brigade level. Instead of individual unit millipore samples being sent to supporting Army laboratories, the samples are submitted monthly to the brigade S4 where they are consolidated and sent to the lab in one shipment. The use of a status chart, tracking all of the filter/separators within the brigade, facilitates management of the dispensing equipment.

POL Competition

Some of the hardest working people in the 9th CBAA are those who handle the POL (military occupational specialty 76W). During a field exercise they are usually the first there and the last to leave. As recognition for them (as well as to help in their training program) a quarterly competition has been



BELOW: POL handler "picks up" aircraft prior to ground guiding it into the hot refueling point.



established to select the best aviation POL section. Events judged in the first contest were first aid, gauging, DA Form 3643, vehicle backing, ground guiding, erecting a FARE, and daily and technical inspections of wheeled vehicles. Those for the next competition will be taken from the skill qualification test manual and from unit recommendations.

The POL competition has done much to raise the esprit de corps of the POL handlers. They are all determined that their unit shall have the next trophy and are working to prepare themselves to win it.

POL Responsible Officer

All too often the 3/5 platoon leader is an inexperienced lieutenant who is serving in a ground assignment until a flight slot opens up (after all, someone has to be the 3/5 platoon leader). In the 9th CBAA, we feel that the 3/5 platoon leader needs more training and education in the other related areas of POL. That can be obtained *now that the POL portion* of the Quartermaster Officer Basic Course at Ft. Lee, VA, *is open to officers of all branches.* The 123-hour POL curriculum provides an excellent opportunity for the POL responsible officer to learn about accountability, quality assurance, equipment and vehicle maintenance.

POL Standing Operating Procedure (SOP)

A detailed brigade POL SOP has been written to include information on contamination hazards and procedures, filter/separators and sampling, refueling/defueling procedures, arm and hand signals, fire and safety procedures, and POL accountability. It is currently being reduced to pocket-size so every POL handler can use it as a quick reference guide.

The brigade's POL program works. It works because the proper command emphasis is given to ensure that the job is done right. The status reports and staff assistance visits constantly monitor the equipment condition. The equipment procedures checklist covers all required checks to ensure that the dispensing of fuel is clean, bright and on specification. The hot refueling concept and POL competition have given our soldiers an excellent reason to train in an effective manner with the incentive to excel. And efforts are being made to train the 3/5 platoon leader in a manner never before undertaken.

Highly professional and motivated personnel—that's the POL program's product for the 9th CBAA.

Cost of Doing Touchdown Emergency Maneuvers

Mishaps occurring during practice touchdown emergency maneuvers continue to be a major problem in Army Aviation. During the period 1 July 1980 through 9 November 1983, there were 665 reported Class A through E mishaps that occurred while conducting emergency procedures training. This emergency procedures training included practice autorotations, forced landings, simulated hydraulics off, simulated governor failures and antitorque failures. The loss to the Army for the practice of these maneuvers was 7 fatalities, 28 injuries and $17.3 million.

The cost of these mishaps and the loss of valuable assets is considered unacceptable in this era of proven systems reliability of the current helicopter fleet. While the Army is faced with reduced flying hour programs and increased cost for blade hours flown, it became necessary to realign flight priorities. Although proficiency in all phases of flight is important, the routine practice of maneuvers with dubious value compared to the need for tactical flight training which permits aviators to survive on the battlefield necessitated changes in our aircrew training program.

After termination of touchdown emergencies training in the AH-1 in March 1983 to November 1983, cumulative data provided by DCSLOG and USASC indicated a significant improvement in the AH-1 mishap rate and maintenance cost. We have seen a 25 percent improvement in armament and airframe failure/repair rates. Maintenance and repair of the landing gear improved by 368%. In addition to these significant savings, the cross-the-board maintenance manhours to flight hours improved 32 percent. While there were 28 Class A, B or C mishaps between 1 July 1980 and 1 March 1983, there was only one Class A between March 1983 and November 1983.

The U.S. Army Aviation Policy Committee voted overwhelmingly to eliminate touchdown emergency procedures training in rotary wing aircraft. The committee meeting took place at Ft. Rucker 14 to 16 November 1983 and had representatives from each MACOM and DA staff agency. The Policy Committee recommendation was briefed to the Vice Chief of Staff of the Army on 23 November 1983 and was subsequently approved. This resulted in a message (DTG 231330Z Nov 83) which terminated touchdown emergency procedure training in rotary wing aircraft. This message also placed a moratorium on IP equivalency evaluations given in single engine helicopters effective 1 January 1984. This moratorium was required since aviators in the field have no means for developing touchdown emergency procedure proficiency.

The message permits touchdown emergency procedure maneuvers to continue at TRADOC and ARNG training bases while conducting initial or advanced qualifications training for other than ATM aviators, i.e., IERW, RWIQC, IPQC. In addition to this training, OH-58 qualifications training will be unaffected. MACOMs must ensure that IPs designated to conduct OH-58 transition training maintain necessary proficiency to teach maneuvers required in the transition.

Forthcoming revisions to all of the ATMs will give new conditions and standards for autorotations and forced landings. In lieu of touchdowns, emphasis, especially for forced landings, should be placed on termination with power. New parameters for "joining the needles" will make the maneuvers more realistic and will certainly provide aviators the opportunity to develop the level of proficiency necessary to safely recover in an actual emergency without making the injury or damage inherent in touchdown.

Test data gathered during this 1-year period will be continually evaluated and studied in order for us to determine whether or not the restrictions should be permanent. Results of the evaluation will be provided in early 1985. "NO MORE IN 84."

DES welcomes your inquiries and requests to focus attention on an area of major importance. Write to us at: Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Ft. Rucker, AL 36362; or call us at AUTOVON 558-3504 or commercial 205-255-3504. After duty hours call Ft. Rucker Hot Line, AUTOVON 558-6487 or 205-255-6487 and leave a message

Use of Helicopters in Land Battle

DURING THE PAST YEAR, several of the operational helicopter standardization agreements (STANAGs) have been printed in the *Aviation Digest.* The purpose for this is to familiarize aviation units with the contents of STANAGs and to provide a document which may be used in developing the unit's standing operating procedure.

Many readers may wonder how these agreements are developed: It is through several international forums in which the United States participates. One of these forums is the Helicopter Interservice Working Party (HISWP). This is a NATO (North Atlantic Treaty Organization) group and is represented by delegates from each U.S. branch of service. At this forum, nations are given the opportunity to introduce new subjects for standardization. The proponent nation for new agreements provides the delegates with draft agreements for national staffing. Comments are incorporated within the STANAG and a first draft for ratification is recirculated to the nations. When a nation ratifies a STANAG, the desired action is to incorporate the terms of the agreement into a national implementing document.

In March 1983, the seventh meeting of the HISWP was held in Brussels. Prior to the regular meeting, delegates from four nations met in a special session to develop a draft of Allied Tactical Publication (ATP)-49, "Use of Helicopters in Land Battle." This document had been given top priority for the HISWP. The ATP is composed primarily of helicopter operations STANAGs which have been ratified. One part of the ATP was written to assist ground commanders in their understanding of how to employ helicopters. Some of the parts contain information for which there are no existing STANAGs, but which the working party considered essential. The first draft of ATP-49 was presented to the HISWP. This draft is being reviewed by the nations. The goal of the working party is to achieve ratification of the document prior to the eighth meeting scheduled for July 1984. The United States will seek to develop ATP-49 as a national document. This action will allow units to receive the publication through the pinpoint distribution system. The following is a listing of STANAGs that will be contained within the publication:

STANAG 2087:	**Aeromedical Evacuation**
STANAG 2351:	**Procedures for Marshalling Helicopters in Multi-National Land Operations**
STANAG 2355:	**Procedures for the Employment of Helicopters in the Anti-Armour Role**
STANAG 2861:	**Procedures in the Event of Downed Helicopters**
STANAG 2863:	**Navigation and Communications Facilities for Multi-National Land Operations**
STANAG 2878:	**Safety Regulations for Helicopter Users**
STANAG 2888:	**Operational Carriage of Ammunition and Fuel by Helicopters**
STANAG 2951:	**Non-Electric Communication for Helicopters**
STANAG 2956:	**Tasking Messages**
STANAG 2970:	**Recovery of Downed Helicopters**
STANAG 3468:	**Rules, Operating Responsibilities, and Procedures for Transport of Cargo by Helicopers**
STANAG 3532:	**Transport of Troops by Helicopters**
STANAG 3597:	**Helicopter Tactical or Non-Permanent Landing Sites**
STANAG 3627:	**Helicopter Day and Night Formation Flying**
STANAG 3628:	**Helicopter Tactical Refueling**
STANAG 3630:	**Emplaning and Deplaning at the High Hover**
STANAG 3907:	**Cross-Servicing of Helicopters Engaged in Land Operations**

The working party also develops technical STANAGs. Of particular concern to helicopter units is STANAG 2946, "Forward Area Refueling Equipment," and STANAG 2947, "Technical Criteria for Closed-Circuit Refueling System." Ratification comments by the nations were incorporated at the meeting. The United States is expected to ratify these agreements. Other helicopter-related technical STANAGs and studies that are under development include:

STANAG 2949:	**Technical Criteria for External Cargo Carrying Slings**
STANAG 2950:	**Technical Criteria for External Cargo Carrying Nets**
STANAG 2970:	**Aerial Recovery Equipment and Techniques for Helicopters**
STANAG 2971:	**Rotor Blade Tracking Device**

The working party has expressed an interest in developing an Allied Technical Publication. This document is similar to ATP-49 in that it will contain all existing technical STANAGs that relate to helicopters. A draft outline has been distributed to the nations for review and comment.

This report contains only a small portion of the interaction that occurred at the seventh meeting of HISWP. The follow-on action by each of the nations will dictate the degree of interoperability that can be achieved among national helicopter forces.

If this article has generated any questions or requirements, please contact Mr. Rush Wicker by writing: Commander, U.S. Army Aviation Center, ATTN: ATZQ-D-CC, Ft. Rucker, AL 36362.

REPORTING FINAL

Late News From Army Aviation Activities

FROM FORT RUCKER

UH-60A FS Update. The Basis of Issue Plan (BOIP) for the UH-60A flight simulator as shown in the October issue of the *Aviation Digest* requires updating. The finalized BOIP is at ODCSOPS for approval and will be as follows:

	FY/QTR
1. Ft. Campbell, KY	87-1
2. Hanau, FRG	86-3
3. Illesheim, FRG	86-4
4. Ft. Campbell, KY	87-2
5. Ft. Lewis, WA	87-3
6. Ft. Bragg, NC	87-4
7. Ft. Hood, TX	88-1
8. Korea	88-2
9. Alaska	88-3
10. Ft. Ord, CA	88-4
11. Korea	89-1
12. Ft. Riley, KS	89-2
13. Ft. Carson, CO	89-3
14. Ft. Stewart, GA	89-4
15. Ft. Polk, LA	90-1

photo by Yvonne Lugo

H-23 Loaned. Werner Noltemeyer, left, curator of the Hubschraubermuseum (helicopter museum), Buckeburg, West Germany, and retired Army Lieutenant Colonel Thomas J. Sabiston, curator of the Army Aviation Museum, Ft. Rucker, AL, exchange views on their museums, while an H-23 Raven helicopter is tied down aboard a German C-160 transport aircraft. The helicopter, which was used by the U.S. Army for medical evacuations and observation flights during the Korean War, was loaned to the German museum as planned by former Ft. Rucker commander Major General Carl H. McNair Jr.

U.S. Troops in Grenada. Soldiers (left) board a UH-60A Black Hawk helicopter from an airfield on Grenada. 82d Airborne paratroopers (right) move inland from a landing zone.

photos by SP4 Jon E. Long

photo by Mel Tarpley

FROM FORT RITCHIE

MP Training. Members of the 572d Military Police Company "took to the skies" during reactionary force training recently at Ft. Ritchie, MD. The training involved moving two platoons of MPs from Ft. Ritchie to nearby Site "R." In the event of a civil disturbance or extreme duress, this type of operation would be used to curtail the incident, according to SFC Ronald J. Sokol, MP Company training noncommissioned officer.

"Usually in the case of a civil disturbance, it would be next to impossible to get to the area with ground transportation due to traffic congestion and large numbers of people. In the case of an armed attack, or extreme duress, the quick and immediate reactions of the MPs would be vital," SFC Sokol said.

As a result of the exercise, SFC Sokol says that it's feasible that up to 30 MPs could be airlifted to the site within the first half-hour of an incident.

FROM FORT EUSTIS

Deceased Transportation Corps Personnel to be Honored. The U.S. Army Transportation Center is seeking the names of deceased U.S. Army Transportation Corps personnel for memorialization at various sites on the post at Ft. Eustis.

Anyone knowing of suitable candidates should submit those names and accompanying justification of no more than two pages to Mr. Dennis Mroczkowski, Director, U.S. Army Transportation Museum, Ft. Eustis, VA 23604.

The justification should include the individual's accomplishments and contributions to the U.S. Army and, specifically, the Transporttion Corps.

FROM PENNSYLVANIA

Third CH-47 Modernization Contract. Boeing Vertol Company has been awarded a third follow-on production contract for the CH-47 Modernization Program.

The $257.3 million fiscal year 1983 (FY 83) contract was awarded 30 September by the U.S. Army's Aviation Research and Development Command of St. Louis, MO.

The contract provides for the modernization of 24 early model CH-47s to the advanced CH-47D configuration, and increases production from the current rate of two per month to three by October 1984. In addition, funding is included for the purchase of long-lead time materials to modernize 36 CH-47s in FY 84 and 48 in FY 85.

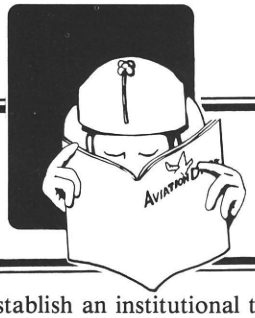
The award of this contract also parallels the outstanding initial performance of the CH-47Ds now in service with the 101st Airborne Division (Air Assault) at Ft. Campbell, KY. In their first 6 months of service, these CH-47Ds became the first Army helicopter fleet ever to achieve an initial 87 percent availability rate, compared with the Army's standard of 70 percent. This is a reflection of the 100 percent fielding support provided by the Army's CH-47 Modernization Project Office.

By modernizing its CH-47 fleet instead of building new aircraft, the Army will lower its fleet-wide operating costs, plus increase its operational capability, while saving more than $1 billion in acquisition costs during the program.

Boeing Vertol is scheduled to deliver the first of these 24 aircraft to the Army in March 1984 with deliveries continuing through January 1985. At present, the Army has accepted 18 CH-47Ds with the majority in service with the 101st Division, as part of the nation's Rapid Deployment Force. The Army's current plan is to modernize 436 CH-47s at Boeing Vertol through the early 1990s.

Superior Surgeon. Colonel Joseph Brill of the 100th Army Reserve Division in Louisville, KY, has been named the Army Reserve Flight Surgeon of the Year. COL Brill in civilian life is the director of the Southern Indiana Mental Health Center in Jeffersonville, KY.

VIEWS FROM READERS



Editor:

Air cavalry and attack helicopter unit commanders face a common dilemma: Whether, and how, to train their aeroscout observers.

Although the emotional debate continues as to who should serve as the aeroscout observer, tables of organization and equipment, and TRADOC guidance, specify that the observer will not be a rated aviator. We know we should realistically train the way we will fight. However, safety restrictions in the Aircrew Training Manual, TC 1-137, prevent a commander from training his unit to tactically operate with a nonrated aerial observer.

TC 1-137, in a warning and note in Chapter 4, prohibits single-pilot night vision goggles (NVG) operations. This is construed to be a regulatory requirement to have two NVG qualified and current aviators in the cockpit when operating NVG. Additionally, when the pilot is wearing MOPP 4 equipment, a second aviator, not in protective mask, must be at the second set of controls. These safety measures preclude NVG and MOPP 4 training exercises with a crew configuration of a pilot and a nonrated aerial observer.

The aeroscout observer, with the exception of the Field Artillery aerial observer, is currently MOS 19D, Armored Reconnaissance Crewman. Although he is supposed to be a sergeant E5, units commonly receive E3s and E4s. The nonrated observer receives no institutional training in aeroscout skills and procedures. His training is solely a unit responsibility. An Aeroscout Observer Exportable Training Package is available that contains lesson plans and study materials. However, for a commander to train his observers he must allocate a significant amount of training resources—critically short flight hours and instructor pilot/unit trainer time—to accomplish the training. Additionally, there is no specific criteria, such as FAST tests or AFSAB cut-off scores, used in selecting an individual for assignment as an aeroscout observer. Thus, in many cases, the enlisted observer candidate is incapable of being trained to acceptable standards.

Once trained, observers are not personnel managed as aeroscout observers. There is an additional skill identifier—2FZ1—available for tracking, but they continue to be managed as Armored Reconnaissance Crewmen. Following their assignment as an aerial observer, they might never again be assigned to an aviation unit. In addition to being poorly managed, aeroscout observers are not stabilized in their aviation assignment. Units have lost observers to ground armored reconnaissance assignments as quickly as 2 months following the completion of their aviation training. Likewise, the FAAO continues to be managed like other artillery lieutenants, and often has little utilization following the completion of his training.

Faced with flying hour shortages and the frequently poor return for the training resources expended, many commanders choose not to train nonrated observers. During tactical exercises they fly only the number of aircraft that they are capable of manning with two aviators.

If the ATM prohibitions concerning NVG and MOPP 4 operations are valid due to safety considerations, then they will be valid in combat situations. If this is the case the force structure must be modified to reflect the requirement for two aviators in aeroscout aircraft. The possible ways to achieve this include using nonrated gunners in attack helicopters, reducing flight crews in utility or cargo helicopters by one pilot per airframe, or by increasing the total number of pilots in the force.

If, however, the crew for aeroscout aircraft continues to be one pilot and a nonrated observer, we must accomplish the following:

- Change the ATM, TC 1-137, to permit commanders to fully and realistically train their aircrews.
- Establish aeroscout selection criteria.
- Establish an institutional training base in order to send trained observers to air cavalry and attack helicopter units.
- Establish a separate MOS and personnel manage aeroscout observers in order to fully use those personnel that are trained.

The decision whether to use two aviators in scout aircraft, or to modify the aircrew training manual and effectively train nonrated observers, is a difficult and sensitive issue. However, this issue must be resolved if we are to have well trained aeroscout crews, prepared to fight and win the first battle of the next war.

CPT Anthony D. Marley
Directorate of Armor Aviation
Aeroscout Systems, Training
Developments Branch
Ft. Knox, KY

Editor:

The age of automation in the home seems to be outstripping automation in the office, particularly in the Army, by an embarrassing margin. While many of us are plunking down several hundred dollars for our Ataris, Apples or Commodores as private individuals, as commanders we have to fight the bureaucrats. First to program a modest expenditure in next year's budget cycle, then to get admin approval to spend our own approved money on a computer. If you tend to doubt that this is so, just try. I find it incongruous that a commander can sign a requisition for an aircraft part that costs the government six figures but he may have to spend several dozen hours of executive time to get the go-ahead to make a small but important purchase. Doesn't seem to make sense.

While that struggle continues, many of my people and I are writing or fiddling with personal computer programs that make life easier or more efficient at unit level. This includes flying hour program (FHP) planning, maintenance management, flight records, PLLs,... you name it and the chances are that the system can yield better information faster if it's automated.

As an example, consider the flying hour program. It used to take my assistant S3 about 3 weeks with stubby pencil and calculator to put the battalion flying hour program together for six aircraft models in three units. This year I earned his eternal gratitude, got a better product and entertained myself on a rainy Sunday afternoon with my Atari 800 and the program called Visicalc. Listing 1 had all the keystrokes needed to set up the program shell, and it contained all the guidance from TC 1-139 on down that affects the fiscal year 1984 training plan. Listing 2 showed the FHP for one platoon of UH-1s. As I say, the whole process was quick, easy and accurate and in October when we (typically) get less than we asked for, it will be just as quick and easy to go back in and refigure the program playing "what if" to see what we must cut. What could be simpler?

Other uses for the computer abound. Just think about a program that takes 2408-12 and -13 information and automatically inputs into the 1352-1, the individual aviator flight record, the ATM sheet, the flying hour program, the maintenance flow chart, the TBO records and so on. What now takes three or more clerks several hours to do can be done by one in seconds. What about a program that takes FAT, tail number and PA and prints out as many PPCs as you're likely to need for a flight? That would save a lot of pilot eyesight squinting at all those little squiggly charts in the dash 10. How about a program that combines PLL, document register and 3318s in some kind of data based management system for the AVUM platoon? Why not a little graphics program? Something like that will spice up an otherwise dull brief and really "gee-whiz" the old chain of command.

So I'm writing to make three suggestions:

- Perhaps it would be a useful service to your readers to start a regular column aimed at personal computer owners. Your articles could list programs that aviation units use to do the many things they have to do. Surely Ft. Rucker has a user's group or two that could assist in the effort.
- Failing that, may I suggest that there are any number of individuals among your readers that may be able to make a contribution through the letters-to-the-editor [Views From Readers] forum.
- Finally, if all else fails, all your computer enthusiasts send your stuff to me and I'll periodically mail out a batch of whatever comes in for whichever computer you have. (Depending on response, I may have to bail out on this promise but let's see.)

LTC George D. Fuller
HHC, 11th Avn Bn, Box 835
APO New York 09039

Editor:

We have a lot of petroleum helicopter flights in the area in which we jump. We would be interested in the author's opinion written in your publication several years back. The article is: "Warning! Helicopters And Parachutes Not Always Compatible" by Lieutenant Colonel L.G. Kelly, in the October 1979 *U.S. Army Aviation Digest*. We would appreciate a copy of this article.

Vernon S. Melancon
United States Parachute Association

Editor:

I would like to ask the Army policymakers to do one of two things: Come up with a more liberal crewrest policy or, at least, publish AR 95-1 in graphic colors. I would like this done because it seems some people cannot understand black and white. I have seen too many aviators, myself included, who have flown "just another hour or two" to complete the mission. The regulation is there—it sets the guidelines. I challenge the commanders to abide by it, look after their troops and put safety before any peacetime mission accomplishment, unless it's of a life or death nature. Can aviation commanders live with this, or are we pushing safety too far?

CW4 Victor J. Petricka
180th Avn Co

Editor:

I am in the first stages of developing an interest into a proposed book. The subject is Operation LAM SON 719, the U.S./ARVN invasion of Laos in 1971. I would greatly appreciate if any readers who were connected with this operation would contact me as soon as possible so we can get together for an interview. The U.S. Army's participation included elements of the 101st Airborne, the 1st of the 5th Mechanized Infantry Division, and the Americal Division, and a host of smaller units; needless to say, the more people I can talk to who were there (regardless of their positions), the better.

As an introduction, I should say that I am not a veteran (I'm a young student). I am writing on this subject out of a concern for our much maligned and misunderstood Vietnam veterans. At this point, I've published several magazine articles on the subject; also, a book I wrote on the Battle of Hue City (based on interviews with Hue vets) is scheduled for publication by Presidio Press in the spring of 1984.

As I said, I would greatly appreciate hearing from any and all Laos veterans. Feel free to call or write anytime.

Thank you for publishing this letter in the *Digest*.

Keith William Nolan
(314) 961-7577
220 Kingsville Court
Webster Groves, MO 63119

1st Aviation Battalion 1st Infantry Division

Fort Riley, KS

THE 1ST AVIATION Battalion began its Army career in February 1957 when it was constituted, allotted to the Regular Army as the 1st Aviation Company and activated at Ft. Riley, KS, and assigned to the 1st Infantry Division. During this time, the company took part in many field training exercises there and overseas.

The 1st Aviation Company was redesignated in January 1964 as Headquarters and Headquarters Detachment, 1st Aviation Battalion and reorganized. Companies A and B were constituted and allotted to the Regular Army in October 1963 and also activated in January 1964 at Ft. Riley. In March 1965, Company A was reorganized as (Airmobile Light). Company A transferred on a permanent change of station from Ft. Riley on 11 April 1965, arriving in Vietnam on 1 May 1965. Company A was further assigned to the U.S. Army Support Command, Vietnam, on the same day. During 1965 the 1st Aviation Battalion was equipped with OH-23G Ravens, UH-1B Hueys and the OV-1 Mohawk.

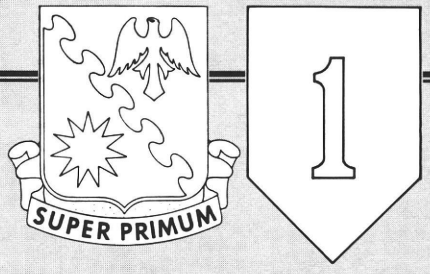
The battalion minus Company A departed Ft. Riley in early September 1965 on its way to Vietnam with the 1st Infantry Division. The battalion departed Oakland Army Terminal on 25 September 1965 aboard the *USNS Blatchford.* The aircraft for the battalion were shipped aboard the *USNS Core,* a converted escort aircraft carrier. The battalion arrived in Vung Tau harbor on 17 October 1965. Prior to departing for Vietnam, the battalion turned in its OH-23Gs and UH-1Bs for OH-13S Sioux and UH-1D helicopters.

The battalion moved to Bien Hoa when it arrived in Vietnam. Company A rejoined the battalion once it was in country. In February 1966 the battalion moved along with the division to Di An. Company A was equipped with UH-1Ds and UH-1B/Cs in the armed helicopter role. Company B was equipped with UH-1Ds, OH-13s and OV-1 Mohawks. The battalion moved again in October 1967, this time to Phu Loi.

In April 1969 Company A was redesignated from Airmobile to Assault Helicopter and Company B remained General Support. During the same period the battalion changed aircraft. The UH-1Ds were replaced by the new model UH-1Hs. Company B turned in its OH-13s for the OH-6A Cayuse and received six new AH-1G Cobra gunships.

During its stay in Vietnam, the 1st Aviation Battalion had the following units in support of the battalion and the division at one time or another: Company A (Airmobile), 82d Aviation Battalion, October 1965 to August 1966; 162d Aviation Company (Airmobile), March 1966 to August 1966; 173d Aviation Company (Airmobile), March 1966 to April 1970; Troop D (Air Cavalry), 1st Squadron, 4th Cavalry, October 1965 to February 1970; and finally Troop C (Air Cavalry), 16th Cavalry, March 1970 to April 1970.

The battalion returned to Ft. Riley and was inactivated on 15 April 1970 after almost 5 years in combat. It participated in 11 campaigns in Vietnam and was awarded three Meritorious Unit Commendations, the Republic of Vietnam Cross



Mr. Danny M. Johnson
Manpower Specialist
Office of the Assistant Chief of Staff
for Intelligence
Department of the Army

of Gallantry with Palm and also with the Republic of Vietnam Civil Action Honor Medal, First Class.

In early January 1972 the battalion was reactivated at Ft. Riley as the 1st Aviation Battalion (Provisional) and consisted of the 1st Aviation Company and two attached units, the 335th Assault Helicopter Company and the 82d Medical Detachment (Helicopter Ambulance). On 1 March 1981 the battalion was reorganized with organic units consisting of Headquarters and Headquarters Company, Company A (Provisional), Company C (formerly the 335th Assault Helicopter Company), Company D (formerly the 1st Aviation Company) and Company E (formerly Company G, 701st Maintenance Battalion).

The battalion was reorganized and activated as the 1st Aviation Battalion (Combat) on 2 September 1981 in the following manner: Headquarters and Headquarters Company, Company A (Attack Helicopter), Company C (Combat Support), Company D (General Support) and Company E (Transportation Aircraft Maintenance). The 82d Medical Detachment (Helicopter Ambulance) remains attached to the battalion. Company B was never reactivated and remains in an inactive status.

The 1st Aviation Battalion is a frequent participant in REFORGER (Return of Forces to Germany) exercises in Europe and also in the continental United States field training exercises. The battalion upholds its motto of "Super Primum" (Above the First).

Distinctive Unit Insignia for the 1st Aviation Battalion

The distinctive unit insignia for the 1st Aviation Battalion reinstated effective 1 September 1981 and amended to change the color of the shield was:

a. *Originally approved* for the 1st Aviation Battalion, 17 February 1964;

b. *Rescinded,* 8 July 1976.

The description and symbolism of the design are as follows:

DESCRIPTION

A silver color metal and enamel insignia 1 1/8 inches in height overall consisting of the shield and motto of the coat of arms.

SYMBOLISM

Ultramarine blue and golden orange are the color used for Aviation units. The alarion (an heraldic eagle without beak or talon) is symbolic of unarmed flight and further suggests the fixed wing variety of aircraft. The star, a symbol of achievement, also represents rotary-winged aircraft. The nebuly partition line is suggestive of clouds and sky and refers also to the role of the Pathfinder Detachment.

Shoulder Sleeve Insignia for the 1st Infantry Division

The shoulder sleeve insignia originally approved 31 October 1918 for the 1st Division and amended 31 March 1927 to include the background of the insignia in the design, is redesignated retroactive to 19 August 1942 for the 1st Infantry Division. The original approval is further amended to revise the description of the design. The insignia is now described as follows:

DESCRIPTION

On an olive drab shield 2 1/2 inches in width and 3 3/4 inches in height overall (the parallel sides 2 1/2 inches in length with a 90 degree angle pointed base) a red Arabic numeral "1" (1 3/4 inches in height overall).

The shoulder sleeve insignia will be worn as prescribed in AR 670-5. This authorization letter will become a permanent file of the organization in accordance with File No. 2-05, AR 340-2 or File No. 228-08, Organizational History files, AR 340-18-2, as applicable.

AVIATION PERSONNEL NOTES

Army Engineering Test Pilots

The November 1982 *Aviation Digest* contained an excellent article outlining the Army Aviation Engineering and Flight Testing Program. Here is some additional information by way of an update.

The program is a doorway to challenging assignments and unique opportunities in the aviation research and development area. The competition for selection is keen and the program itself is 13 months of rigorous academic and flight training.

Test Pilot Program Prerequisites. Active duty Army aviators in the grade of major and below may apply.

- Must hold pilot status code 1 and either specialty Code 15, 67J, 71 or military occupational specialty 100 series.
- Must be dual rated with a minimum of 1,000 hours military flight time.
- Must possess a current instrument certificate.
- Must be a competent swimmer.
- Must have completed college algebra, physics and calculus with above average grades.
- Experience in complex aircraft such as the CH-47 Chinook, UH-60 Black Hawk, AH-64 Apache or OV-1 Mohawk is highly desirable.

Selection and Training. Selection of Army aviators for participation in the program is made by an annual Military Personnel Center (MILPERCEN) Officer Personnel Management Directorate (OPMD) board. Board members are drawn from:

- U.S. Army Aviation Engineering Flight Activity (USAAEFA)
- U.S. Army Aviation Development Test Activity (USAADTA)
- U.S. Naval Test Pilot School (USNTPS)
- OPMD Combat Arms Division
- OPMD Combat Service Support Division
- OPMD Warrant Officer Division.

Only those applications of officers who are recommended by their respective career divisions are considered. Once selected, and prior to attending NTPS, officers are sent TDY (temporary duty) to the Army Test Pilot Orientation Course at USAAEFA, Edwards Air Force Base, CA. This 8-week course is designed to provide academic and flight refresher training. Academic subjects include college math through calculus, physics, aerodynamics, mechanic and technical report writing. Flight orientation includes high altitude environmental training, flight test techniques and familiarization in a number of aircraft used at NTPS. NTPS classes begin semiannually, in January and July. The Army's training quota is nine per year; however, the number of officers trained is a function of requirements. Upon completion of the NTPS, graduates are assigned to the U.S. Army Aviation Research and Development Command or USAADTA, Ft. Rucker, AL, as engineering test pilots.

Board Schedule. The next OPMD Engineering Test Pilot Selection Board will convene in February 1984. Department of the Army Circular 351-83, "Army Aviation Engineering Test Pilot Program," provides further general information as well as detailed application procedures. Those readers whose applications have been held for future boards must update their applications not later than 1 February 1984, the administrative cut-off date for new applications.

For more information contact Aviation Plans/Programs Branch, MILPERCEN (address below).

Aircraft Maintenance Officer Course (AMOC) Phase II

Numerous AMOC Phase II school quotas are still available in fiscal year 1984 (FY 84) in the OH-58 Kiowa, CH-47 Chinook and AH-1S Cobra aircraft. Maintenance personnel who have attended AMOC Phase I may request quotas by submitting a request to MILPERCEN (address below).

Gate Statistics

During FY 83, 87 percent of those eligible commissioned officers passed their 12-year gate while 98 percent of the eligible warrant officers passed theirs. For the 18-year gate, 59 percent of the commissioned officers and 94 percent of the warrant officers passed.

Aviation Pre-Command Course

The U.S. Army Aviation Center at Ft. Rucker, AL, conducts an aviation course designed specifically for those officers selected for command of an aviation unit. This course has been modified to better meet the needs of aviation commanders in the field by enhancing their aviation management abilities and making maximum use of available resources. This course will greatly assist all newly selected commanders. Senior commanders in the field are encouraged to send command designated officers and executive officers to this 2-week course. Quotas may be obtained by submitting a request to Commander, MILPERCEN, ATTN: DAPC-OPA-V, 200 Stovall Street, Alexandria, VA 22332; AUTOVON 221-8156/7/8, Commercial (202) 325-8156/7/8.

Unaided Night/Night Vision Goggles

Training for the Army National Guard

Captain James M. Sikes
Army Aviation Support Facility No. 1
North Carolina Army National Guard
Morrisville, NC

GLOSSARY

AFTP	additional flight training period
ANVIS	Aviation Night Vision Imaging System
AR	Army regulation
ARL	aviator readiness level
ATM	aircrew training manual
DES	Directorate of Evaluation and Standardization
EAATS	Eastern Army Aviation Training Site
FAC	flight activity code
FM	field manual
FORSCOM	Forces Command
FY	fiscal year
IP	instructor pilot
MOI	methods of instruction
NGB	National Guard Bureau
N	night
NOE	nap-of-the-earth
NVG	night vision goggles
POI	program of instruction
RDU	Raleigh Durham
SIP	standardization instructor pilot
SOP	standing operating procedures
TASC	Training and Audiovisual Support Center
TEC	training extension course
TOE	table of organization and equipment
USAAVNC	U.S. Army Aviation Center

THERE I WAS, a young captain (for a National Guard aviator that is anyone who is below the age of 40), full of fight and vinegar, ready to take on the night with pure fear and apprehension. I was saying to myself, "This is it—I am really going to buy the big one this time!" I left word with my wife to sell the farm and the kids. I also told her to be sure to invest the insurance money in Braniff Airways stock and don't sell it no matter what you hear. Holding a bachelor of science degree in economics and being an IP with more than 6,500 hours, I knew I was right on both counts. Wrong!

In 1980, our state was able to obtain some additional training money. Because training aviation units has always required a lot of assets, our state training manager turned to us and asked if there wasn't something constructive we could do about it. Our state Army Aviation officer, Colonel Bruce Guard (they named the National Guard after him, or so he tells everyone), immediately saw the opportunity to strike a blow to improve the North Carolina Army National Guard aviation combat effectiveness and increase pilot proficiency. Energetically, he set out finding a way to coerce me and a young major (he is under 45) to go to the U.S. Army Aviation Center at Ft. Rucker, AL, and attend the first half of the N/NVG course. Incidently, after much resistance, he gave up on the tactful approach and ordered us to go. His wisdom (that's what the silver haired foxes call it) prevailed and it turned out to be an outstanding training experience that the major and I enjoyed.

We completed the unaided night portion of the course on 19 August 1980 and returned to the state with the mission of establishing a viable night training course. Our initial attitude had been changed and we knew the value of this new tactic added to our bag of tricks. After analyzing our situation and overcoming the local training area problems, we started our first class in November 1980. The qualification plan was simplified by breaking it down into six phases. Each phase provided the state with an attainable goal (that's what we educated managers are supposed to do) that served as a tool to measure the success of our program. The phases developed are:

Phase I: Train full-time Guard instructor pilots in unaided night MOI.

Phase II: Qualify a nontechnician instructor pilot force to help sustain and support the unaided night program.

Phase III: Qualify the remaining aviators in the attack helicopter company and infantry brigade aviation section in techniques of unaided night flight.

Phase IV: Qualify the originally trained technician IP cadre at Ft. Rucker in NVG MOI.

Phase V: Qualify the nontechnician IP force at home station in the NVG MOI.

Phase VI: Qualify the remaining aviators in the attack helicopter company in NVG flight techniques.

So how did the master plan work? Here is our current status and plan for the future. As I said, Phase I was completed in August 1980. Phase II began in November 1980 and was completed in March 1981. To ensure the qualification training was meeting the Army standards, we sent one home trained technician IP, one nontechnician IP and one nontechnician SIP to Ft. Rucker to receive an end-of-course evaluation from the folks at DES. All the rides were meticulously administered (I did say they were given by DES instructors) and all the trained candidates passed. The major and I both received and passed an unaided night SIP ride at this time, which further strengthened our resolve that we had a good program. All in all, Phase II enabled our facility to train 13 IPs, including 2 from the South Carolina Army National Guard, 1 from New Hampshire and 1 from Vermont.

Now for our best accomplishment so far. Phase III was completed in May 1982. All FAC 1/ARL 1 aviators now hold the unaided night qualification rating. The only two remaining aviators left to train just recently returned to our state's aviation program and they are still undergoing refresher training in NOE and instrument qualification. At present, we have trained 48 aviators.

Maintaining the rating has also been easier than one would expect. The appropriate ATMs require that each aviator perform selected emergency tasks at night and unaided night training has provided us with the means to accomplish this. Many of our standardization evaluations are now given just before sundown and culminate with the aviators performing standard autorotations, hovering autorotations and low level autorotations in our unaided night training pattern. Through use of sound management practices, the unaided night program will elminate the need to fly extra hours to meet ATM requirements. Realizing that a more demanding task can be counted toward a less demanding task, all required low level autorotations, for example, can be done in the unaided night mode.

Our state again sent the original technicians back to Ft. Rucker to receive their NVG MOI rating in May 1981. Thus, Phase IV was completed and we have had the time to work out the other details on the balance of the NVG qualification. We foresee little problem in maintaining NVG currency after the initial qualification because of the NVG filters that have been provided.

We began Phase V by instructing the nontechnician IP force in September 1982. The nine instructors located in Raleigh, NC, were qualified by December 1982. As a point of interest, we believe that without the part-time IP force this program would not have been so successful nor could we sustain it. Our philosophy remains that *units* go to war, not aviation support facilities.

The final phase of instructing the balance of the attack helicopter unit in the use of NVG began in January 1983 and will be completed by 1 February 1984. This is the ultimate goal and it should increase the attack helicopter company's and infantry brigade's readiness in the event of mobilization. As mentioned before, by using the NVG filters, we should be able to easily sustain the training received and simultaneously reduce the demands for increased flight hours due to ATM requirements.

Like any new program, this one will bring on special problems that will test our decisionmaking ability. Each location must analyze its training area needs and requirements. The Raleigh facility is located at a busy airport with a control tower. We thought that this would be a major restriction, but as it turned out, we had fewer problems than another facility did in Salisbury, NC, which is located on an uncontrolled airfield. We had no noise abatement problem at RDU, but the Salisbury unit had to make plans to stop training at 2300 hours. The point is that in North Carolina we have both extremes of airfields, yet all the training area problems were overcome. If our commanders put their minds to it, and want to accomplish the training required, almost any problem can be overcome safely and effectively. From my experience, I have not seen an airfield that would prevent the unaided night training program from being initiated.

Aviator fatigue seems to be the one major obstacle to overcome. In the beginning we used only AFTPs to train our IP force. They were definitely affected by the long hours involved. The answer to this problem was provided by the National Guard Bureau. Upon request, funds were programed for our state and made

available for our use in February 1981. This opened the door for many of our aviators to obtain an absence from their full-time employer to complete the required training. NGB aviation has worked on obtaining additional money resources for FY84 to provide for the added ATM requirements which may help you when you develop your NVG program.

Extra maintenance, due to the increased emergency procedure training, was another area of concern. We found, however, that it did not add greatly to the unscheduled maintenance load. In fact, it assisted our maintenance officer in the planning process. Each hour flown in the night training program was creditd to the aviator's minimums which meant the planned flight hour program could be flown. As an added benefit, the maintenance officer could schedule an aircraft to perform training and support missions during the day and then use the same aircraft that night. More productive time and use was obtained from each aircraft's daily inspection. From 4 to 6 hours a day per aircraft committed was commonplace. The only major increase in maintenance seemed to be that after 8 hours of unaided night training, the aircraft's skid shoes needed to be rebuilt as all our emergency landings were to a hardstand surface.

What about the ground school? N/NVG TEC 5800 series, which replaces N/NVG Exportable Training Package, first quarter FY 84, is designed to provide units and institutions with exportable, performance oriented training packages. This series of TEC lessons provides the aviators immediate access to high quality, self-paced, multimedia instruction especially designed to assist them in acquiring and maintaining skills critical to their N/NVG on-the-job performance. Each of the N/NVG TEC lessons is individually packaged for use by an individual or small groups. The use of these TEC lessons will support and supplement the unit IPs and will relieve them of responsibility for preparing and presenting classroom conference instruction. Lessons that are available through the unit TEC library are listed in the accompanying figure.

What should you use as a basis to develop a good unaided night/NVG SOP? Besides the current ARs and ATMs, chapter 6 of FM 1-51, FORSCOM 350-3 and USAAVNC Pamphlet 91-15 are excellent sources of direction. These documents coupled with your command guidance should provide an outstanding base for a sound SOP.

The next question you may be thinking about is what do you use as a training syllabus in developing a good program? In each exportable package, you will receive

EXTENSION COURSE LESSONS

LESSON NUMBER*	LESSON TITLE
1. 902-011-5810A	Parts and Function of the Eye
2. 902-011-5811A	Types of Vision and the Visual Properties of Various Colors
3. 902-011-5812A	Night Vision: How to Achieve and Protect It
4. 902-011-5813F	The Night Scanning Pattern
5. 902-011-5814F	Distance Estimation and Depth Perception at Night
6. 902-011-5815A	Install/Remove Daylight Training Filters
7. 902-011-5816A	Clean the Daylight Training Filters
8. 902-011-5817A	Characteristics of the Daylight Training Filter and When to Use It
9. 902-011-5818F	Visual Illusions, Part I
10. 902-011-5819F	Visual Illusions, Part II
11. 902-011-5821F	Using Tactical Field Lighting Systems
12. 902-011-5825F	Define Terms Associated with Hemispherical Illumination
13. 902-011-5826A	Ambient Light
14. 902-011-5827F	Safety Limitations for N/NVG Flight
15. 902-011-5832A	Compute the Time of Sunrise and Sunset in LMT and LST
16. 902-011-5833A	Compute the Duration of Morning and Evening Civil Nautical Astronomical Twilights and the BMAT and EMAT Times in LMT and LST
17. 902-011-5834A	Compute the Times of Moonrise and Moonset in LMT and LST
18. 902-011-5842A	Determine and Record Night Hours of Lunar Illumination in GHA and DEC
19. 902-011-5843A	Compute the Lunar Altitude and Percentage of Lunar Illuminated
20. 902-011-5844A	Construct a Light Level Calendar
21. 902-011-5845F	Aircrew Duties N/NVG
22. 902-011-5846A	Aircrew Emergency Procedures N/NVG
23. 902-011-5847F	Aviator's Night Vision Imaging System AN/AVS-6 (Part I)
24. 902-011-5848F	Aviator's Night Vision Imaging System AN/AVS-6 (Part II)
25. 902-011-5851F	Night/Night Vision Goggles (N/NVG) Mission Planning Considerations
26. 902-011-5852F	Night/Night Vision Goggles (N/NVG) Night Terrain Analysis

*A—designates printed text lesson
F—designates audiovisual lesson

a Commander's Guide and Instructor Pilot/Operations Guide to assist in the conduct of night training and the use of TEC lessons. If your NVG Training Center does not have this package and requires it for training the assigned aviators, you can order this package through Defense Audiovisual Agency, Distribution and Depository Activity, Tobyhanna, PA 18466.

What about unaided night training for the OH-58A Kiowa and OH-6 Cayuse aviation crews? This is a tough one. We are still seeking a solution to this problem. All of our initial training was done in the UH-1H Huey or UH-1M aircraft with the scouts and observer pilots getting a 1-hour checkout in the observation aircraft after they are qualifed in the UH-1. Two of our unaided night UH-1 instructors received OH-58A training from DES evaluators during our last Aviation Resource Management Survey, and they have managed to expand upon that training by taking the scouts out on nights when moon illumination is greater than 50 percent. At present, we would recommend that the training be conducted in observation helicopters only by a graduate of the Observation N/NVG course.

Again, NGB has come to our rescue. During FY 84 they have programed OH-58 IP NVG courses at the EAATS at Ft. Indiantown Gap, PA. Those of you that have the Kiowa assigned to your states now have a means to obtain qualified NVG IPs.

What about those states that have an NVG training requirement but don't have the goggles assets to support it? NGB is now addressing this problem. One temporary solution may be implemented as soon as the second quarter of FY 84. The plan calls for partial reallocation from those states with 100 percent of the authorized NVG devices to states that do not have any. This plan would mean that each state that needs to train will have about 25 percent of its goggles to sustain their NVG qualification programs. As additional AN/PVS-5s or ANVIS devices are procured into the inventory, the authorized TOE requirements will be filled.

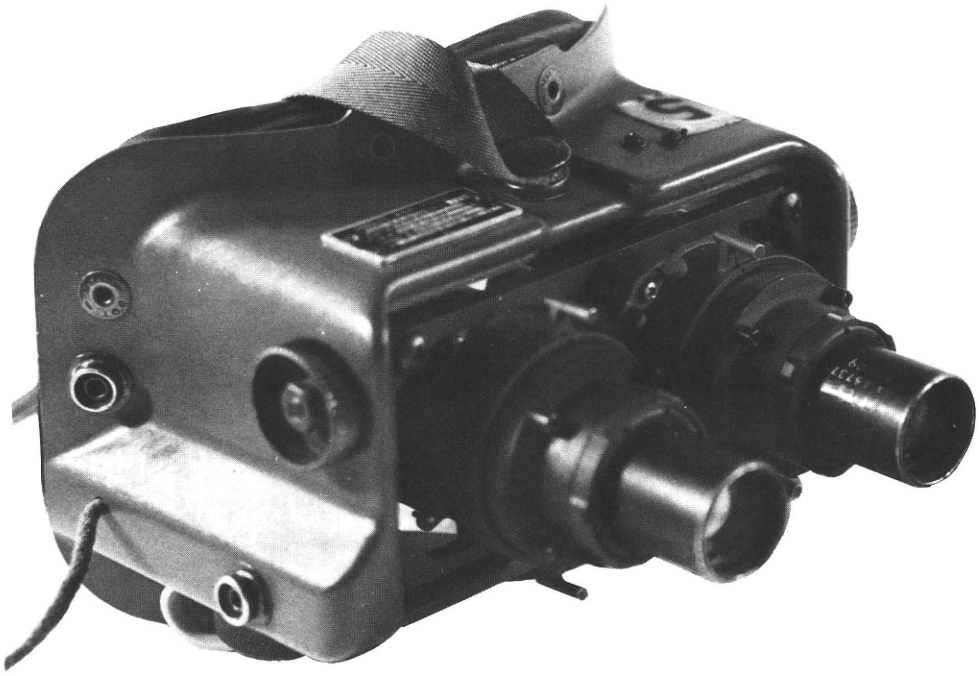
What besides the added tactical skills is the advantage in becoming N/NVG rated? I always seemed to draw the one copilot in the unit that was even more scared of night flying than I was. You know the kind of sadistic guy I'm talking about. He is the one that always says quickly, about 15 minutes into a 1 hour and 30 minute flight, in a voice two octaves above normal, "What's that noise?" which automatically brings on an even quicker comeback in your voice, five octaves above normal, "What noise?" So the rest of the flight you fly at the edge of the seat, holding the cyclic so tight that you leave your fingerprints in it. You spend most of the time making deals with God and promising yourself that you will never fly with this dude again. I must admit that N/NVG training has helped me to overcome that unnecessary worry and also helped me to concentrate on the real problems that can occur.

In conclusion, N/NVG can be flown safely and should be done as soon as possible by all reserve units that have been directed to do so by FORSCOM. If us country boys in North Carolina can do it, anyone can. Those aviators that we had to drag kicking and screaming to the cockpit found out that it was interesting and worthwhile training. There always seems to be a fear of the unknown, and a lack of understanding of the N/NVG method of flight has generated undue concern. N/NVG training has done a lot to eliminate our fear of flying at night. Not only do the aviators learn more about themselves, but this training has also helped them to recognize and overcome the hazards inherent in night flying. The aviators that had apprehension about the unaided night training program have, without exception, expressed that it was not as bad as their imaginations had led them to believe. They were pleased with themselves to have gone through the night training.

We, as Army aviators, won't have the opportunity to learn from the aircraft commanders who sit in the left seat (or behind you as in some aircraft) before commanding an aircraft in the next battle. If we are to provide a viable combat force to the ground commander—*day and night*—we must prepare ourselves now. Experience should be the lamp that lights our way (pun is intended) on tomorrow's battlefield.

ABOUT THE AUTHOR

Captain James M. Sikes, a Master Army Aviator, is currently the operations officer for Army Aviation Support Facility #1, North Carolina Army National Guard. He also is a scout/attack team platoon leader for Company D, 28th Aviation Battalion (Attack Helicopter). CPT Sikes graduated from WORWAC in 1968 and served in Vietnam between November 1968 and June 1970. He is a graduate of UH-1 IP Course Phase I and II, AMOC Phase I and II, RWIFE, U.S. Army Safety Officer Course, N/NVG MOI Course and is currently attending C&GS. CPT Sikes has logged 6,800 hours in rotary wing aircraft of which more than 5,000 hours have been as an instructor pilot.



The Care and Feeding of NIGHT VISION GOGGLES

Captain (P) Jeffrey R. Murray
Commander, UH-60 Branch
Department of Flight Training
U.S. Army Aviation Center
Fort Rucker, AL

If you want to be able to train with NVG, you must first learn how to maintain them.

NIGHT VISION GOGGLES (NVG) training is here to stay. Everybody has heard the old saw about the first battle of the next war and how we must be ready from the get-go or we'll be got-gone. Well it's true. And night operations are where it's at. If you've every participated in any type of ARTEP (Army Training and Evaluation Program), be it Aviation, Armor, Infantry or whatever, you know the confusion that reigns supreme during night operations. However, the more you practice at night the less complex it seems, and so it goes with NVG. They aren't that difficult to fly with, but I would sure hate to teach myself how to use them during the first battle of the next war.

If you want to be able to train with NVG, you must first learn how to maintain them, and that requires command influence. Another old saw, that a unit only does well that which the commander checks, holds true for NVG. If there is something drier than logging goggles tube time in a goggles tube time book, I sure don't want to do it. But it is imperative that the commanders find someone to take their NVG programs in hand and keep them straight. I'm not talking about training, I'm talking about maintaining. It's a boring job, but it is not time-consuming. It has little visibility until goggles are needed, then everybody remembers who was supposed to be in charge. And if you're not the unit instructor pilot or maintenance officer, and you want the "old man" to notice you, volunteer to be the NVG officer, annotate it on the bottom of your officer evaluation report support form and follow some or all of the suggestions below to get your NVG program off the ground.

You've Got The Job

The first step the newly assigned NVG officer should perform is a 100 percent inventory. Open the case and record the serial number of the goggles and each tube. Ensure everything that belongs inside the case is, in fact, there. Pages 3, 47 and 48 of the "Night Vision Goggles Operators' Manual," TM 11-5855-238-10, will show you what you should have. Take everything that is not normally used on a daily (nightly?) basis and remove it, tag it and store it so it won't get lost. Examples of such items are the headstrap assembly, socket head key and arctic adapter. Sign the DA Form 2062 and take the rest of the day off. At about $5,000 apiece, you have signed for items worth a bunch of money, but the old man should already be starting to like you a little bit more because the accountability monkey is off of his back.

A daily inventory is essential. Not a 100 percent inventory, but simply an accountability check. Make up a little card like the first sergeant carries that keeps track of all the troops, only title it NVG. List the number of NVG assigned, the number in maintenance and the number operational. Give a copy to the old man. Might as well let him know you're interested, right? Besides if someone absconded with $5,000 worth of your NVG, wouldn't you want to know right away?

Then make yourself some night vision goggles timesheets similar to the ones in the accompanying figure. Record all the appropriate serial numbers in the appropriate spaces. Keep a sheet for each set of goggles you have assigned. Then start logging time on each individual tube. Do not let aviators turn their NVG back in without recording the time flown with them. Individual tube time is important because support maintenance will replace bad tubes and return the same set of NVG back to you. Bad tubes do not necessarily mean the goggles are no good, they are usually turned over to ground units for further use. Goggles that are not suitable for flying are usually perfect for a jeep driver.

Next, procure some more DA Form 2062s and overprint them with NVG information to simplify the individual aviator sign-out process. Place a number on the NVG case and the faceplate for ease in identification. Ensure that the pilots know what they are signing for in addition to plain old goggles, such as side and vee straps, lens caps and demisting shields.

Now you're beginning to get a handle on your goggles, but what about your batteries? If you can procure a refrigerator you will help keep them in better shape, plus you can clandestinely store all the assorted fruit juices aviators are famous for consuming. The BA-1567/U batteries contain mercury and must be carefully handled. Make sure the outer case rotates freely, it is not bulged out and that it has not accumulated more than 12 hours of use. (NOTE: The Aviation Center uses the BA-1567/U battery a shorter time (about 10 hours) for safety reasons.)

Obtain some white correction tape from the local secretarial pool and affix a strip on each battery as soon as it is taken out of the wrapper. Record the operational time in a cumulative manner on the tape, and turn the battery in to your property disposal officer if you have no use for it after its time exceeds 12 hours. High time batteries are good for use in the SFTS (Synthetic Flight Training Simulator—a 1.5-hour flight is required by the aircrew training manual prior to NVG qualification) or for use by passengers orienting in the rear of your aircraft. The time to find out your battery is no good is before you get in the aircraft.

Now that you've gotten the accountability under control you need to set up a maintenance program. If support maintenance has a test set (TS-3895) get them to teach you to use it. It is designed strictly to test the AN/PVS-5 and AN/AVS-6 series NVG. Each set can be tested for clarity in both high and low light level tests, and inoperable or honeycombed tubes can be identified. Turn in to support maintenance those NVG that do not measure up. Keep track of the down time on your goggles timesheet.

DAILY OPERATION LOG FOR NIGHT VISION GOGGLE

CASE NUMBER 7

SERIAL NUMBER 904C

TUBE SERIAL NUMBERS (L) ~~44075A~~/77644Q REPL. 19JAN83 (R) 18336F

DATE	HOURS USED	CUMULATIVE HOURS USED (L)	CUMULATIVE HOURS USED (R)	REMARKS	DATE	HOURS USED	CUMULATIVE HOURS USED (L)	CUMULATIVE HOURS USED (R)	REMARKS
3-7JAN83	6.2	6.2	6.2						
10-14JAN83	4.1	10.3	10.3	IN MAINT 14JAN83 LEFT TUBE DIM					
19-21JAN83	5.0	5.0	15.3	OUT MAINT 19JAN83 LEFT TUBE REPLACED					
24-28JAN83	7.4	12.4	22.7						

USAAVNC DOTD-DOFT FM 431, 1 SEP81

Aviator Ground Rules

OK, the old man knows who you are now and thinks you're doing a bang-up job. But you'll soon be back on his bottom-of-the-manure-pile list if your now visible operational readiness rate shows a decline. Nothing like publicizing your shortcomings. So educate your aviators. Hold a short class and post a list of *dos* and *don'ts*. Here is a list to help you out:

Do keep the NVG in the carrying case until ready to use. When you take them out of the case and you leave the aircraft, *do not* let them sit around unprotected. Remember, it is dark outside and any passengers or support personnel who may be in/on your aircraft do not know goggles from binoculars and the chances of an unsecured set of goggles getting inadvertently kicked out of the aircraft by a curious, unsuspecting nonpilot increases exponentially as the square of decreasing light.

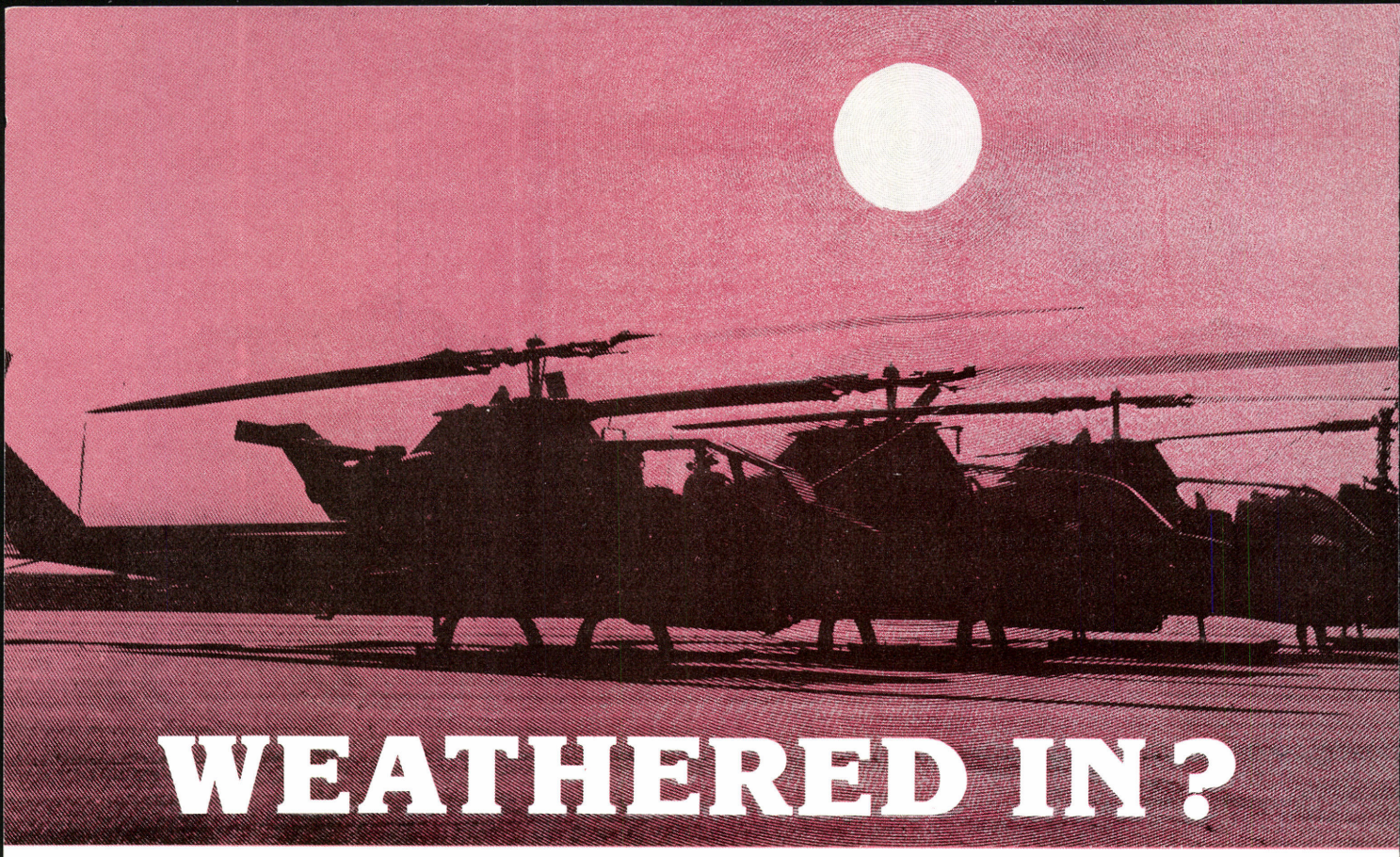
When testing NVG prior to use, *do* keep the objective lens cap covers in place. The pinholes will allow adequate light for testing and the excess light will not harm (i.e., honeycomb) the tubes.

Don't let the lens bounce off the seatbelt. Twist the neck strap one-half turn to raise the NVG off the belt and secure the objective lens cap when the NVG are not in use. When the lenses strike metal, pitting results, and excessive pitting makes them hard to see through.

Do mark your batteries with cumulative time and store them in a cool location, preferably a refrigerator. *Don't* throw away old batteries; turn them into the property disposal officer for proper disposal and mercury reclamation.

Do ensure your aviation life support equipment noncommissioned officer checks the goggles for general condition and accountability as they are turned in after use. *Don't* let him accept a box and assume it has goggles inside.

OK, so now take stock of what you've done. The company NVG system is under control. Your old man knows who you are and how you do things. He has a goggles program he can call his own and probably take the credit for. But you know you set the program straight, and you can take pride in doing something productive for your unit, besides flying. Your fellow pilots are trained in all NVG operations, not just the flying portion, and the NVG availability rate is higher than the aircraft availability rate. You are one of the main reasons your unit flies Above the Best.



WEATHERED IN?

Captain Reid J. Trummel
Executive Officer
D Company (Attack Helicopter)
7th Combat Aviation Battalion
Fort Ord, CA

IT IS 1500 HOURS on our third day at El Paso (TX) International, and it looks like we might as well forget going anywhere again today. We have been weathered in here for 3 days now, and although it has been somewhat frustrating, it has not been difficult—thanks to the thorough professionalism of the crews. Besides, we're getting in a lot of card playing, and there are worse places to be weathered in. We are three AH-1 Cobra aircrews en route from the Corpus Christi Army Depot to our home base at Ft. Ord, CA. We've been away from home for a total of 12 days now, but "get-home-itis" hasn't clouded judgment yet.

As we gather up our equipment and prepare to head back to the motel, I notice a Marine Corps UH-1 has now joined our Cobras on the "military ramp." These past 3 days we've watched a lot of aircraft come and go: Air Force T-38s, Navy T-28 primary trainers out of Corpus Christi, Marine Corps F-4s and a UH-1, one of those big Coast Guard helicopters with the pontoon landing gear, and all types of commercial and private aircraft from Boeing 747s to Cessna 150s.

So what type of weather allows all the other services and civilians to come and go, but grounds the Army? It is not the ceiling or visibility. On the contrary, the sky is clear and the visibility unlimited. There is, however, a SIGMET in effect that calls for "moderate, occasional severe turbulence," and until it is lifted we aren't going anywhere. A SIGMET is defined as an "unscheduled forecast," and the Army aviator's "bible," AR 95-1, states in paragraph 4-2, "Aircraft will not be intentionally flown into known or forecast severe turbulent conditions." So here we sit.

How has this condition come about? Turbulence is different from the weather conditions we normally associate with grounding of aircraft: low ceiling and visibility. Ceiling and visibility are precisely measurable conditions, but turbulence does not lend itself to such objective quantification. Indeed, there is probably no element of a weather forecast more subjective than the turbulence forecast.

Turbulence forecasts are based on the forecasting guide in the "Weather Service Operations Manual," chapter D-22, and on the judgment of the forecaster. The forecasting guide lists six criteria for

predicting the intensity of the turbulence forecast:

- derived gust velocity
- incremental vertical acceleration
- vertical wind shear
- convective clouds
- surface winds
- mountain wave.

At first glance this appears to be pretty scientific, but inspection of the footnotes to the table reveals the following caveats: "only a rough approximation," "these values are for guidance only and do not indicate precise limits," "turbulence of these specified intensities is not always present," "may be present in some portion," "depends on terrain roughness," "may be found" and "may interact to produce variations in turbulence." This is not an indictment of the National Weather Service's efforts in putting the forecasting guide together, but rather serves to illustrate that even the experts really don't know precisely when, where and in what intensity turbulence will occur.

Even the criteria used to report the intensity of actual turbulence are highly subjective. Turbulence reporting criteria are found in the "Flight Information Handbook," the "Airman's Information Manual" and the "Weather Service Operations Manual." For the purpose of this discussion there are two noteworthy features of the criteria. First, because it is so subjective, what may be one aviator's "intermittent moderate" may be another's "occasional severe," and second, severe turbulence is not defined as having the potential to cause structural damage to the aircraft. That only becomes a possibility, and a possibility only, when turbulence is classified as "extreme."

But aside from the vagaries of forecasting and reporting turbulence, the critical question is that of the safety of crews and aircraft. How many lives has turbulence claimed, and how many aircraft have been damaged or destroyed? In August 1981, the National Transportation Safety Board published report number NTSB-AAS-81-1, Special Study—Review of Rotorcraft Accidents, 1977-1979. Bearing in mind that civilians are not prohibited by Federal Aviation Regulations from operating in known or forecast severe turbulence, we find that of the 890 civilian rotorcraft accidents reported during the 3-year period, none was cited as being caused by turbulence. Additionally, in only four, or less than 1/2 of 1 percent, was turbulence cited as a contributing factor. In contrast, collisions with birds were more significant as a cause of rotorcraft accidents.

Turbulence, as a cause or contributing factor in rotorcraft accidents, is similarly insignificant in U.S. Army helicopter operations. Over the period 1 October 1980 to 30 April 1983 (the most recent data available as of this writing), the U.S. Army Safety Center classified 336 rotary wing mishaps as weather related. From my review of these mishaps, I found a total of only 14 that could be cited as caused by turbulence. Of those 14, all were Class E mishaps (no deaths or injuries, and damage less than $300), and 7 were "precautionary landings," some of which were made solely for the purpose of complying with the regulation prohibiting flight into known or forecast severe turbulent conditions. The other seven mishaps (barely 2 percent of weather related mishaps) were all overtorques, the cause of which could easily be blamed on pilot error rather than on an actual need for more power than that which was available. In any case, in all seven turbulence related overtorques, the aircraft were inspected, found to have no damage and returned to service.

Every Air Force, Navy, Marine Corps and Coast Guard crew that passes through here tells us that the actual turbulence is only light, or occasionally moderate, and I am convinced that it is safe for us to go, but we don't have the leeway that the other services have on this subject. The regulation is clear; the more severe of the two, either *forecast* or *actual* conditions, takes precedence.

I propose changing paragraph 4-2c(2), AR 95-1, to read, "Aircraft will not be intentionally flown into known or forecast extreme turbulent conditions." Turbulence is not killing or injuring flight crews, civilian or military, and it is not damaging our equipment, but until I am allowed to use my professional judgment, to exercise my authority and responsibility as airmission commander on this issue, we will have to wait for the forecast to change.

Editor's note: The Directorate of Evaluation and Standardization at the U.S. Army Aviation Center, Ft. Rucker, AL, advises that the new Change 1, AR 95-1 changes paragraph 4-2c(2) of the regulation only prohibiting flight into known or forecast extreme turbulence or into known severe turbulence. Also, major Army commands will establish policies to permit flights into forecast severe turbulence in designated training areas.

MONTHLY WRITING AWARD

FOR IPs ONLY

If you aren't "Above The Best," then no one is!

CW3 Dennis E. Dura
Ohio Army National Guard
Columbus, OH

WATCHING THE fourth film in the Army's series on the loss of tail rotor effectiveness got me to looking around the room at my fellow aviators viewing the same film. I started to wonder just how much of this film was sinking into their aviation consciousness.

A fellow once told me that when you make a presentation only 20 percent of your audience is listening to you, another 20 percent is sleeping and the last 60 percent is having sexual fantasies. With that in mind, I conducted what the old "Flight Instructor Handbook" calls "a guided discussion" with all the pilots after the film. There turned out to be a lot of discussion and we actually found that a few of our friends had experienced loss of tail rotor effectiveness. We all got the benefit of their experience and obvious successful recovery procedure.

After everyone had left, I started to think about how much more we had learned by having the discussion instead of just viewing the series of films. This led me to think back over my more than 20 years of flying in an attempt to recall what had really taught or influenced me in my flying. The answer was not awe-inspiring, but interesting enough.

It wasn't my past commanders, nor the more conscientious or imaginative safety officers I've known.

Nor was it all the voluminous amounts of aviation literature I try to read and mentally digest every year. But the one element that affected me the most at the beginning of my aviation career and up until now has been my instructor pilots (IPs). I can still remember my primary instructor and all the rest who did everything they could to mold me into an aviator. A little bit of each of them lives on in the way I fly. Each of them imparted to me a small part of their flying technique that I, in turn, manifest as my own.

As IPs, we make Army Aviation happen. All the regulations and procedures written cannot produce an aviator—only the IP working day in and day out with the fledgling aviator. All the safety slogans and educational material cannot affect an aviator the way an IP can. If the unit IP doesn't preflight using the checklist, guess who else doesn't. If the unit instrument flight examiner (IFE) is sloppy in radio procedures, guess who else is going to be. As IPs, we directly and intimately affect the lives of our aviators and the mission of Army Aviation. If you think I am exaggerating, sit back for a moment now and think about your flying career and that IP who cared enough to help you become "Above the Best."

Since I have written this much, I might as well stick my neck out further and discuss three personal views of what IPs should be. They should be *friends, teachers* and *evaluators.*

IPs should get to know their students or the aviators in their unit. They should know enough about them so that they can select the proper approach to their training. The "Instructor Pilot's Handbook" gives you plenty of principles and guidelines, but you have to use your heart sometimes, not just your brain. You have to be a *friend.* As the IP, unit aviators should be able to sit down with you and discuss in confidence without any form of ridicule or repercussion any mistakes they've made while flying. Now, you may feel some kind of refresher training may be warranted based upon the circumstances, but a good relationship should be maintained between you and your aviators. If IPs find that fellow aviators avoid them, and it's not due to the type of deodorant they use, then their effectiveness is lessened and the training/safety programs suffer. It is almost impossible to like everyone you instruct, but at the very least you can maintain a professional friendliness to those who "rub you the wrong way."

If we teach someone how to pass a checkride and not how to fly, then we have fallen short in our obligation as IPs.

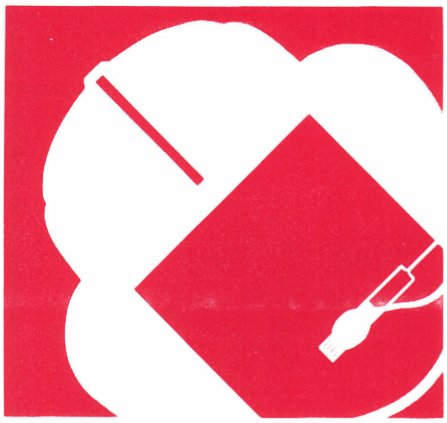
Which leads to the second facet of being a good IP—being a good *teacher.* A teacher is one who can cause a change in someone. Whether that change is mental or in the application of a skill, it requires preparation, the correct presentation and assistance on the part of the IP as a teacher. The IPs' knowledge has to have some depth to it. They can't afford to know a subject by memory only. They have to be able to present different aspects of a subject in order to give the student a complete view. Official presentations of a maneuver or a procedure have developed over the years and are good for standardization; but within the realm of good sense and safety, IPs should be able to present to students the "why"as well as the "how." If we teach someone how to pass a checkride and not how to fly, then we have fallen short in our obligation as IPs.

Maintaining the proficiency and the knowledge to be an effective IP is not easy. Who said that it would be? All those extra duties and service missions tend to erode even the best of intentions. You have to learn to manage your time. Even if it turns out to be a flexible schedule, set aside time every week for review and study of new literature concerning your aircraft and aviation-related material. Pick an area of aviation you really like; i.e., aerodynamics, aeromedical factors, regulations, tactics, night vision goggles, etc., and become an expert in it. If you don't continue to challenge yourself, you'll become stagnant and regress.

All of us tend to suffer "burn out" at various times in our career. Sometimes we do need a career change, but many times it is just one of those "downs" we experience through life. One way I regain a positive attitude about my calling in life is to focus on all the aviators I have worked with throughout my career. I think of the positive effect I have had on their flying. I also think about the times I didn't fulfill my obligations as an IP and resolve to do better the next similar circumstances occur. During those times you experience a "career down," you should think about whatever generates a positive attitude within you.

In my opinion, the third major facet of being an IP is being an *evaluator* who evaluates pilots the same way he or she would want to be evaluated. *Nobody* likes to be evaluated. The evaluator in us should know what is essential to know and what is trivia; don't get hung up on the nonessential items. The evaluation should measure the aviator's performance against the standards under realistic conditions and not under contrived circumstances that would normally require the declaration of an emergency. We should never confuse evaluation with training. A situation that would have training value may not have an objective standard against which to measure the aviator.

You have to be careful of evaluating pilots against the rigid guidelines developed in a school environment. Years ago, as a newly ordained IFE, I almost failed one of our Master Army Aviators on his oral because he couldn't give me the exact answers to my questions. A short time later, that Master Army Aviator, while running operations, stopped one of our new aviators (who knew all the right answers) from going out into weather that would have scared the angels. That little experience taught me tact and another view on the subject of evaluations.



As an evaluator, you have the obligation to try to evaluate the aviator as closely as possible to his normal mode of operation. If you present yourself as an examiner who has never passed anyone, and then proceed to nitpick away the aviator's self-respect, that aviator *will* fail the evaluation and you will have failed also—as an evaluator.

What about giving a checkride to the senior staff officer who flies occasionally compared to the operational aviator? In all honesty, no double standard is needed, just the minimum standard. If any aviator doesn't meet at least the minimum standard, then you are paid to put a "U" on DD Form 4507.

What about evaluating friends? If they are good friends, then it will be an easy evaluation because they will be at ease and you'll get a chance to see them at their best. On the other hand, if they turn out to be unsafe, you'd better give them a U because good friends are hard to find and you probably will want to keep them around for a long time.

One final note on evaluations, don't ever discuss a person's performance in public. On occasion, you may have to discuss the results of a ride with another IP or the commander, but never expose an individual to possible ridicule by peers. In the long run, you will be the loser since the other aviators would lose their confidence in you.

Recently there have been a lot of statistics published about how many accidents have occurred with IPs onboard. One "tongue in cheek" solution mentioned was to get rid of all the IPs and cut the accident rate by 50 percent. People who entertain comments like that have no understanding or appreciation for the *high-risk* business we are in. No one can ever estimate how many times an IP has recovered an aircraft from a critical situation and turned right around and let the aviator "try" the maneuver again! Or the times an IFE has talked an aviator out of vertigo in IMC (instrument meterological conditions) in order that the aviator could gain confidence in his abilities.

As an IP, if you ever get tired, or complacency starts to creep into your attitude, remember that you are one of the *guardians of flight*. We pass on and maintain the *heritage of flight* begun by Wilber and Orville Wright. Remember, if you aren't "Above the Best," then no one is!

IP CHECKLIST

AM I PREPARED?
AM I ALERT?
AM I A GOOD EXAMPLE?

ABOUT THE AUTHOR

The author has been a military IP since 1967 and a National Guard Technician since 1974. He was awarded the 1980 Federal Aviation Administration Great Lakes Region Flight Instructor of the Year Award.

U.S. Army Communications Command
ATC ACTION LINE

Let's All Do The Twist

Mr. Kenneth S. Arnold
U.S. Army Air Traffic Control Activity
Aeronautical Services Office
Cameron Station, Alexandria, VA

PILOTS MUST LEARN to train themselves to use *head and body movements as well as eye movements* in a planned scanning pattern to overcome the limitations on target detection!" This is a statement issued by the National Transportation Safety Board after investigating a midair collision which occurred between two general aviation aircraft in November 1982.

It was determined that these two aircraft collided because each pilot "failed to exercise adequate vigilance to detect and avoid" the other aircraft. The Board's visibility study showed that each aircraft should have been visible to the pilot of the other for about 45 seconds, although the vision of one pilot might have been restricted by the windshield center post. The other pilot's vision could have been restricted so that he would have been able to see the other with only one eye until 15 seconds before impact. If these pilots had heeded Chubby Checkers' now famous words, "Let's all do the twist," they might be alive today!

This accident investigation also turned up some additional facts that have been previously addressed in ATC Action Line. Contributing factors in this accident were (1) the failure of one of the pilots to keep clear of terminal control area airspace or to ask controllers for traffic advisories, and (2) the failure of the controller who had the other aircraft on his radar scope to observe the potential traffic conflict and to alert its pilot.

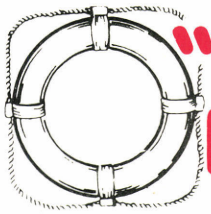
The two aircraft collided in clear weather just inside the TCA at an altitude of 2,000 feet, 200 feet above the floor of the TCA. Both aircraft were VFR. One aircraft had been identified on radar and its pilot was being vectored for a practice approach to a local airport. This aircraft was equipped with an altitude-encoding transponder. The other pilot had not made radio contact with any ATC facility. He was required to ask ATC for permission to enter the TCA, and he also needed special permission to enter it without on-board altitude-encoding transponder. His aircraft had a transponder without altitude-encoding capability.

In analyzing these facts surrounding this accident, two obvious conclusions surface:

- The outer edges of a TCA must be viewed with great caution. This is where intermingling of controlled and uncontrolled traffic is most likely to occur. Pilots should not rely on controllers to provide advisories. Many primary radar returns from light aircraft do not display at all or paint only faintly, on the controller's radar scope. Also, all pilots must realize that radar service has its limitations in that the controller may not be able to issue traffic advisories concerning aircraft which are not under air traffic control and cannot be seen on radar. Furthermore, he may be occupied with higher priority duties which prevent issuance of advisory messages concerning aircraft not normally participating in the ATC system. If VFR aircraft are not equipped with altitude reporting transponders, the controller would be wasting his valuable time reporting aircraft that could be at altitudes far removed from a known aircraft's flight path.
- Separation of VFR traffic can be best accomplished by pilots who recognize that outside scanning must be an aggressive procedure. Self-discipline is the only answer to this requirement. The will to perform proper scanning procedures should be directly proportional to the will to live.

Readers are encouraged to address matters concerning air traffic control to:
Director, USAATCA Aeronautical Services Office, Cameron Station, Alexandria, VA 22314

☆ U.S. GOVERNMENT PRINTING OFFICE: 1983—646-031/108



"LIFE LINES"

Has the *Aviation Digest* ever helped you prevent an accident? Do you know of anyone who has had an accident averted because of information found in the *Digest?* From time to time we receive letters from readers who have recalled something they have read and were able to prevent a serious accident. The following is just such a case.

I CAN RECALL several articles in the *Aviation Digest* which have had an impact on my mental disposition relating to piloting aircraft. It is extremely difficult to say that this knowledge may not have averted an accident because all knowledge associated with flying helps to avert accidents. However, I can relate some particular incidents in which *Aviation Digest* articles were paramount in my thinking.

I was copilot on a troop lift, flying the UH-1H Huey, in which the airmission commander elected to make a downwind approach. I was chalk three in a four ship formation and during the entire approach sequence I reflected on what the article said about settling with power. At about 200 feet above ground level and in contrast to all my efforts to maintain my stack up on chalk three, my helicopter was sucked into the downwash of chalks one and two and because of my power setting the helicopter was almost immediately settling with power. I reduced collective slightly and flew to the right of the formation regaining positive control at about 5 feet. Chalk two experienced a hard landing. The conditions were definitely against downwind landing.

At another time I was flying IMC (instrument meterological conditions) and had never experienced vertigo in more than 7 years of flying. Considering myself somewhat experienced I did not feel uncomfortable flying with an inexperienced copilot. After a very tiring morning and into the third hour of instrument flight time, we were attempting a right turn to intercept a feeder route to our initial approach fix when my copilot began to experience vertigo. I took control and the conditions were that the afternoon sun made extreme light level changes as we went through the clouds. Conditions went from startling bright white to darkness requiring instrument lights in a matter of seconds. Imbedded thunderstorms caused me to make large crab angles as much as 45 degrees off heading. Then I got a sinking feeling. The helicopter was losing altitude rapidly and began a right turn. By this time the copilot was totally out for the count. I made three quick cross-checks and realized that the attitude indicator was level; airspeed, altitude and power were constant. Immediately, I knew what had happened. Remembering how to control vertigo by concentrating on the instruments, I made the intercept and flew a successful VOR (VHF omnidirectional range) approach to break out at 1,200 feet above ground. It was not easy.

CPT Houston Yarbrough
60th Co, 6th Bn

If the Aviation Digest has ever helped you avoid an accident, please share it by sending a description of what happened to:
Aviation Digest
P.O. Drawer P
Ft. Rucker, AL 36362