FlightFax

REPORT of ARMY AIRCRAFT ACCIDENTS

August 1996 ◆ Vol 24 ◆ No 11

"One of your aircraft is down and burning . . ." is every commander's most dreaded call. But even this nightmare can get worse at the crash site.

Commanders whose units experience aircraft and ground-vehicle accidents are increasingly confronted not only with the accident and the resultant loss of valuable resources but also with exposure of personnel to accident-site hazards such as advanced composite materials, or ACMs. Even though the immediate symptoms of exposure to ACM hazards (headache, burning eyes, and vomiting) may not be evident, the potential still exists for long-term health problems. Therefore, it is crucial that personnel who must work near an accident site be informed of the hazards so that they can take appropriate precautions to lessen their risk of exposure.

Personnel responding to aircraft and ground-vehicle accidents are most at risk because of their immediate exposure to ACMs and other accident-site hazards such as bloodborne pathogens (see sidebar on page 3). However, first responders are not the only ones at risk. Individuals involved in the subsequent investigation, recovery, and cleanup operations also may be exposed to these accident-site hazards.

Potential health hazards

Advanced composite materials—such as graphites, Kevlar, epoxies, and fiberglass—are widely used in modern Army equipment including personal protective equipment, armored vehicles, and aircraft. As more information is obtained about the properties of these materials, concern has heightened about the potential health risk to personnel exposed to ACMs that have been severely fragmented or burned in aircraft or vehicle accidents. When an accident occurs, particularly when a fire has ensued, fragmented composites and gases including nitric oxides, sulfur dioxides, hydrogen cyanide, as well as burned fragmented carbon fibers, are generated.

The Navy Environmental Health Center has collected extensive data concerning composites and, in particular, composites in fires (NEHC-TM 91-6, September 1991). Their main concern is the possibility that the fibers, liberated as the resins burn off, will splinter into a small enough size to be inhaled and retained in the lungs. Fibers also may lacerate or irritate the cornea of the eyes, or they may penetrate the skin in the same manner as a splinter.

In addition, experimental studies done to assess and define composite combustion products revealed that burning graphite or epoxy composites produce carbon monoxide and, to a much lesser extent, hydrogen cyanide. Also found as combustion products were ethane, propane, isopropyl alcohol, benzene, and trace amounts of propylene. Although the gaseous hazards are more prevalent while the fire is active, residual gases may be trapped and subsequently released when the wreckage is moved.

The effects from these hazards may include respiratory function irritation or inflammation (difficulty in breathing may occur) as well as skin irritations (contact dermatitis) and rashes. Cancer could be a delayed effect, especially with prolonged and repeated skin contact or inhalation exposure without protection. At this time, there is not enough information to determine all of the short- and long-term health problems that exposure to ACMs may cause. However, sufficient evidence does exist to suggest the presence and toxicity of many of the materials generated in postcrash composite fires. Without question, a crash site involving composites is a potentially hazardous area. Therefore, commanders must develop pre-accident plans that identify the risks to personnel and specify control measures that will minimize exposure to ACMs.

Pre-accident plans

Installation and unit pre-accident plans must address accident-site hazards as required by DA Pam 385-40: *Army Accident Investigation and Reporting*, paragraph 2-2(2). Commanders, unit safety officers, and personnel at all levels must be actively involved in pre-accident planning. To minimize unnecessary exposure to ACMs and other accident-site hazards, unit and installation emergency response teams must be properly trained, equipped, and disciplined to use the appropriate personal protective measures when responding to any accident but especially when the accident involves composite fires.

The best way to minimize unnecessary exposure to accident-site hazards is through a solid pre-accident plan that outlines work practices required to ensure proper handling of the hazards and specifies the protective equipment necessary to minimize the risks.

■ **Work practices.** In mishaps where fire or an explosion occurs, the following controls must be observed:

- Limit crash-site access to essential personnel. While the wreckage is burning or smoking, allow only firefighters and rescue personnel equipped with a self-contained breathing apparatus (SCBA) into the immediate area.
- Work upwind from the fire whenever possible. Restrict all unprotected personnel from assembling downwind of the wreckage (fires), and restrict entry into the immediate area where burned fibers may be stirred.
- Restrict all personnel except those administering immediate life-saving efforts from entry until munitions have been cleared by the proper disposal teams if live ordnance or munitions are involved.
- Prohibit eating, drinking, or smoking in or around the crash site.
- Spray the debris with a fixative such as polyacrylic acid (for example, Carboset XL-11 manufactured by B.F. Goodrich) as soon as the fire is extinguished and the wreckage has cooled to contain the burned fiber materials. A light oil, acrylic floor wax, or an equivalent tack substance are acceptable substitutes and easily applied. Treat components and wrap them with heavy gauge plastic wrap if they are required for further analysis. This keeps the fibers from becoming airborne during the recovery and transport phases and prevents personnel who handle the components from being injured.
- Cordon off the area and restrict entry to a single entrance and exit point.
- Keep guards and other personnel on the periphery of the accident, upwind at a safe distance when fire or smoke is present. Entry into any downwind area must be restricted. If personnel must be downwind, ensure that they wear protective clothing and equipment.
- Exercise caution while handling debris. Skin punctures from reinforcing fiber splinters are possible.
- Shower as soon as possible after leaving the crash site.
- Handle residue from burned composite materials as nonhazardous waste according to local environmental policies.

■ **Protective clothing and equipment.**

- ***For accidents <u>not</u> involving fire.*** Leather gloves

with inserts offer adequate protection from splinter injuries. A respirator and safety eye protection with side shields will provide adequate protection from airborne fibers. All three should be worn when moving or handling composite fiber components.

● ***For accidents involving fire.*** Units should consider procuring the following appropriate protection devices to be used in crash rescue operations:

◆ A self-contained breathing apparatus as determined by firefighting protocol is essential while the vehicle or aircraft is burning or smoldering. All personnel without an SCBA should be restricted from the immediate area with the exception of those providing immediate life-saving efforts.

◆ A full-face respirator with a high-efficiency particulate air (HEPA) organic vapor filter should be worn by personnel present during the early stages of the investigation before a fixant has been applied or when composite fiber components are being cut, broken, or ripped apart. In the absence of full-face respirators, a respirator with filters and eye goggles are required as a minimum.

◆ Tyvek® or comparable coveralls that have been taped at the openings should be worn by investigation and cleanup crews or anyone working within 25 feet of any burned composite vehicle (M113, Bradley, M1, UH-60, CH-47D, AH-64, OH-58D) unless or until a fixant has been applied. These coveralls are single-use and should be disposed of as normal waste after use.

NSNs for Tyvek® disposable coveralls

Small	8415-01-092-7529
Medium	8415-01-092-7530
Large	8415-01-092-7531
Extra large	8415-01-092-7532
Extra, extra large	8415-01-092-7533

◆ Puncture-resistant leather gloves with inserts are necessary when handling debris. Standard issue black leather gloves are acceptable.

◆ Safety glasses or goggles with side shields will provide eye protection if a full-face respirator is not used.

◆ A respirator is still warranted even after a fixant has been applied to the debris and vapor or mist generation is no longer a concern.

Points of contact

When developing your unit's pre-accident plan, you can obtain specific guidance from the—

■ Local flight surgeon or occupational medicine officer (ground accidents).

■ Installation industrial hygienist.

■ Local hazardous materials emergency response team.

■ Installation safety and occupational health manager.

■ U.S. Army Safety Center, Operations Office, DSN 558-2660 (334-255-2660).

■ U.S. Army Center for Health Promotion and Preventive Medicine, DSN 584-3118 (410-671-3118).

Commanders and safety officers must manage the risks associated with accident-site hazards. A pre-accident plan that identifies and assesses ACM hazards and specifies controls measures will provide commanders with an effective risk-management tool to protect the health of those who must work in and around crash sites.

—MAJ Paul Nagy, USASC, DSN 558-3262 (334-255-3262), developed this article from a recent USASC safety alert message (201506Z May 96) and an April 1992 *FlightFax* article written by LTC Kenneth Tannen.

Another accident-site hazard

Biological hazards involving bloodborne pathogens may be present during rescue operations. While initial responders and emergency rescue personnel are most at risk for these hazards, subsequent investigation, recovery, and cleanup personnel must consider the possibility of exposure to body fluids and bloodborne pathogens. For example, an accident investigation team member could sustain a cut from a piece of contaminated debris while handling biological materials.

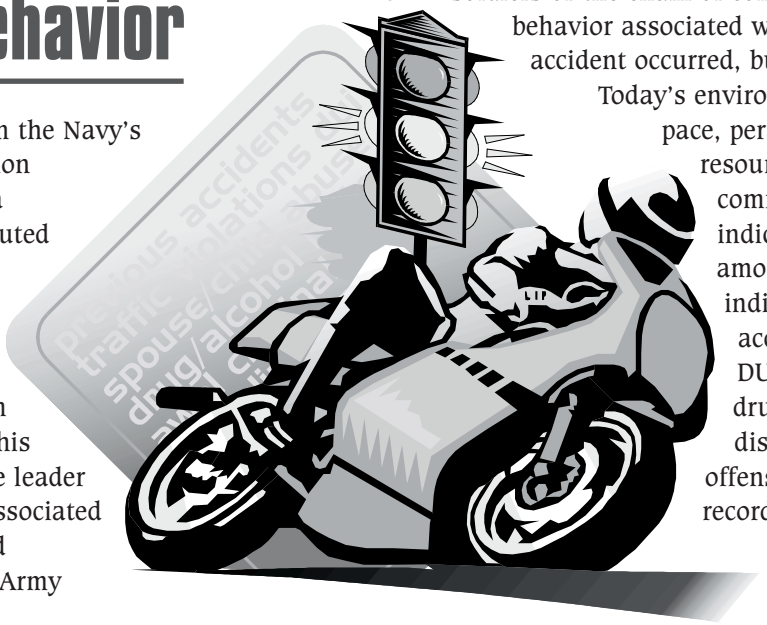
■ ***Units should identify work practices and controls in their pre-accident plans to protect personnel from exposure to bloodborne pathogens at accident sites. This should include requirements for mandatory briefings of personnel who will be operating in and around an accident site.***

■ ***Personal protective equipment should include—***

- ***Latex gloves or double latex gloves.***
- ***Utility work gloves.***
- ***Disinfectant wipes.***
- ***Red biohazard bag.***
- ***10-percent household chlorine bleach solution.***
- ***Boot covers.***
- ***Protective coveralls.***
- ***Goggles.***
- ***Surgical masks.***

SAFETY ALERT MESSAGE

High-risk behavior



Emerging insights from the Navy's recent series of aviation incidents show that a number of these were attributed to human error on the part of individuals who had a record of previous mishaps. The Army family can gain some insights from these unfortunate events. This message is intended to raise leader awareness of the hazards associated with soldier indiscipline and improper crew selection for Army ground and air systems.

Human factors account for 80 percent of Army accidents. Those accidents involving "individual failure," an element of human factors, means that a soldier chose to disregard an established standard to which he or she was trained. Examples include the OH-58 crew that crashed while attempting a loop; the HMMWV driver who rolled his vehicle when he elected to drive in excess of established speed limits under limited visibility; the M1 commander who refused to listen to his driver, which resulted in the tank rolling over in a ditch; or the CH-47 crew that struck wires while flying low level down a river. These very serious accidents are examples of the worst-case effects of indiscipline. Fortunately, they do not happen often.

Studies show that in many of these accidents other soldiers or the chain of command knew of the high-risk behavior associated with indiscipline before the accident occurred, but no action was taken.

Today's environment of high operational pace, personnel turnover, and fewer resources requires that commanders be more vigilant of indicators of high-risk behavior among their soldiers. These indicators include previous accidents, traffic violations, DUI, spouse or child abuse, drug or alcohol history, disciplinary offenses, criminal offenses, AWOL, and poor work record. Other less obvious indicators can include marital strife, frequent family separations, accident proneness, financial problems, and high overall stress levels.

Commanders are encouraged to establish both formal and informal processes to capture the indicators of individual and crew high-risk behavior. For example, most aviation units have a formal "pilot-in-command board." The board consists of the unit commander, an instructor pilot, a safety officer, another pilot-in-command, and perhaps a flight surgeon who evaluate a candidate for pilot-in-command status. In some ground units, a board consists of the unit commander, a senior noncommissioned officer, a master driver, and a safety officer. This group evaluates drivers and crews for evidence of requisite training, maturity, judgment, and the ability to perform the unit's mission. At each of these reviews, the board should watch for the indicators of indiscipline that may develop after a soldier is placed in a crew status.

The bottom line is for leaders to know their soldiers. This can best be accomplished by applying the risk-management process. Start by identifying these behavioral indicators (the hazards) that occur both on and off duty. Then implement controls—for example, additional training, performance review boards, counseling—to mitigate the risks.

POC: CW5 Robert A. Brooks, USASC Aviation Branch, DSN 558-3756 (334-255-3756)

FY 96 SAFETY ALERT MESSAGES

Message	Date	Subject
161532Z	Oct 95	M1A1/M1A2 Abrams Tank
161543Z	Oct 95	G/VLLD, AN/TVQ-2
171558Z	Oct 95	M939 Accident Awareness
062143Z	Dec 95	OH-58D(I) Autorotations
151951Z	Dec 95	MOUT Training
211324Z	Dec 95	POV Fatalities
301711Z	Jan 96	M1A1 Tank Turret Fatalities
291423Z	Feb 96	AH-64 Ground Fire
181832Z	Mar 96	UH-60 Blade Strike Fatality
191910Z	Mar 96	Parachute Fatality
091312Z	May 96	High-Risk Behavior
201506Z	May 96	Accident-Site Hazardous Materials
041835Z	Jun 96	Task Overload and Loss of Situational Awareness

SAFETY ALERT MESSAGE

Task overload and loss of situational awareness

This message is intended to raise leader and individual awareness of situations that could lead to task overload and loss of situational awareness, as well as to stress the importance of applying risk management and using crew coordination to reduce hazards. Talking on the radio; operating navigation and weapon systems; and finding, tracking, and engaging targets can cause the cockpit to be an extremely busy place. Given the workload in today's sophisticated aircraft systems and demanding mission profiles, anyone can become task-saturated and, as a result, lose situational awareness.

Operating complex aircraft systems under adverse environmental conditions can be very demanding and requires a great deal of time and concentration from each crewmember—so much so that, in some cases, each crewmember fixates on the task at hand and fails to fly the aircraft. No matter how busy it gets inside the cockpit, someone has to be looking outside the aircraft. The "aviate, navigate, and communicate" axiom is often quoted as the first rule of flight.

Instructor pilots, instrument examiners, and unit trainers are among those crewmembers who are placed in the most demanding and hazardous scenarios and therefore are most at risk. While instructors are active aircrewmembers and must perform appropriate duties, they also must provide instruction, verify procedures, and ensure safe parameters are maintained. But instructor pilots are not alone in the cockpit. Communication in the cockpit is essential. Communicating and appropriately dividing attention between cockpit duties and flying the aircraft are the best ways to avoid task overload and loss of situational awareness.

The bottom line is that the success and safety of all missions depend on effective risk management and solid crew-coordination techniques.

POC: CW5 William H. Ramsey, USASC Aviation Branch, DSN 558-9857 (334-255-9857)

A message from the new USASC Sergeant Major

We all know that aviation can be an unforgiving business. The old saying that aviation regulations are written in blood has its basis in fact. Unfortunately, most of us who have been around Army aviation for a while have lost friends and unit members to accidents. There's no getting around it; aviation training and operations can involve a high level of risk. And, without effective risk management, we will continue to lose friends and unit members to accidents that should have been prevented.

Risk assessments have been SOP for most aircrews for some time now. But what we really have to ask ourselves is, "Are we filling in blocks on a form or a matrix, or are we getting inside the risk-management process to find ways to conduct the high and extremely high risk missions by designing and implementing controls to manage the risk?"

In aviation, risk management is not just for the pilots. NCOs in aviation units make critical decisions constantly—decisions that can result in a mission accomplished or a mission failed because soldiers were injured or killed. On the maintenance floor and in the shops, soldiers and NCOs routinely use hazardous tools, chemicals, and procedures. In the field, all NCO leaders identify and assess hazards as they establish, occupy, and move around the training area or the area of operations.

We have generators, vehicles, FARPs, TOCs, and a variety of weapon systems in our area of operations for which NCOs are responsible. And along with that responsibility comes the need for NCOs to be just as proficient at applying the 5-step risk-management process as the aviators are.

As the new SGM for the U.S. Army Safety Center (USASC), I want all the soldiers and NCO leaders in Army aviation to know that the Safety Center stands ready to assist units in ensuring that the risk-management process becomes embedded in our units at the level where it comes closest to soldiers—with the noncommissioned officers.

Accidents generally are reported through our accident-reporting system (AAARs, AGARs, 285s); situations that could have been accidents, but weren't, don't get reported. We need the soldiers in the field to tell us how NCOs are using the risk-management process to perform high-risk operations safely. We want to publish vignettes that show real-world practical applications of risk management. Our NCOs and soldiers are out there every day making wise decisions and developing controls to mitigate hazards...let us hear about them.

The focus of the Army Safety Program is to *"Protect the Force Through Risk Management to Enhance Warfighting."* Aviation NCOs play a big part in making that happen.

—SGM Greg McCann, DSN 558-3575 (334-255-3575), fax 558-9136 (334-255-9136),e-mail mccanng@rucker-safety.army.mil

Written by accident investigators to provide an accident synopsis and major lessons learned from recent centralized accident investigations.

OH-58D(I). During an NVG Hellfire live fire, Chalks 1 and 2 made in-flight contact. Chalk 1 crashed and was consumed by a fire. Chalk 2 also sustained a high-G, near-inverted impact and was destroyed. Both pilots in Chalk 2 suffered fatal injuries, and the PC in Chalk 1 suffered fatal injuries. The Chalk 1 PI sustained only minor injuries and was able to egress on his own power before the fire consumed the aircraft.

● ***What happened.*** It appeared to be a simple mission. Each of the three aircraft would have one missile, fly a simple route to the range, occupy a 3-kilometer-wide battle position (BP), engage one target each, then egress and return to base via the same route. So what went wrong?

Both the commander and the platoon leader were RL 2 aviators, and this was their first Hellfire opportunity. They were in Chalks 1 and 2 of the accident aircraft respectively and were appropriately paired up with the unit instructor pilots for mission training to be conducted on this flight. The mission was briefed, rehearsed, and rock drilled before execution. The flight of three would enter the BP from the west and would stack from the east to west.

The aircraft entered the BP, but the crews selected firing positions that used only 300 to 500 meters of the 3-kilometer box. Chalks 1 and 3 fired their missiles. As Chalk 2 was preparing to fire, Chalks 1 and 2 made contact. The main rotor blades of Chalk 2 impacted the right door of Chalk 1, wresting the universal weapons platform, landing gear, right doors, and fuel cap from Chalk 1, opening the fuel cell with the blade strike, and causing significant injury to the IP on the controls.

● ***Lessons learned.*** How did two hovering aircraft get so close to each other without any one of the four pilots noticing? The answer is not simple or definitive.

First, design of the aircraft, field-of-view limitations of the ANVIS, and the cockpit workload contribute to difficulties in clearing the aircraft to the rear quarters, particularly on a zero-illumination night. It is extremely difficult, if not impossible, for a pilot in this aircraft to clear the opposite side of the aircraft.

Second, both accident aircraft had RL 2 aviators. The PIs were focused "on the vids" because of self-designating laser engagement requirements and enhanced visibility. Most likely, the IPs were devoting more attention inside the aircraft to verify switch positions, prelaunch parameters, postmissile impact damage, and other training duties.

Third, specific firing positions were not identified in this large BP. The command emphasized numerous times to "use the whole 3 kilometers." Chalks 1 and 2 were evidently too close. Had firing positions been predesignated, which understandably is not always possible, the aircraft would have had more separation. Left tailwinds were prevalent in the BP and may have also contributed to aircraft drift.

It could not be determined who drifted into whom, but regardless of which aircraft drifted, none of the four pilots in the two aircraft maintained a vigilance outside the aircraft to clear obstacles and maintain separation. A lack of crew coordination, improper night scanning techniques, training responsibilities, and equipment shortfalls caused this accident.

As with any of the advanced aircraft, the OH-58D(I) is cockpit intensive and unforgiving. Once the Army installs hover-hold capability and improves the optical display assembly to give pilots "heads-up" capability, workload will decrease, making it easier for the PC to maintain situational awareness and obstacle clearance. However with or without these improvements, both pilots must divide their attention appropriately between responsibilities inside and outside of the cockpit.

The Broken Wing Award is given in recognition of aircrewmembers who demonstrate a high degree of professional skill while actually recovering an aircraft from an in-flight failure or malfunction necessitating an emergency landing. Requirements for the award are spelled out in AR 672-74: Army Accident Prevention Awards Program.

■ **CW4 Jerome T. Davis and CW2 Walter R. Lejeune, C Company, 1/160th Special Operations Aviation Regiment (Airborne), Fort Campbell.** With six crewmembers on board, the MH-60L departed Campbell Army Airfield to conduct an annual instrument evaluation for two pilots. The destination airport was Owensboro (KY) Regional. CW4 Davis, the instrument flight examiner, was in the left seat, and CW2 Lejeune, one of the pilots, was in the right seat. The flight to Owensboro was uneventful and lasted 1½ hours. CW2 Lejeune satisfactorily completed all required flight maneuvers, terminated his last instrument approach, and transferred the aircraft controls to CW4 Davis. CW4 Davis transitioned to the parallel taxiway and then to an adjacent taxiway. CW4 Davis then directed CW2 Lejeune to change radio frequencies to ground control. While hovering at approximately 10 feet AGL over the taxiway, the aircraft began an uncommanded, rapidly accelerating yaw to the right. CW4 Davis initially tried to counter the right yaw with left pedal but, based on the lack of response to pedal input and the accelerating yaw rate, he recognized the total loss of tail rotor thrust. CW2 Lejeune, who was temporarily focused inside the aircraft while completing the radio frequency change, detected the rapidly accelerating yaw, immediately refocused his attention, and also recognized the loss of tail rotor thrust. Over the ICS, CW4 Davis announced "tail rotor, PCLs off." Having correctly diagnosed the nature of the emergency virtually simultaneously with CW4 Davis, CW2 Lejeune had quickly positioned his hands on the power control levers (PCLs) in anticipation of instructions from CW4 Davis. At the command of "PCLs off," CW2 Lejeune retarded both PCLs to off. Approximately 3 seconds elapsed from the time the aircraft yawed until CW2 Lejeune retarded the PCLs. CW4 Davis continuously adjusted cyclic to maintain a level attitude and adjusted collective to successfully accomplish an autorotation from a hover. Approximately another 3 seconds elapsed from the time CW2 Lejeune retarded the PCLs until the aircraft landed. In the 6 seconds that passed between the time the aircraft started to yaw rapidly to the right until the crew was safely on the ground, the aircraft completed more than two full rotations, spinning approximately 810 degrees. When the emergency occurred, the gross weight of the aircraft was more than 18,000 pounds. The loss of tail rotor thrust was due to failure of the input bevel gear, which completely sheared, inside the tail rotor gearbox. There were no associated cockpit instrument indications before, during, or after the emergency.

■ **CW2 Gary L. Carrola, 7th Squadron, 6th Cavalry Regiment (ATK HB), Route 22, Box 960, Conroe, TX 77303-2298.** During a night OH-58A training flight with an enlisted aerial observer, CW2 Carrola experienced a complete engine failure that was confirmed by illumination of the engine-out light, N1 and N2 decay, and a rapid left yaw. CW2 Carrola immediately entered autorotation and turned the aircraft approximately 120 degrees to the right toward the only suitable landing area available. The landing area was a small shopping center parking lot on the edge of town. CW2 Carrola simultaneously made a Mayday call on the FM radio and attempted to restart the engine. The engine start sequence was progressing as the aircraft passed through 100 feet AGL but failed after a few seconds. Committed to making the autorotation to the ground, CW2 Carrola noticed wires on the approach end of the parking lot. A cross-check revealed the Nr in the high green, which allowed him to increase the collective pitch enough to clear the wires. At approximately 75 feet AGL, CW2 Carrola had to maneuver the aircraft to pass between several parking lot light poles and effect a safe touchdown. Even though the aircraft touched down on a seal-coated pavement with a slight downslope, the aircraft slid only its own length before coming to a stop without incident.

Broken Wing Award *eligibility and nomination requirements*

AR 672-74: *Army Accident Prevention Awards Program* outlines the requirements for the Broken Wing Award. To be eligible for the award, an aircrewmember must, through outstanding airmanship, minimize or prevent aircraft damage or injury to personnel during an emergency situation. The aircrewmember must have shown extraordinary skill while recovering an aircraft from an in-flight emergency situation.

An emergency will **not** be considered for award if—

- It is self-induced.
- It actually occurs during a simulated emergency requiring no added skill to land the aircraft successfully.
- It occurs because of noncompliance with published regulations or procedures.
- It is determined that no emergency actually existed.
- A lack of discipline or aviator judgment may have induced the emergency.
- The aircraft was in a phase of flight with no unfavorable circumstances to prevent a safe landing.

Nomination requirements

Nominations must include the following information:

- Full name, SSN, and crew duty of the person actually on the controls during the emergency.
- Date, time, and location of the emergency.
- Mission type, design, and series of the aircraft involved.
- Type of mission.
- Phase of flight when the emergency occurred.
- Kind of terrain over which the emergency occurred.
- Obstructions, dimensions, type, and condition of the landing area.
- Altitude above ground level.
- Density altitude.
- Wind condition (direction and velocity).
- Gross weight of the aircraft when landing.
- Concise description of the emergency from inception to termination.
- Action taken by the nominee to cope with the emergency and what was done to recover from the emergency or minimize damage or injury. The circumstances surrounding the occurrence must be documented to show the skill, knowledge, judgment, and technique required and used in recovering from the emergency.
- Lapsed time from onset of the emergency to termination.
- Drawings, other supporting documentation, and photographs, if available.
- Copy of the abbreviated aviation accident report (AAAR) if required and submitted.

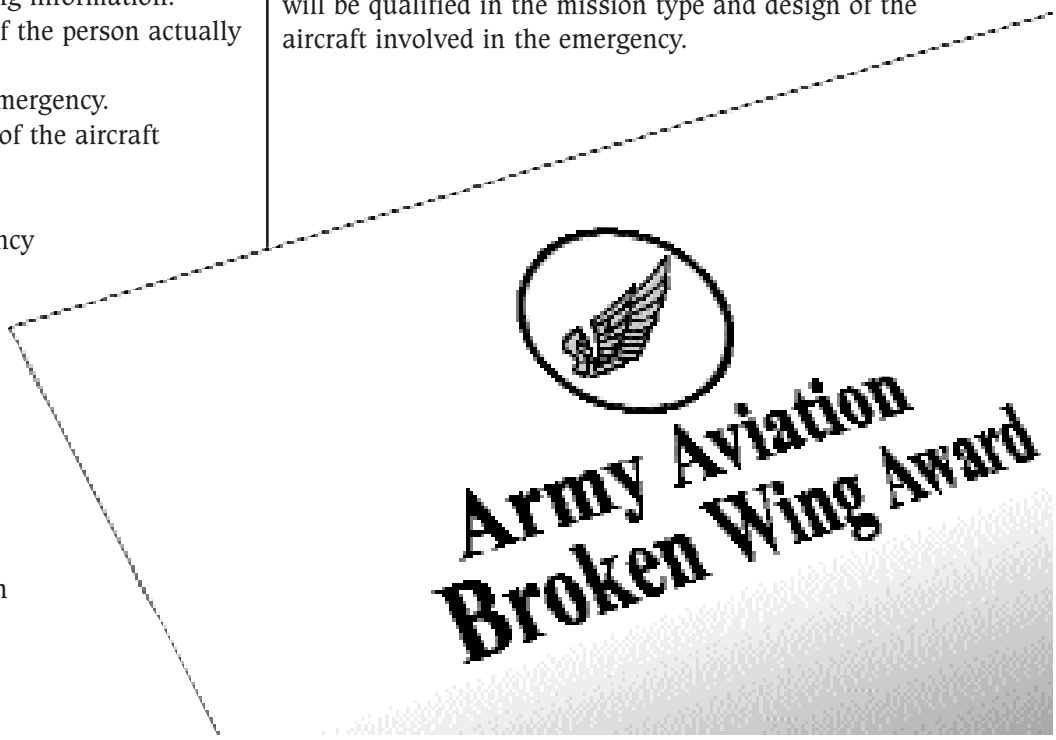
Submitting nominations

The unit commander or installation or unit safety manager should initiate nominations for the Broken Wing Award. Normally, only one person will be nominated to receive the award for a single in-flight emergency. However, if more than one crewmember materially contributed to successful recovery from the emergency, all those involved should be considered for nomination.

Nominations for the Army Aviation Broken Wing Award should be forwarded **through command channels** to the U.S. Army Safety Center, ATTN: CSSC-PT (Broken Wing Award), Building 4905, 5th Avenue, Fort Rucker, AL 36362-5363.

Evaluating nominations

A panel consisting of the Director of Army Safety or his or her representative and at least five aviators will review the nominations. The panel may include senior enlisted crewmembers when appropriate. At least one panel member will be qualified in the mission type and design of the aircraft involved in the emergency.

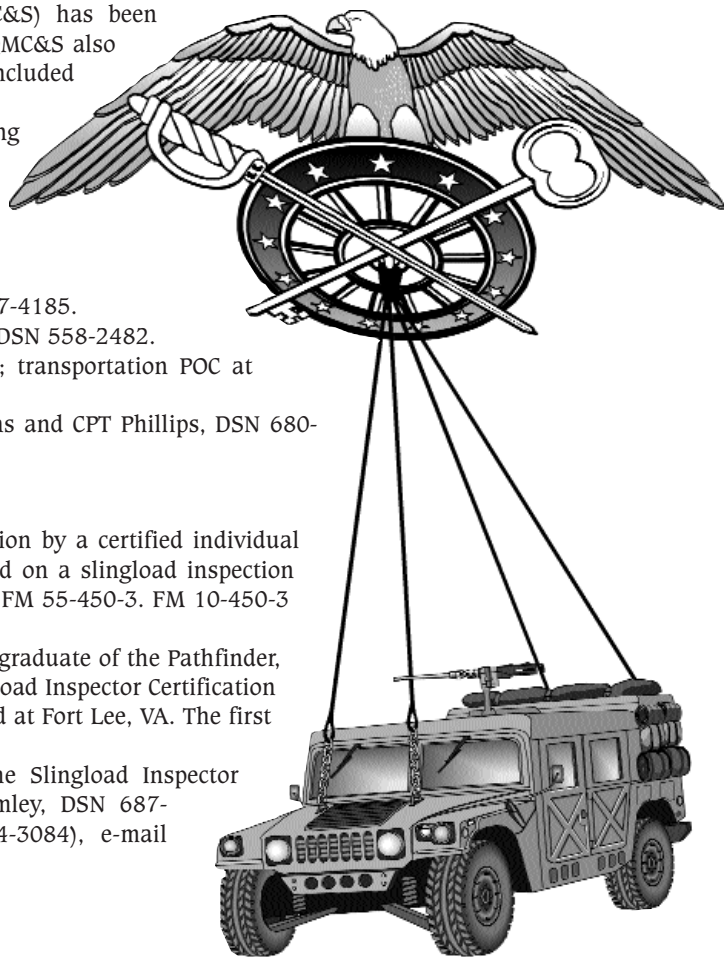


ShortFAX
Keeping you up to date

Slingload proponency and inspector certification course

The U.S. Army Quartermaster Center and School (USAQMC&S) has been designated the proponent for slingload operations. The USAQMC&S also is the current proponent for aerial delivery (airdrop) and has included slingload in the aerial delivery definition.

Primary duties for the slingload proponency include developing and reviewing doctrine, training, and materiel actions relating to both airdrop and slingload operations, to include field manual development.



Points of contact

- **Slingload operations**—USAQMC&S, Mr. Don Lynn, DSN 687-4185.
- **Aircraft recovery**—U.S. Army Aviation Center, SGT Theim, DSN 558-2482.
- **Internal air transport**—U.S. Army Transportation School; transportation POC at CASCOM is Mr. Lamb, DSN 687-2871.
- **Airborne Airlift Action Office, HQ, TRADOC**—MAJ Higgins and CPT Phillips, DSN 680-2469/3921, fax DSN 680-2520.

Slingload Inspector Certification Course

Effective 1 October 1997, all Army loads will require an inspection by a certified individual before supporting aircraft arrive. Inspection data will be recorded on a slingload inspection form that will be included in FM 10-450-3, which will supersede FM 55-450-3. FM 10-450-3 is scheduled for publication during the first quarter of FY 97.

An inspector must be a specialist fourth class or above and a graduate of the Pathfinder, Air Assault, or Slingload Inspector Certification Course. The Slingload Inspector Certification Course is a new 5-day course that the USAQMC&S has established at Fort Lee, VA. The first class will begin in September 1996.

For additional information or to schedule personnel for the Slingload Inspector Certification Course, please contact Mr. Don Lynn or SFC Rumley, DSN 687-4185/5889 (804-734-4185/5889), fax DSN 687-3084 (804-734-3084), e-mail lynnd@lee-emh2.army.mil.

More on GG rotors

Headquarters, Department of the Army (HQDA), recently issued a message (291400Z May 96) informing commanders of the Army's strategy to correct problems associated with the gas generator turbine rotor blade, commonly referred to as the "GG rotor." A U.S. Army Aviation Center message dated 091530Z Mar 96 provides the best information on the background of the problem and also provides the branch chief's guidance to the field on training and standardization. (See "GG rotors update" in the April 1996 issue of *FlightFax*.)

In the last few months, commanders and senior representatives of appropriate commands and activities have explored various courses of action to remedy problems associated with undampened GG rotors present in -700 and -701 GE turbine engines found in Apache and Black Hawk helicopters. As a result of this effort, the following actions will be pursued:

- A General Officer Steering Committee (GOSC) of 15 February 1996 directed PM, Utility Helicopters, to force retrofit the remaining 350 undampened -700 UH-60 engines with dampened GG rotors. This effort will be centrally funded by the wholesale Supply Management, Army (SMA) business area from the safety-of-flight earnings generated in the SMA surcharge. This program is expected to be completed by March 1997.
- The remaining 800 undampened -701 engines in the Apache fleet will undergo a similar force retrofit. DAMO-FDV and DALO-SMV will provide a fielding plan and funding strategy for PM, Apache Helicopter, to execute in the near-term. This schedule will be released to the field via subsequent message. PEO, Aviation/ATCOM will manage the retrofit by contract team that will exchange GG rotors and required mating parts on affected undampened engines, according to priority established by HQDA. This effort is expected to start in January 1997 and be completed by May 1998.

HQDA is confident that leaders and crews in the field are taking appropriate measures to mitigate the risks presented by this hazard until the retrofit is completed. Accordingly, we do not anticipate issuance of an aviation safety-of-flight message at this time nor do we expect to reduce the time-before-overhaul (TBO) hours of the engine to apply this fix.

POC: LTC R. Kowalczyk, HQDA, DSN 224-2065 (703-614-2065)

Accident briefs

Information based on *preliminary* reports of aircraft accidents

Aviation flight accidents

Utility

UH-60 Class A

L series - As a flight of three UH-60L aircraft were approaching the drop zone to conduct Fast Rope Insertion/Extraction System (FRIES) training, the main rotor blades of Chalk 2 meshed with the main rotor blades of Chalk 1. The crash resulted in both aircraft being totally destroyed and 39 injuries, to include 6 fatalities.

UH-60 Class C

K series - During air assault infiltration exercise, aircraft was Chalk 3 when it landed hard and FLIR turret contacted ground. Aircraft also sustained damage to tail and landing gear.

Attack

AH-1 Class E

F series - Crew detected smell of burning wires. Alternator/rectifier light illuminated. Crew could not reset alternator and landed aircraft without further incident. Maintenance replaced alternator.

AH-64 Class C

A series - Upon return to airfield for fuel, oil low utility hydraulic warning light illuminated. IP realized there must be a leak because system had been serviced before flight. IP hover taxied aircraft to parking ramp and performed normal shutdown. During postflight inspection, IP discovered damage to tail wheel lock hydraulic line, stabilator, and tail rotor blades. Near the end of the first of two periods of RL progression training planned for the night, IP had demonstrated approach and landing to a pinnacle. During approach, tail section of aircraft had passed into and through small tree and some small scrub brush without either pilot realizing incident had occurred.

A series - No. 2 engine cowling came open in flight. Crew landed aircraft, safetied cowling closed, and returned to airfield. Investigation ongoing.

AH-64 Class E

A series - During engine start with APU on, PI was advancing No. 1 power lever to fly. With power lever about halfway to fly position, No. 1 engine torque fluctuated wildly. No. 1 Np dropped to zero, and APU fail lights illuminated. Crew secured engine. Maintenance replaced yellow wire harness.

A series - During cruise flight, utility hydraulic accumulator pressure gauge dropped slowly from 3,000 to approximately 1,800 PSI. No caution warning lights illuminated. Crew returned to airfield, landed, and shut down aircraft without further incident. Maintenance replaced utility hydraulic pressure transducer.

A series - During taxi to parking, crew observed smoke in crew station. PI parked aircraft and executed emergency procedures. Maintenance inspection revealed that shaft-driven compressor had failed.

A series - Aircraft was on APU power at tactical FARP refuel pad when oil PSI accessory pump caution warning light illuminated. PC shut down APU immediately. Inspection revealed accessory gearbox oil pressure switch had failed.

A series - During roll-on landing, No. 2 engine oil PSI light illuminated. Maintenance replaced No. 2 engine oil pressure transmitter.

A series - During night traffic pattern flight, primary hydraulic PSI light illuminated. Crew landed safely and shut down aircraft. Maintenance replaced hydraulic manifold pressure switch.

A series - No. 1 nose gearbox chip and caution warning lights illuminated. Crew retarded power lever to flight idle position and completed roll-on landing. Inspection revealed bearing in gearbox had failed.

A series - During takeoff, PC noticed No. 2 engine TGT rise rapidly to 1,000°C for about 30 to 40 seconds. No. 2 engine-out warning light illuminated and engine-out warning audio sounded. PC obtained single-engine airspeed and recovered aircraft back to home base. Inspection revealed No. 2 engine GG rotor failure.

Cargo

CH-47 Class C

D series - Aircraft departed from Naval air station en route to Army airfield in support of slingload training mission. While transitioning from 500 feet AGL to 1,500 feet MSL, PI noticed that rotor RPM was climbing through 105 percent and announced that they were having a high side on No. 2 engine. As PI began to increase thrust, PC confirmed emergency and began to move engine condition lever (ECL) from flight position to control rotor RPM. When there was no immediate response, PC aborted defined emergency procedure and tried to control rotor RPM with emergency engine beep trim system. When there was no response using emergency beep trim system, PC came on the controls and entered an autorotation to disengage engines from drive train. Rotor RPM had reached 120 percent and stayed there throughout descent and landing. PI performed emergency engine shutdown. During shutdown, ECLs responded normally and engine shutdown was completed. Inspection revealed that rotor heads had experienced overspeed and would have to be replaced. No. 2 engine was suspected of an N2 overspeed. Maintenance performed rig check on actuators that are controlled by ECLs and found them to be normal and functioning. Suspect that fuel control for No. 2 engine malfunctioned. Secondary cause may have been N2 control box. Maintenance replaced both rotor heads, No. 2 engine, and N2 control box. Mishap is still under investigation.

CH-47 Class D

D series - As Chalk 4 in flight of four, crew air taxied along predetermined route to pick up VIP as briefed. Although route was briefed as "cleared of all nonparticipating aircraft," Chalk 4 came within 150 feet of OH-58 that was parked for maintenance. Rotorwash from CH-47 blew door off OH-58.

CH-47 Class E

D series - Crewmember was closing up aircraft for taxi and saw hole where window should have been. Passenger had been seated by right side bubble window. Suspect that passenger used window as a brace when he stood up to exit aircraft.

D series - On VFR NVG training flight, No. 1 generator caution light illuminated during normal cruise flight. PI performed emergency procedures. Generator off caution light went out, and SP elected to continue to airfield. Within a few minutes, both No. 1 and No. 2 generator off caution lights illuminated, resulting in a dual generator failure. PI and SP performed emergency procedures for No. 1 and No. 2 generator off caution and landed aircraft at airfield without further incident. Inspection revealed faulty generator control box.

D series - At 700 feet MSL and 100 knots, PI transferred flight controls to IP to conduct local area orientation of airfield. After IP took controls, aircraft began to yaw 5 degrees, progressively increasing to 20 degrees left to right. IP turned aircraft to

final for landing, and flight controls locked up in yaw axis to the left. Left pitch axis was dissipating all available airspeed. IP increased counterpressure to flight controls but no movement of controls occurred. Flight controls felt as if there were no hydraulic pressure in system, but flight engineer indicated pressures and temperatures were normal. No caution lights illuminated on the caution panel. After approximately 30 seconds, flight controls broke free and it felt as if partial hydraulic control were restored. IP centered cyclic and put aircraft in trim, but only limited control of the aircraft was restored. IP selected suitable landing area and was initiating approach for landing when flight controls locked up again in yaw and roll axis, making aircraft control nearly impossible. Flight controls felt as if they were free again just before ground contact. IP completed successful landing, neutralized flight controls, and transferred controls back to PI to conduct normal shutdown. At that time, crew felt slight vibration in flight controls that increased rapidly to violent vibration and blade flapping. Crew locked shoulder harnesses and completed emergency engine shutdown. Postflight inspection revealed an extended jam indicator on the aft swiveling upper dual boost actuator.

D series - After landing, crew smelled hydraulic fluid and noticed No. 1 flight control system was losing fluid. Maintenance replaced pitch integrated lower control actuator.

D series - During engine runup for second leg of mission, No. 2 flight control hydraulic return filter button popped and would not reset. Maintenance replaced hydraulic filter.

D series - On landing from VFR training mission, No. 1 flight control hydraulic pressure gauge indicated excessively high pressure. Temperatures and levels were normal. Maintenance replaced faulty No. 1 flight boost hydraulic pressure transducer.

Observation

OH-58 Class C

D series - During live-fire operations, flash suppresser on 50-cal machinegun failed. Part of suppresser damaged trailing edge of red main rotor blade. Crew found damage during postflight inspection.

D series - Mast-mounted sight cover (upper shroud) separated during aircraft runup and hit rotor system. Cover was destroyed, and one blade and one blade grip were damaged.

OH-58 Class E

A series - Aircraft was at 500 feet and 80 knots in level flight when crew smelled hot oil. Crew landed aircraft immediately in field and shut down engine. Aircraft had been flying 20 minutes on full load of fuel. Inspection revealed oil leaking from transmission input seal. Crew chief replaced transmission input seal. Crew completed 10-minute ground run and MOC with no further problems.

C series - Aircraft was in shallow turn when N2 dropped to 97 percent. PC landed aircraft and rolled throttle to idle. N1 stabilized at 62 percent and then dropped to 55 percent. Maintenance found loose bleed air line.

D series - Crew was conducting 50-cal machinegun gunnery in support of avionics test. After completing second load of 500 rounds, crew was repositioning aircraft to rearm site. At 600 feet AGL and 95 knots, copilot's chin bubble broke. Crew landed aircraft at rearm site and shut it down. Chin bubble also was a test item.

D series - At 700 feet MSL and 65 knots during climbout from combat position, DC generator fail caution light came on. PI performed emergency procedures but DC generator would not reset. Crew heard loud noise from generator compartment and executed 180-degree turn back to combat position. At approximately 10 feet, low rotor audio sounded and light illuminated. Low transmission oil PSI light illuminated along with low engine oil PSI light. After shutdown, DC generator caught fire. PI put out fire with extinguisher. Maintenance replaced starter generator.

Training

TH-67 Class C

A series - While hovering, directional control was lost and aircraft impacted ground. Aircraft sustained twisted tail boom pylon whirl, isolation mount damage, and damage to transmission cowling. Investigation is ongoing.

TH-67 Class E

A series - During VFR flight, aircraft experienced fluctuation in all gauges, fuel pump light illuminated, UHF/VHF radio failed, and audio could not be reset. Emergency procedures for total electrical failure produced no results. Maintenance replaced reverse current relay and aircraft battery.

A series - Main transmission chip light illuminated and would not go out. Maintenance replaced faulty chip detector sensor.

A series - During flight No. 3, crew performed precautionary landing for engine chip light. Maintenance replaced engine quick change assembly harness.

Fixed wing

C-12 Class E

C series - Following descent and landing during rainshowers, No. 2 fire pull handle light illuminated while aircrew taxied to parking. Crew could not visually identify a No. 2 engine fire and completed taxi without incident. Postflight inspection revealed no indication of No. 2 engine fire. On following day during aircraft runup for one-time evacuation flight, engine fire protection system checks were normal. Crew flew aircraft to base without incident. Suspect moisture in one or more fire warning system detectors caused illumination of No. 2 fire pull handle.

C series - At 22,000 feet during climb, pilot's outer windshield cracked. OAT was -20°C, sky condition was clear, and windshield anti-ice switch had been in normal position since 5,000 feet. Crew returned aircraft to airfield without incident. Contract maintenance determined that windshield had delaminated.

C-21 Class E

A series - During climb to 14,000 feet, crew heard a tone over headset and speakers during all power changes. Crew also noted erratic needle movement on right and left generator voltage meters that seemed to correspond to tone. PC initiated return to base while PI conducted troubleshooting via UHF phone patch. Problem was isolated to No. 1 generator. Crew placed generator switch in off position in VMC and completed uneventful landing. Maintenance replaced generator.

OV-1 Class D

E series - During engine runup, maintenance technician in right seat attempted to reset his shoulder harness lock with the lock reset lever. He mistakenly pulled ejection seat manual override lever, which activated manual disarmament of ejection seat and severed the drogue chute line. Crew shut down aircraft without further incident.

U-21 Class E

A series - During takeoff, aircraft would produce only 2100 RPM on left engine. Crew reentered traffic pattern and landed aircraft without further incident. Postflight inspection revealed frayed control cable assembly in power quadrant, which prevented full travel of left propeller control.

Safety messages

Safety-of-flight messages

■ Safety-of-flight technical message concerning retirement life change for main

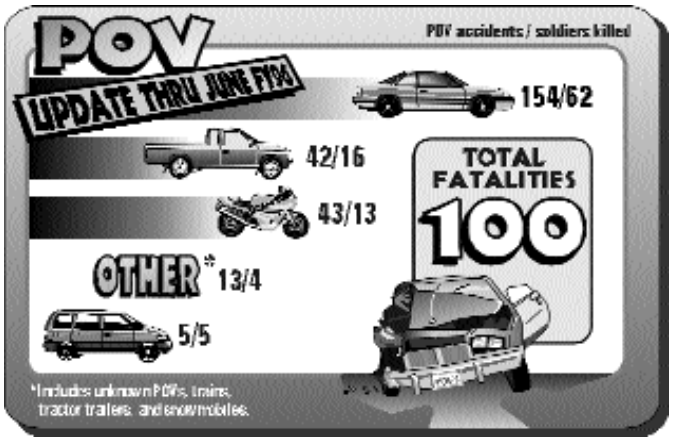
rotor drive shaft, P/N 7-211350021, on all AH-64 aircraft (AH-64-96-02, 101917Z Jun 96). Summary: The current interim statement of airworthiness qualification (ISAQ) and TM 1-1520-238-23 list a retirement life of 5,400 hours for the Fenn main rotor drive shaft. This part now has a reduced interim retirement life of 1,750 hours based on engineering review of test data. The purpose of this message is to require units to inspect all AH-64 aircraft for drive shafts manufactured by Fenn and to change the aircraft time change DA Form 2408-16 to reflect the interim fatigue life. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

Aviation safety action messages

■ Aviation safety action maintenance mandatory message concerning removal and replacement of main rotor blade tip weight retention nuts on all AH-64 helicopters (AH-64-96-ASAM-07, 291900Z May 96). Summary: After removing the main rotor blade tip cap, inspections have revealed that one of the nuts securing the aft weight support fitting was cracked. The purpose of this message is to require units to replace the nuts that secure both the forward and aft main rotor blade tip weight fittings and to reduce the torque on these nuts. Contact: Mr. Lyell Myers, DSN 693-2438 (314-263-2438).

■ Aviation safety action maintenance mandatory message concerning revision to replacement of the inboard balance weight attachment bolts required by AH-64-96-ASAM-05 on all AH-64 helicopters (AH-64-96-ASAM-08, 121919Z Jun 96). Summary: AH-64-96-ASAM-05 required replacement of the main rotor blade shouldered studs, P/N 7-211412071-3, due to cracking from hydrogen embrittlement. This message revises the list of main rotor blade serial numbers. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning one-time inspection of the forward and aft rotary wing heads to ensure flow of lubricating oil to the horizontal hinge pin bearings on all CH-47D, MH-47D, and MH-47E aircraft (CH-47-96-ASAM-04, 061523Z Jun 96). Summary: During the scheduled maintenance of a rotor head assembly, tape was discovered covering one of six oil lube ports on the upper surface of the rotor hub. These ports are used to provide lubrication of the horizontal hinge pin bearings. The tape is used to protect the oil passages during painting and may have been accidentally left in place during overhaul production. A complete or partial restriction of lubricating oil to the horizontal hinge pin bearings causes premature wear and results in damage to the bearings and related components. The purpose of this message is to require a one-time inspection of all CH-47D, MH-47D, and MH-47E forward and aft rotor hubs to ensure flow of lubricating oil to the horizontal hinge pin bearings. Rotor hubs received from the supply system shall have this ASAM complied with before installation on the aircraft. Contact: Mr. Lyell Myers, DSN 693-2258/2085 (314-263-2258/2085).



Ground precautionary message

■ Ground precautionary message (GPM-96-007, 061330Z Jun 96), BB-558/A (NSN 6140-01-186-8802) nickel cadmium battery manufactured by Saft America, Inc., all contracts, used in the OH-58D aircraft. Summary: Recently, it has been reported that the subject battery has exhibited a number of violent ventings or explosive incidents and fire during nonflight or flight line tests. The BB-558/A battery is used only in the OH-58D aircraft. Analysis of failure reports indicates the likely cause to be from damaged heating elements internal to the battery. It is believed that heater element damage is caused during battery maintenance or reassembly and the absence of shims between the heater blankets and battery case. This message outlines user actions required. Contact: Mr. Lyell Myers, DSN 693-2438 (314-263-2438).

For more information on selected accident briefs, call DSN 558-2119 (334-255-2119).

In this issue:

- Caution—advanced composite materials
- Another accident-site hazard
- High-risk behavior
- Task overload and loss of situational awareness
- A message from the new USASC Sergeant Major
- Investigators' Forum
- Broken Wing Awards
- Broken Wing Award eligibility and nomination requirements
- Slingload proponency and inspector certification course
- More on GG rotors

Class A Accidents through June

		Class A Flight Accidents		Army Military Fatalities	
		95	96	95	96
1ST QTR	October	0	1	0	0
	November	0	0	0	0
	December	1	0	0	0
2D QTR	January	1	1	1	0
	February	0	0	0	0
	March	1	2	0	7
3D QTR	April	1	1	5	3
	May	2	0	2	0
	June	1	1	0	6
4TH QTR	July	0		0	
	August	2		5	
	September	1		0	
	TOTAL	10	6	13	16

U.S. ARMY SAFETY CENTER

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Thomas J. Konitzer
Brigadier General, USA
Commanding General
U.S. Army Safety Center

FlightFax

REPORT of ARMY AIRCRAFT ACCIDENTS

September 1996 ◆ Vol 24 ◆ No 12

Before the first snow flake falls...

Prepare for the harsh winter conditions ahead.

Proficiency training in winter operations should already be on every crewmember's agenda because the warm days of summer will soon give way to the snow, ice, and freezing winds of winter.

Operating and maintaining aircraft in cold weather can be physically demanding and hazardous. Regardless of winter's adverse environmental conditions, the Army must continue to defend our Nation's interests around the world and train future warfighters. To do so safely requires taking cold-weather training seriously and applying risk management effectively.

Now is the time to start brushing up on winter flying techniques, maintenance procedures, and survival skills. Review the known hazards associated with cold-weather operations, identify any hazards specific to your unit's mission or area of operation, and develop effective control measures that will reduce the risks.

Advance preparation and effective risk management won't keep the snow from falling or the cold winds from blowing, but they will help you prevent costly accidents and cold-weather injuries when winter descends upon us again.

Winter hazards cut flight short

Even a highly experienced crew on a bread-and-butter mission can get into trouble fast when "Dusted" with snowflakes.

Our evening's mission at the Combat Maneuver Training Center (CMTC) was to provide observer-controller (OC) coverage for a single AH-64 that was to screen forward and help ground cavalry squadron troops identify any vehicles they found. Simply put, we were to follow the AH-64 around the maneuver "box," observing their tactics and procedures as well as reporting their position to a computer analyst for battle tracking. We also were to provide flight following for the player aircraft. Normally, we stay 500 to 1,000 feet above them, depending on weather. This OC mission was our bread and butter—a mission we had all done numerous times before with many other units.

The weather brief

We got our initial written weather brief 3 hours before the planned takeoff time. Although we knew the brief wouldn't be valid at takeoff, we used it for planning purposes (PPC, risk assessment, and so forth) and had all intentions of getting an update just before we went to the aircraft.

About 20 minutes before departure, we got a weather update: "The initial brief remains unchanged." This gave us a ceiling of 1,000 feet and visibility of 4 kilometers or greater and no weather warnings. Full cloud coverage and no moon guaranteed a dark flight. Flying out to the field site that night, we discussed the fact that the visibility was excellent but that the ceiling was probably only 600 to 800 feet above the hills.

The aircraft

The CMTC aviation OC team had recently transitioned from the OH-58 to the UH-1. Our UH-1H was fully instrumented, modified for NVGs, and had 150 gallons of auxiliary fuel on board.

The crew

Since we had just recently transitioned from the OH-58 to the UH-1, our Huey experience wasn't exactly high. But the overall crew experience was. The PC was an AH-64 instructor pilot and an aviation safety officer (ASO) with more than 2,600 hours total time. The PI was an OH-58 IP and an instrument flight examiner with more than 3,300 hours' experience. The rated observer also was an OH-58 IP and IFE with 3,100 hours. Combined, we had more than 9,000 hours of flight experience. We also had more than 2,700 hours of NVG and NVS experience.

The flight

Although we knew it had started snowing, it appeared to be just a "light dusting" and we still had excellent visibility under ANVIS down the valley. After the 2350 takeoff, I accelerated to 25 to 30 knots and was preparing for a climbing 180-degree left turn when things got ugly. First, the light dusting turned into a very heavy snowshower, which greatly reduced visibility. This didn't help the fact that seeing out the left side from the right seat under goggles in the UH-1 was difficult.

As I completed the turn, visibility got worse and everything appeared darker as both the left seater and observer mentioned a clump of trees I had turned toward. I saw the trees and had added some power to fly over them when I picked up the Apache's cockpit lights. The cockpit lights verified what we thought: we were in heavy blowing snow.

With my visibility cut to approximately 200 meters, I quickly decided to land near our takeoff point. I was using a treeline out my right door as a reference. At 20 feet and 20 knots, I experienced total whiteout. Before I could tell anyone, I regained contact with the ground and heard the observer yelling "Power, power!" During the second in which I had lost contact with the ground, I had entered a slight nose-low right turn. I immediately turned left to again parallel the treeline, executed a slow NOE deceleration to a 5-foot hover, and quickly landed. As we recovered from the initial shock of what had just happened, we shut down the aircraft and prepared for an examination of how we got into a situation that could have resulted in a serious accident.

The after-action review

Except for the split-second whiteout, I never felt out of control. But I'll be the first to admit that this 1-minute flight truly scared me. I realized that another 1 or 2 seconds in that nose-low right turn would have led to impact with the ground, definite damage to the aircraft, and possible injuries.

In the 5 minutes that followed our near mishap, we figured out what went wrong and why. Three factors led us into this frightening predicament. Individually, none of the three would have been cause for alarm. But combined, the stage was set for them to "snowball" into disaster.

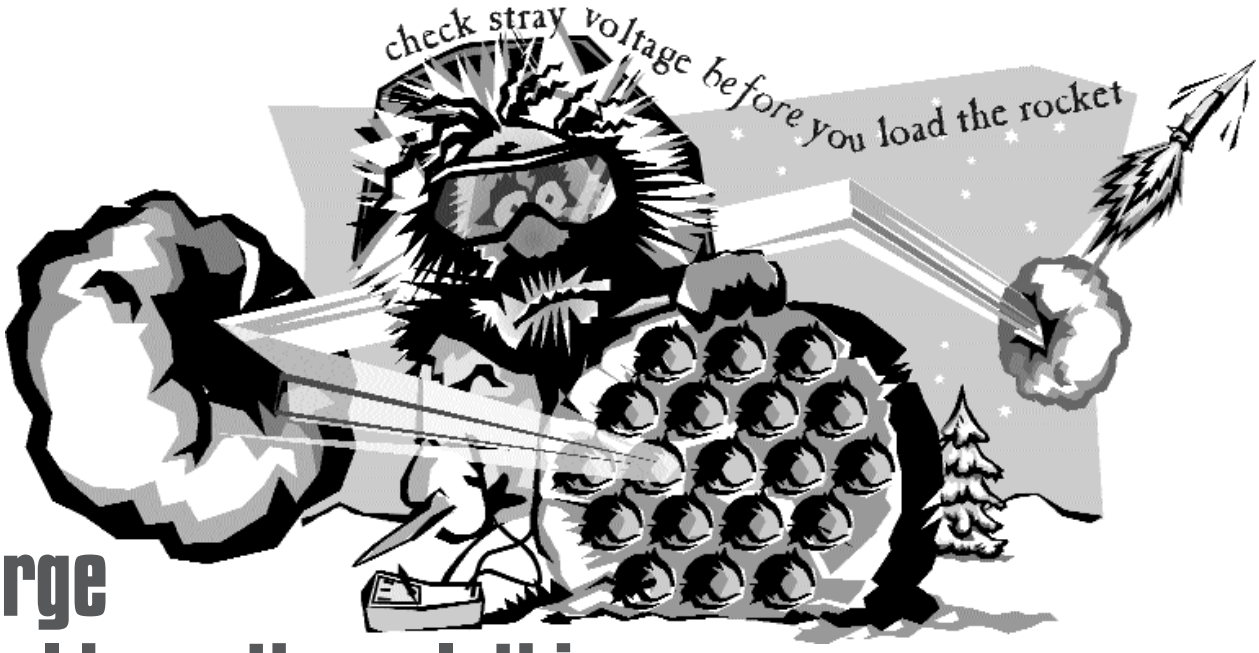
- Two kilometers away, in the direction of takeoff, was a small village that was giving off enough reflected light to give us a false sense of the true conditions. Looking toward the town, the NVG picture was sharp and bright; however, once we turned away from the light source, things got darker and visibility appeared to drop drastically.
- I made a left turn from the right seat. Normally this isn't a big deal but, considering I was confined by a valley and was depending totally on my crew for obstacle avoidance, this wasn't a good choice. I should have set up for a right turn or, better yet, transferred the controls to the left seater who could see! He also had the red position lights on his side, which we all know provide a better picture under goggles. In fact, he had maintained contact

with the ground throughout.

■ I used a treeline out my right door for a visual reference. Although this seemed like a good idea at the time, I now believe that I created a barrier for the snow I was blowing and actually increased the whiteout. Had I left myself more room to the right, much of the snow may have blown out and away from the aircraft and given me continuous visual contact with the ground.

Even if you are flying with an experienced crew that has thousands of flight hours, spending some extra time before the flight asking a few more "what ifs" to identify all the potential hazards could keep you from having to spend time after the flight (or worse, the accident) figuring out what went wrong. Think about our experience, and don't get caught in a similar situation. Obviously, you can't stop Old Man Winter from "dusting" you with snowflakes or dropping any other cold-weather hazards on you. But if you practice solid risk-management techniques, you can prevent things from getting ugly and prolong your flight beyond 1 minute. **Train to Win!**

POC: CW3 Theodore W. Hazen, A Company, 3-101st Aviation Regiment, Fort Campbell, KY, DSN 635-9219/9291 (502-798-9219/9291). (CW3 Hazen was an assistant observer-controller at the CMTC when he wrote this article.)



Static discharge from cold-weather clothing

The Commander of the Soldier Systems Command (SSCOM) has issued a ground precautionary message (GPM-SSCOM-96-01) to alert users of possible static discharge from the camouflage cold-weather parka, NSN 8415-01-228-1306 (series) and camouflage cold-weather trouser, NSN 8415-01-228-1336 (series), worn as the outer garments of the extended cold-weather clothing system (ECWCS).

The synthetic fabrics used in these items have the ability to develop a static electrical charge that does not dissipate readily. Synthetic fabrics generally develop greater static charges and maintain these charges for a longer period of time. This problem is increased in cold, dry climatic conditions. Unexpected release of the static charge during static-sensitive operations, such as ammunition and fuel handling and electronic circuitry maintenance, may present an immediate operator hazard or delayed adverse effects upon systems.

Users of these fielded clothing items must identify their static electric sensitive operations and implement established procedures in the following references:

■ FM 10-68: *Aircraft Refueling*.

■ FM 10-69: *Petroleum Supply Point Equipment and Operations*.

■ FM 10-20: *Organizational Maintenance of Military Petroleum Pipelines, Tanks, and Related Equipment*.

This includes, but is not limited, to engineering controls such as grounding, bonding, and ventilation of vapor/air mixtures.

USASSCOM will work with user proponents to determine the extent of the hazard and eliminate the potential for static buildup in 100-percent synthetic fabric used in field clothing.

Proponents for development of munitions, POLs, and electronics systems should attempt to minimize the sensitivity of their systems to adverse effects of static electrical discharge.

Points of contact

■ **Technical**—Mr. Neil E. Smedstad, DSN 256-4032 (508-233-4032).

■ **Safety**—Mr. Paul G. Angelis, DSN 256-5208 (508-233-5208).

Written by accident investigators to provide an accident synopsis and major lessons learned from recent centralized accident investigations.

UH-60L. As the flight of three UH-60s approached the drop zone (DZ) for a Fast Rope Insertion/Extraction System (FRIES) live-fire exercise (LFX), the main rotor blades of Chalks 1 and 2 meshed. In the subsequent crash, 39 personnel were injured, 6 of which sustained fatal injuries. Both aircraft were destroyed.

● ***What happened.*** The flight crews rehearsed the mission six times that morning with the FRIES masters aboard the aircraft. During the last three rehearsals and the actual mission, all aircraft were flown with the left-seat pilot on the controls. During the first rehearsal, the decision was made to move the aircraft left approximately 20 meters because of the uneven terrain at Chalk 1's original drop point. This deviation from earlier missions reduced the rotor separation of Chalk 1 and Chalk 2 from 3 rotor disks to approximately 1½ rotor disks when the aircraft were stabilized at their hover points.

During the after-action review following the rehearsals, the crews discussed the hazards associated with the size of the DZ and all agreed that the DZ was still suitable for the mission. The en route formation was briefed, to include the altitude, airspeed, and rotor separation. However, except for the discussion about the DZ being "tight," aircraft separation within the DZ for the FRIES operation was not briefed.

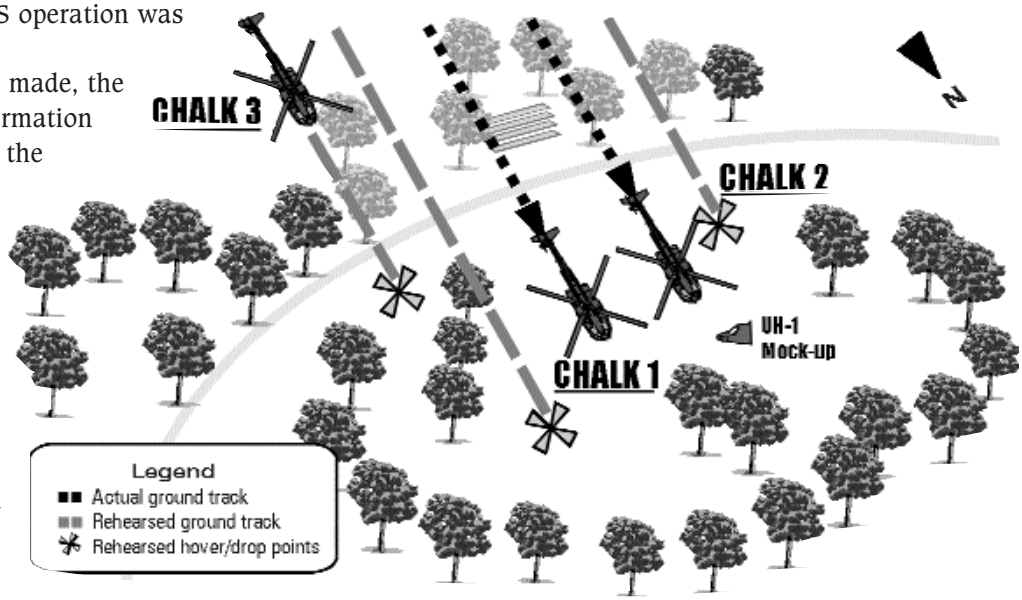
As the 30-second inbound call was made, the aircraft began to decelerate and the formation began to tighten up in preparation for the FRIES drop. As Chalk 1 and Chalk 2 cleared the final barriers into the DZ, Chalk 1 was approximately 15 to 20 meters left and Chalk 2 was approximately 10 to 15 right of the rehearsed ground tracks. Chalk 2 overtook Chalk 1 in the DZ, the main rotors meshed, and both aircraft crashed.

● ***Lessons learned.*** A combination of overconfidence among the crews and lack of situational awareness led to this accident. During their earlier briefing, the crews had acknowledged the need to stay on the rehearsed ground track because of the size of the DZ. However, as a result of the successful rehearsal flights, the crews were confident in their own abilities to maintain the rehearsed ground track and thus maintain aircraft separation.

Although the risk-assessment worksheet for this mission had been completed as required, it left several "holes" in the mission planning. The LFX and each individual task—multiship operations, FRIES, gunnery, terrain flight, and ATM training—were assessed as low risk. When considered individually, each of these tasks may have been assessed properly. However, when complex tasks are combined, the need arises to consider the cumulative risks involved. And while the individual aviation and infantry units completed separate risk assessments for their respective missions, no formal assessment was completed to determine the appropriate risk level for the overall mission.

As the formation entered the most critical portion of the flight (the final approach into the DZ and coming to a stabilized hover for the FRIES drop), the crews of Chalk 1 and Chalk 2 diverted from flying multiship to single-ship operations. The crews of both aircraft shifted their focus from flying a multiship operation to clearing the aircraft of trees around the DZ, scanning inside the cockpit, and picking up their individual cues needed to bring the aircraft to a stabilized hover. No one aboard either Chalk 1 or Chalk 2 was scanning to provide clearance between the two aircraft. This was compounded in Chalk 1 where the right-side crew chief was tasked with performing live-fire aerial gunnery, clearing the aircraft of obstacles, and conducting duties as a FRIES instructor for the left-side crew chief.

Even though the unit had an excellent training program and complete SOP requirements for both multiship operations and single-ship FRIES, the hazards of combining the two complex missions had not been



identified. While crews are expected to have a high level of confidence in their ability to perform complex missions, relying on that confidence in themselves and others is not enough to ensure the safe completion of any mission. This is especially true in today's aviation units, including the accident unit, where even "experienced" crews consist primarily of senior CW2s and 1LTs or CPTs.

Crews must maintain acute situational awareness of not only what is happening within their aircraft but also what is happening outside their aircraft, particularly during multiship operations. According to the ATM, the pilot on the controls is responsible for focusing outside the aircraft to clear and keep track of other aircraft and the pilot not on the controls and the crew chief will provide adequate warnings to avoid traffic and obstacles. Each crewmember is responsible for announcing loss of visual contact with the other aircraft in the formation or that their attention is focused inside the aircraft.

Preparing for the NTC

"There I was . . ." echoed through the tent after the missions. Although this experience had all the trappings of combat and required all the pilot and crew skills we could muster, this was not combat. It was an NTC rotation—the closest we can get to combat conditions in a training environment. Thanks to a lot of home station training we did in preparation for the rotation, it was a successful one.

If you haven't been to the NTC before, you can rest assured that the experience will be demanding and combat-realistic. To ensure your first, or next, is an accident-free NTC rotation, focus your training before deployment on the following:

■ ***Brownout NVG landings.*** You cannot do enough of these.

■ ***Rough terrain NVG landings.*** Practice landing on rough terrain so pilots and crewmembers can learn to recognize obstacles, such as rocks (and believe me there are **many** of them at the NTC), under NVGs.

■ ***Crew coordination.*** Crew coordination is essential for every mission but especially so for missions flown in the low illumination, very dark NTC environment. Have crewmembers learn to recognize what various altitudes look like and to advise pilots constantly on any significant deviations.

Identifying hazards is every crewmember's responsibility. Emphasize to soldiers that this includes stepping out of their lane to identify and take action on hazards if necessary. Encourage crewmembers to speak up if they recognize a hazardous situation; lives may depend on what just one crewmember sees.

Other suggestions and lessons learned

■ Develop a sleep-management plan and make it a priority. Segregation of day and night crews is recommended. An aggressive fighter-management program is necessary and should facilitate mission support, not impede it.

■ Procure and train with a global positioning system (GPS). Using the GPS will reduce the stress level when navigating in low illumination and ensure accuracy.

■ Develop a severe weather plan before deployment. Winds at the NTC often exceed 50 knots; therefore, a plan for protecting personnel and aircraft is required. Enough aircraft field-mooring kits should be available to moor the aircraft in multiple tactical assembly areas. Procuring reinforced bars for tent-staking also will help to ensure security.

■ Allocate planning time for crews to plan the missions thoroughly and to study the map properly. With today's complex missions, time must work for you, not against you.

■ Don't try flying UH-60s in low illumination without the HUD. The less time you spend looking inside the aircraft, the better off you will be.

■ Use the *Risk Assessment and Control Options Program for Army Night Rotary Wing Missions* software. It works and will provide the commander with another risk-management tool.

■ Maintain tactical situational awareness. Getting distracted or focusing on one factor exclusively is easy to do. Know the enemy situation. Don't be predictable. Maintaining tactical situational awareness may keep you from sleeping in your aircraft overnight or running for your life to the nearest downed-pilot pickup point.

Thorough home station training and aggressive risk management can improve your unit's performance during an NTC rotation. Creating an environment where all personnel are empowered to identify unsafe conditions and provide the leadership with control options and countermeasures will ensure a realistic measure of success—all personnel and equipment returning home safely.

POC: CW5 Larry Newsom, Aviation Safety Officer, 18th Aviation Brigade, Fort Bragg, DSN 236-7767/8260 (910-396-7767/8260)

Aviation Branch Safety Office

TRADOC Regulation 385-2: *TRADOC Safety Program,* Chapter 4, establishes proponency for safety in each branch. The basic responsibilities of branch safety proponency are to integrate safety and risk management into the TRADOC domains of doctrine, training, leader development, organizational design, materiel requirements, and soldiers; monitor the safety performance of branch units and school products; and develop safety lessons learned and controls for hazards identified.

Proponency for Army aviation safety is under the control of the Branch Chief and Commander of the U.S. Army Aviation Center (USAAVNC), Fort Rucker, AL, and is managed by the Aviation Branch Safety Office (ABSO). Since establishment in 1987, ABSO has constantly focused its aviation force-protection efforts worldwide and fulfilled its responsibilities for installation safety at Fort Rucker and surrounding facilities.

Although not inclusive of all its duties, the following illustrates how ABSO addresses its responsibilities for—

■ **Integrating safety and risk management.**

● *Doctrine.* ABSO reviews aviation doctrinal manuals developed by the USAAVNC for general integration of safety and specifically for integration of risk management.

The ABSO staff has direct access to the aviation doctrinal sources (USAAVNC command and directorates); therefore, questions from the field regarding aviation safety doctrine and safety program management should be directed to ABSO. Although the U.S. Army Safety Center provides some aviation safety training (such as the Aviation Safety Officer Course and the Aviation Safety Noncommissioned Officer Course); investigates all Class A and selected Class B aviation accidents; produces aviation-related media products such as *FlightFax*, videos, and posters; and researches and analyzes aviation accident cause factors, they do not develop aviation doctrine. And, because their mission encompasses accident prevention and force protection for the entire Army, they cannot focus solely on aviation accident prevention.

● *Training and leader development.* ABSO is the proponent for safety in aviation training both at Fort Rucker and Armywide. The ABSO staff provides 12 hours of risk management and aviation safety program management instruction to the Aviation Officer Advance Course and the Aviation Warrant Officer Advance Course. Training on the Army Safety Program and aviation safety is integrated into the Aviation Officer Basic Course. ABSO monitors all other professional development courses at the USAAVNC for safety and risk-management integration. The ABSO staff also provides risk-management and safety-program seminar training to aviation units worldwide.

● *Organizational design.* ABSO works closely with the office of Aviation Proponency to ensure that aviation unit TO&Es, MTOEs, or TDAs have the appropriate safety staff representation.

● *Materiel requirements.* ABSO continually analyzes aviation mishap reports for cause factors and to identify hazards. Materiel factor trends identified in this analysis are brought to the attention of the command quickly. Working closely with the Aviation and Troop Command (ATCOM), ABSO assists in developing and implementing materiel deficiency countermeasures. The ABSO staff also works closely with the TRADOC System Managers (TSMs) and aviation Program Managers (PMs) to ensure that systems safety is integrated into the aviation materiel development and fielding process.

■ **Monitoring safety performance of units and school products.** A major duty of the ABSO staff is on-site assessment of aviation units. The two active duty aviation safety officers (ASOs) on the ABSO staff also are the Branch Chief's safety representatives for the Director of Evaluation and Standardization (DES). Traveling with DES teams, the ASOs evaluate and assist all active duty aviation units and many Reserve component units around the world. ABSO is the only safety office in the U.S. Army that performs this function on a worldwide basis. This is considered a critical ABSO responsibility because these periodic evaluations ensure that viable safety programs based on risk-management tactics, techniques, and procedures continue to exist in all aviation units, Branch Chief areas of interest are understood and emphasized, and lessons learned and countermeasures are shared among units.

■ **Developing safety lessons learned and controls.** ABSO's basic mission is to assist units in integrating risk

management into all aviation operations. Hazard identification, risk assessment, and development of risk controls are a part of every task accomplished by the ABSO staff.

Points of contact

The ABSO staff is available to help you accomplish your mission safely. We are your safety officers. If you have questions concerning risk management, aviation force protection, or accident prevention, please address them to Commander, U.S. Army Aviation Center, ATTN: ATZQ-S (ABSO), Building 115, Fort Rucker, AL 36362-5034; e-mail safety@rucker-emh3.army.mil; or contact the following ABSO subject matter experts:

■ **Branch Safety Manager (Director).** Mr. Jim Rogers, DSN 558-2301 (334-255-2301).

■ **Secretary.** Ms. Sharon Manning, DSN 558-3000 (334-255-3000).

■ **Accident reporting, accident investigation, and risk-management training.** Mr. Ron Cox, DSN 558-3210 (334-255-3210).

■ **Senior Safety Specialist.** Mr. Jack Schultz, DSN 558-1877 (334-255-1877).

■ **TH-67 and awards.** Mr. George Baker, DSN 558-1833 (334-255-1833).

■ **Fixed wing, UH-60, and flight data recorders.** Mr. Walt Garner, DSN 558-1866 (334-255-1866).

■ **UH-1, CH-47, OH-58A/C, POL, NVD, medevac, and ALSE.** Mr. John Langhammer, DSN 558-1745 (334-255-1745).

■ **AH-1, AH-64, OH-58D, RAH-66, and aerial gunnery ranges.** Mr. Jerry Smith, DSN 558-9006 (334-255-9006).

■ **Senior OSHA Specialist.** Mr. Frank McClanahan, DSN 558-1027 (334-255-1027).

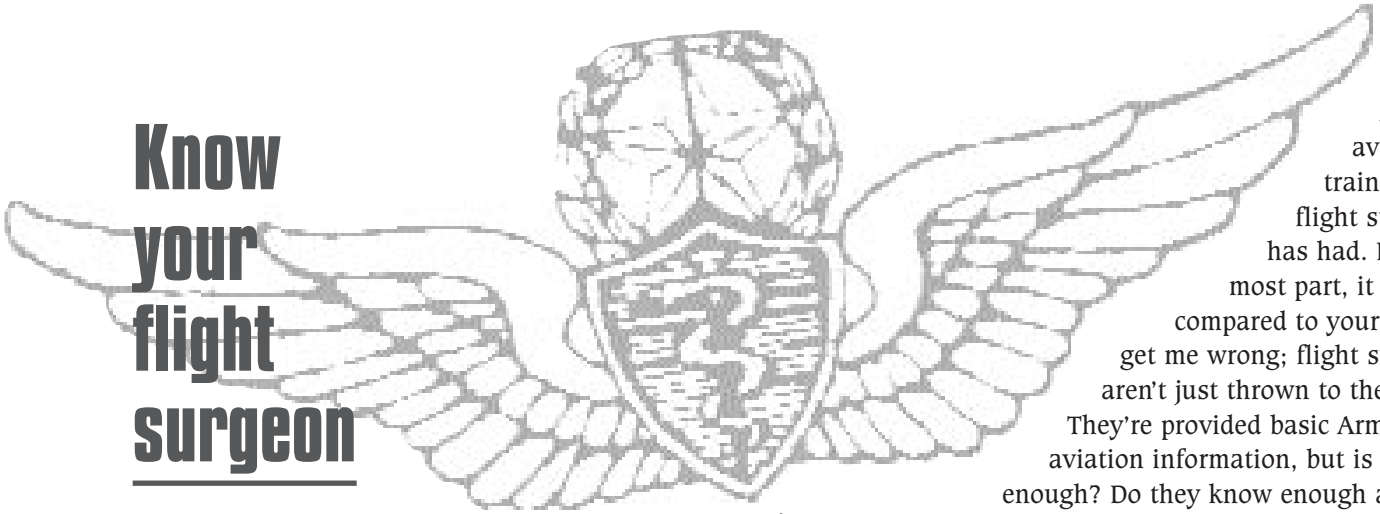
■ **OSHA and motorcycle safety.** Mr. Bob Conner, DSN 558-1832 (334-255-1832).

■ **OSHA, explosives, and hazmat or hazcom.** Mr. Joe Sapp, DSN 558-1950 (334-255-1950).

■ **Branch Safety Officers.** CW5 Bob Williams, DSN 558-2388 (334-255-2388) and CW5 Scott Johnson, DSN 558-1993 (334-255-1993).

POC: CW5 Scott Johnson, USAAVNC Aviation Branch Safety Office, DSN 558-1993 (334-255-1993)

Know your flight surgeon



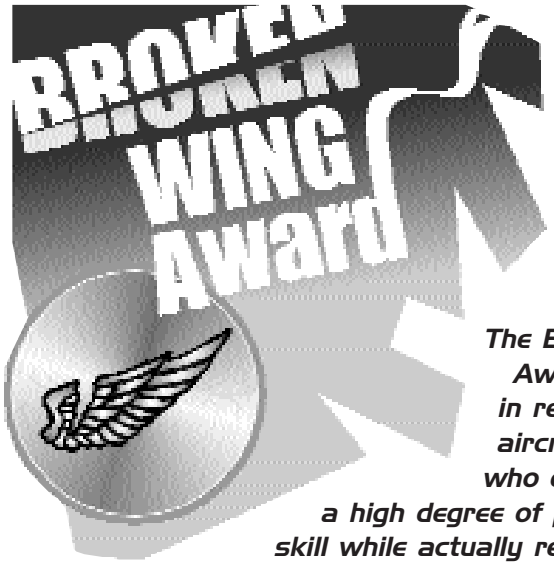
This might seem like a ridiculous statement. Of course you know your unit's flight surgeon. But there is a major difference between knowing who your flight surgeon is and knowing what he or she can do for your safety program. Contrary to popular belief, the flight surgeon is not there just to handle sick call, prescribe medication, and complete flight physicals. The flight surgeon can be a key resource in developing a first-class safety program. Fully understand the role the flight surgeon can play in your safety program and make him or her an integral part of it.

The ASO-flight surgeon relationship is one that must be nurtured. It's up to you to see that your unit's flight surgeon is brought into the Army aviation fold. To accomplish this, acquire an understanding of what real-world Army aviation training the flight surgeon has had. For the most part, it is nil compared to yours. Don't get me wrong; flight surgeons aren't just thrown to the wolves. They're provided basic Army aviation information, but is it enough? Do they know enough about aviation operations to recognize the hazards? If not, help them fill in the blanks.

Break your flight surgeon away from the office and get him or her actively engaged in all aspects of unit operations: range briefs, FARP inspections, air mission briefs, ALSE steering committee meetings, OPORD briefs. Make the flight surgeon an active member of your semiannual survey team. Does your flight surgeon review crash-drill training, new-equipment fielding, or MTOE changes? If not, why not? You will be surprised at the input the flight surgeon can provide.

By now you might be asking yourself if this is really the ASO's responsibility? The answer is an unequivocal "yes" if you want an outstanding aviation safety program.

POC: CW5 Gerald D. Cartier, ASO, 10th Aviation Brigade, Fort Drum, DSN 341-3402/3401 (315-772-3402/3401)



The Broken Wing Award is given in recognition of aircrewmembers who demonstrate a high degree of professional skill while actually recovering an aircraft from an in-flight failure or malfunction necessitating an emergency landing. Requirements for the award are spelled out in AR 672-74: Army Accident Prevention Awards.

■ **CW4 Elmer W. Wilson III, B Company, 6 Battalion, 159th Aviation Regiment, Fort Rucker, AL.** Ten minutes after takeoff on the second leg of a direct support mission, CW4 Wilson instructed the PI to fly a direct heading and 80 percent power to establish the UH-60A in cruise flight at 600 feet AGL and 150 knots. Ceilings were lower and tailwinds less than forecast, putting the mission slightly behind schedule. With the PI on the controls, CW4 Wilson directed his attention inside to update the Doppler. As CW4 Wilson focused inside, the crew felt a vibration and heard a banging sound. The aircraft yawed slightly left, then 60-degrees right and rolled left 15 to 20 degrees. In response, the PI reduced the collective and began a deceleration. Seeing a master caution and tail rotor chip light, CW4 Wilson immediately suspected a tail rotor malfunction and announced that he had the controls. He further reduced the collective, setting up straight descending flight. CW4 Wilson initiated a left turn to a selected landing area that was closely surrounded by tall trees and scattered houses. He added power to slow the rate of descent, and the aircraft yawed right 10 to 15 degrees and simultaneously shuddered. The crew heard the low RPM audio and saw a flash of yellow on the pilot's display unit. For lack of time to secure the engines, CW4 Wilson executed a full power-on autorotative descent. While announcing his intentions to the crew, CW4 Wilson focused his attention outside and adjusted aircraft attitude and rate of closure to the landing area. As he aggressively decelerated to ensure minimum ground run, the aircraft yawed left and the stabilator contacted small trees to the right of the flight path. At 10 feet, he pulled pitch and the tail wheel contacted the ground. At 5 feet, with the aircraft rapidly yawing right in a left drift, he placed the collective full down to stop the aircraft 6 feet short of large hardwood and pine trees at the end of the landing area. CW4 Wilson executed an emergency shutdown on slightly upsloping terrain to the rear and left of the aircraft. Postflight inspection revealed that the tail rotor paddles, retention plate, and slip ring had moved outboard to the crosshead, crushing the pitch change links and leaving a 5-inch gap between the slip ring and the deice stator. Further inspection revealed that the bevel gear shaft had failed internally.

■ **CW4 Stephen R. Selby, 571st Medical Company (AA), 4th Battalion, 4th Aviation Regiment, Fort Carson, CO.** After completing a night vision goggle medevac mission, the crew departed the tactical field site and flew the UH-1V to a cantonment area landing site. Upon turning for final approach to landing, the master caution light illuminated. Approximately 5 seconds later, the N2 gauge indicated an overspeed. CW4 Selby reduced the throttle to correct the overspeed. The N2 gauge dropped to zero. At about 50 feet AGL and 60 knots, the engine failed completely as the aircraft descended for a precautionary landing. CW4 Selby entered autorotation and landed the aircraft while avoiding wires and other obstacles in the dusty landing zone.

■ **CW4 Ronald Hugh Wells, Army Aviation Support Facility, Mississippi National Guard, Jackson, Mississippi.** CW4 Wells was test flying a UH-1V when the compressor section of the engine exploded with a loud bang, followed by yaw and total engine failure. CW4 Wells properly assessed the problem and entered autorotational descent. At the time of the failure, the aircraft was on a north heading at 1,200 feet AGL in a segment of the test flight corridor that is over an urban area with very few forced landing areas. With no suitable area to land, CW4 Wells turned the aircraft left about 90 degrees to search for an area. He found no available area and turned another 90 degrees. Finding an extremely small area with numerous trees and 6-foot underbrush, CW4 Wells maneuvered the aircraft into the area and completed the forced landing with minimum damage to the aircraft.

■ **Mr. Melvin John Strobel, contract instrument instructor pilot, Fort Rucker, AL.** After 15 minutes of intersection holding in instrument meteorological conditions (IMC), the UH-1H "tanker" descended to 2,000 feet MSL while on a radar vector to Cairns Army Airfield ILS runway 6 final approach course. The nonrated student pilot intercepted the localizer final approach course approximately 3 miles outside the outer marker. Upon glideslope interception, the UH-1 began its final approach descent in IMC. Approximately 30 seconds after glideslope intercept, the master caution and engine chip detector lights illuminated. Mr. Strobel took the controls and determined that the only available precautionary landing site was a small field directly beneath the aircraft. He

initiated a steep descending left turn to keep the landing area in site and advised air traffic control (ATC) that he was making a precautionary landing. After a heading change of approximately 60 degrees, the engine made a short grinding noise, followed by a second grinding noise, and then a loud bang. The engine seized. Mr. Strobel entered autorotation and reported the engine failure to ATC. The heavy aircraft (equipped with a nonjettisonable internal auxiliary fuel bladder that still contained 300 pounds of JP-8 and a fixed 450-pound counterweight opposite the auxiliary fuel bladder) was just 800 feet above the only available landing site. At approximately 300 feet AGL, Mr. Strobel completed the 180-degree autorotational turn and aligned the aircraft with the upslope of a cotton field terrace. Upon touchdown, the aircraft skids sank into the soft muddy soil (from heavy rains the previous 2 days) and the aircraft rocked forward as the landing gear folded back. The aircraft came to rest on its folded undercarriage with the aft portion of its belly resting in the mud. After the blades stopped turning and with the engine still smoking, the crew egressed uninjured. Mr. Strobel used the aircraft's fire extinguisher to extinguish a small stack fire. ❑

Our maintenance standard

We frequently talk about and occasionally debate the subject of the Army maintenance standard commonly referred to as "10/20." Our maintenance standard consists of more than just the preventive maintenance checks and services (PMCS) contained in the 10- and 20-level equipment technical manuals. The words are in AR 750-1: *Army Materiel Maintenance Policy and Retail Maintenance Operations.* They set a standard that requires our equipment not only be capable of accomplishing the immediate mission but also be complete with components and basic issue items and with scheduled services up to date and maintained in a way that will provide this capability over an often-extended life expectancy.

I often hear commanders and others refer to the "10/20" standard as "cosmetic maintenance" and as something that we should not be doing and cannot afford. The torn seat cushion is an example frequently used. A torn cushion would not be found in the "not ready" column of any of our PMCS charts nor will it keep a tank or truck from performing the immediate mission. But it is important.

The bedrock of our maintenance standard is the operator who performs PMCS on his or her vehicle. Every time one of our soldiers enters a shortcoming on a 2404 and an appropriate corrective action is taken, we reinforce our maintenance standard and our soldier. Every time the seat cushion stays torn, we set a new, lower maintenance standard.

We certainly do not need to order a new seat cushion each time we find a tear, but we do need to repair it. The 15 minutes spent with a canvas repair kit or 5 minutes with a roll of tape is time well spent. Our maintenance standard must become a "mindset" and PMCS a way of life.

Our maintenance standard is also our equipment transfer standard between MACOMs. This transfer process also seems to foster misunderstandings about the Army maintenance standard. Our maintenance standard does not call for a freshly painted vehicle, but it does require spot painting to prevent corrosion. It does not require new tires or track pads, but it does require that they meet the tread or wear criteria in appropriate 10- and 20-level technical manuals and in our safety regulations. A few judgment calls that cause disagreement are probably inevitable, but make sure that your inspectors at both the losing and gaining units are inspecting to our maintenance standard, not to a lower standard nor to a depot-level condition code B (that is, "like new") standard.

At the HQDA level, we truly believe that we resource the field with the necessary funding to maintain our equipment to our maintenance standard. We do this through a set of models that include usage data from your unit level logistics system (ULLS) and supply and maintenance data from your standard Army maintenance systems (SAMs) uploaded to the work order logistics file (WOLF). I ask you to take an interest not only in the timeliness of this data but in its quality as well.

Although dollars are certainly important, our soldiers, as always, are the most important link. We teach our maintenance standard in all of our TRADOC schools as part of the common core. However, shorter courses have inevitably forced a corresponding reduction in time devoted to formal maintenance training. This means that first-line leaders must teach and supervise maintenance checks and standards in the motor pool and on the flight line. In order not to waste our most precious resource, our soldiers' time, we must have an organized process that identifies and corrects equipment that does not meet our maintenance standard. I solicit your attention to processes. Measure them, set standards, enforce the standards, and use your measurements and insights to improve your processes.

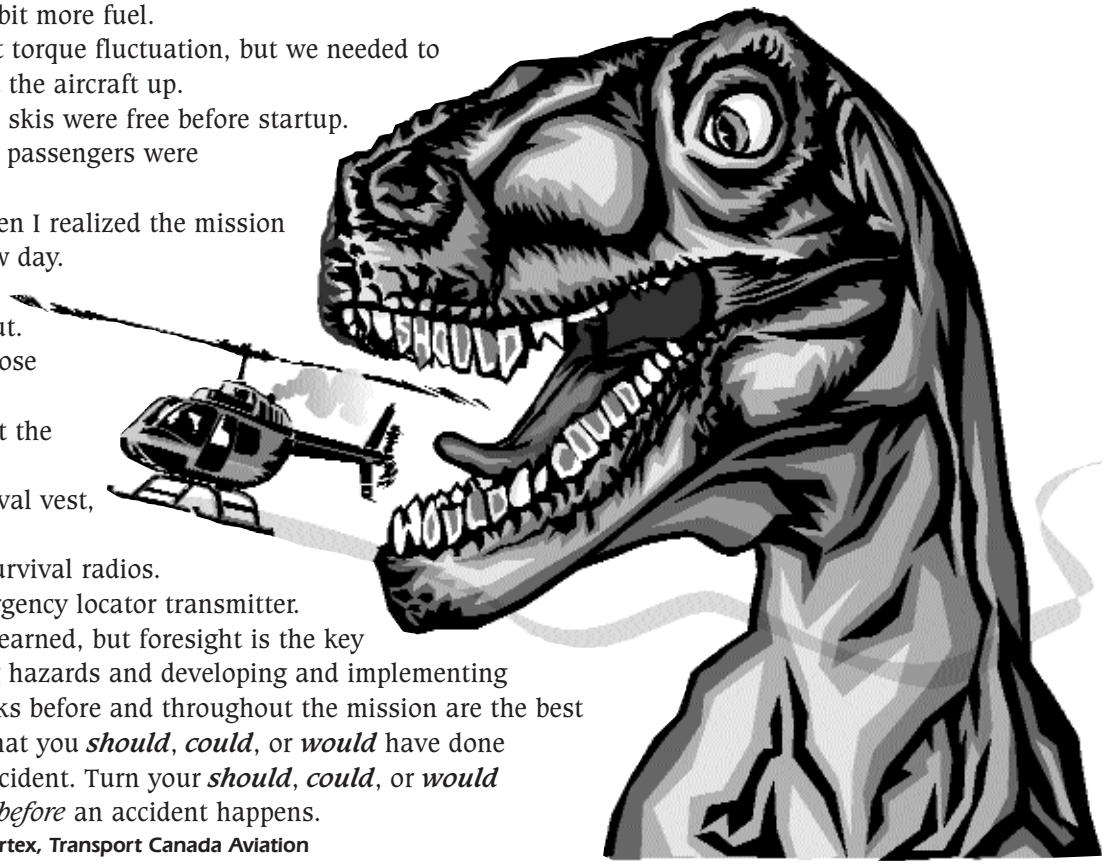
Every month, *PS Magazine* asks us, "Would you stake your life right now on the condition of your equipment?" Meeting our maintenance standard with good quality PMCS, property accountability, timely application of required modification work orders and safety-of-use or safety-of-flight messages, spot paint, and yes, repairing the torn seat cushion means that we can confidently answer "yes" to this question now and in the future.

—Adapted from Deputy Chief of Staff for Logistics message

I *should* have but . . .

How many times have you heard someone say, "I ***should*** have done this or I ***should*** have done that" after they had done something else or done nothing at all? Too often it's heard after an accident occurs. The same applies to ***could*** and ***would***. Before reality raises its ugly head to bite you, think a bit the next time you hear or say—

- I ***should*** have checked the weather more closely before I left.
- I ***should*** have taken a bit more time checking the condition and rigging of the slingload.
- I ***could*** have cleared the trees coming out of that confined area if I had had a bit more power.
- I ***would*** have planned the flight differently if the "old man" hadn't put pressure on me to get the mission accomplished.
- I ***could*** have made it with a bit more fuel.
- I ***would*** have written up that torque fluctuation, but we needed to complete the maintenance and get the aircraft up.
- I ***should*** have made sure the skis were free before startup.
- I ***should*** have made sure my passengers were appropriately briefed.
- I ***should*** have spoken up when I realized the mission would extend well beyond my crew day.
- I ***should*** have known the loose snow would cause a whiteout.
- I ***should*** have known that loose net would get airborne.
- I ***should*** have told him about the rotor blades.
- I ***would*** have worn my survival vest, but it was just a routine mission.
- I ***should*** have checked the survival radios.
- I ***could*** have armed the emergency locator transmitter.



Hindsight is great for lessons learned, but foresight is the key to accident prevention. Identifying hazards and developing and implementing controls to eliminate or reduce risks before and throughout the mission are the best ways to avoid lamenting about what you ***should***, ***could***, or ***would*** have done following the painful bite of an accident. Turn your ***should***, ***could***, or ***would*** statements into control measures *before* an accident happens.

—Concept courtesy of Aviation Safety Vortex, Transport Canada Aviation

FlightFax has new writer-editor

Beginning with the October issue, Ms. Sally Yohn will be the *FlightFax* writer-editor. Please submit material for publication, questions, and comments to her at—

U.S. Army Safety Center
ATTN: CSSC-RSA (FlightFax)
Bldg 4905, 5th Avenue
Fort Rucker, AL 36362-5363

DSN 558-2676 (334-255-2676)
FAX 558-9478 (334-255-9478)
e-mail yohns@rucker-safety.army.mil

STACOM
Standardization Communication

Correction to STACOM 167

Instructor/operator of aircraft simulators

STACOM 167 was published in the July 1996 issue of *FlightFax*. The last sentence in the second paragraph **incorrectly** reads, "Simulator operators are not authorized to administer checkrides, certify readiness level progression, fill out gradeslips, or impart **informal** flight instruction or evaluation to flight crewmembers." It should have said **formal** rather than **informal**. We apologize to DES and our readers for any confusion our error may have caused.

The STACOM point of contact at DES is Mr. Craig Cameron, DSN 558-9029/9098 (334-255-9029/9098).

Accident briefs

Information based on *preliminary* reports of aircraft accidents

Aviation flight accidents

Attack

AH-64 Class E

A series - While in cruise flight, "Oil PSI Acc Pump" light illuminated intermittently. IP returned aircraft to base and completed normal landing and shutdown. Inspection revealed that pressure switch had failed.

A series - During straight and level flight, crew observed oil low primary hydraulic and primary hydraulic PSI lights. Crew executed power-on descent and landed aircraft without further incident. Inspection revealed hole in hydraulic pressure line.

A series - During cruise flight, heading and attitude reference system (HARS) came off line and digital automatic stabilization equipment (DASE) disengaged. HARS would not restart in flight. Crew landed and tried another unsuccessful restart.

A series - APU fire caution light illuminated in flight. Crew landed aircraft in accordance with dash 10 emergency procedures. Maintenance replaced fire sensing element.

A series - At 100 feet AGL and 50 knots on NOE route, aircraft was crossing over ridgeline and starting descent down a drainage when No. 2 nose gearbox chip caution light came on. Crew attained single-engine airspeed and pulled No. 2 power lever back to idle. Caution light went out. Crew returned aircraft to airfield and completed roll-on landing without further incident.

A series - During cruise flight, utility hydraulic PSI caution warning light illuminated. Crew completed landing without further incident. Maintenance replace utility hydraulic pump.

A series - While conducting NVS flight operations, TADS slewed too far left and remained fixed in that position. Crew terminated flight and shut down aircraft. Maintenance replaced TADS turret.

A series - During terrain flight training, No. 2 generator caution warning light illuminated. Crew moved No. 2 generator switch to off/reset position and then back to on position several times without success in bringing No. 2 generator back on line. Crew flew aircraft back to airfield and completed landing without further incident. Maintenance replaced spline adapter.

A series - During maintenance test flight autorotational check, crew heard loud bang. Master caution and shaft-driven compressor caution warning lights illuminated immediately. PI in back seat executed landing in field and performed emergency shutdown. Maintenance replaced shaft-driven compressor.

Cargo

CH-47 Class C

D series - While en route to home station, crew landed for fuel and discovered that clamshell doors covering C-box area were missing. Doors were not recovered. Suspect failure of latching mechanism.

Observation

OH-6 Class C

C series - During standard autorotation, blades flexed and contacted upper anticollision light. All four main rotor blades sustained damage.

H series - During postflight inspection, crew noted overtorque reading of 86.2 on instrument monitor system. Investigation ongoing.

J series - During VFR night multiship training mission, Chalk 2 was practicing high gross weight formation takeoffs and landings when aircraft experienced overtorque.

OH-58 Class C

C series - While performing engine shutdown, PI who was sitting in left seat but using right-seat collective throttle inadvertently rolled throttle to full-off position prior to 2-minute cool down. Realizing his error, he rolled throttle back on. Hearing increase in engine noise, PC assumed control of throttle, started motoring engine, and rolled throttle off. TOT exceeded 1,000 degrees.

OH-58 Class D

C series - During IERW standard autorotation, aircraft touched down with low rotor RPM and encountered spike knock. During his left seat familiarization, PI had pulled initial collective too high and continued descent in nose-high attitude. IP took controls and leveled aircraft. Aircraft touched down with low Nr, resulting in pylon whirl and spike knock.

Fixed Wing

C-12 Class C

G series - Postflight inspection revealed lightning strike damage to HF whip monopole antenna, right lower dipole antenna, right elevator, and support beam and attached hardware.

OV-1 Class C

D series - During postphase emergency unfeather procedure, propeller RPM overspeed occurred. Crew secured engine and landed aircraft without further incident.

Flight-related accident

CH-47 Class C

D series - Flight engineer (FE) was performing fireguard duties during engine shutdown. Witnesses report that FE was beneath rotating aft rotor system and lightning bolt appeared to hit the ground nearby. FE was knocked to ground. Emergency services were contacted. FE was transported to medical facility and retained overnight for observation and treatment of minor injuries. Aircraft sustained rotor blade and bonding damage. Local weather advisory was in effect at time of accident.

E series - Soldier fell approximately 35 to 40 feet while conducting fast rope training. Soldier hospitalized with punctured lung and broken ribs.

Safety message

■ Aviation safety action maintenance mandatory message concerning increase in fatigue life of the forward support assembly, P/N 70400-08116-048, on all UH/EH/MH-60A aircraft (UH-60-96-ASAM-05, 091833Z Jul 96). Summary: Forward bellcrank support assemblies manufactured by Hicksville Machine Works, cage code 59384, serial numbers 1316HMW1 through 1316HMW560, were assigned a retirement life of 500 hours by UH-60-96-SOF-01. This retirement life has since been re-evaluated and determined to be 1,800 hours; therefore, the retirement life of Hicksville forward bellcrank support assemblies serial numbers 1316HMW1 through 1316HMW560 now have a retirement life of 1,800 hours. The purpose of this message is

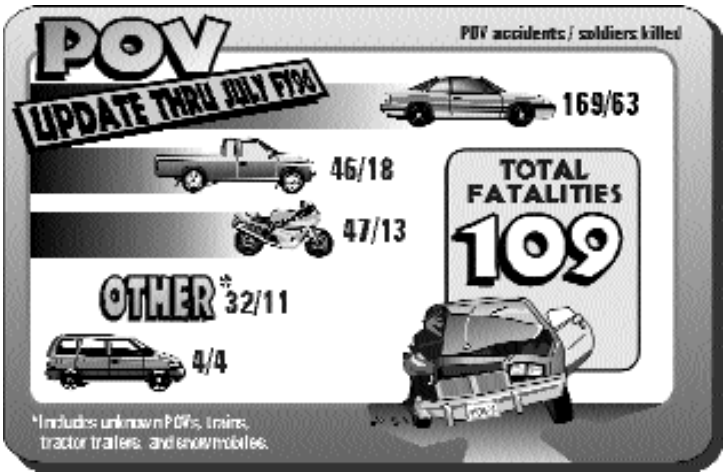
to require units to annotate the appropriate component records to reflect the new retirement life for the Hicksville forward bellcrank support assembly. Contact: Mr. Lyell Myers, DSN 693-2438 (314-263-2438).

■ Aviation safety action maintenance mandatory message concerning one-time inspection of the forward control installation for the manufacturer of P/N 114R3650-3 bolt assemblies on all CH-47D, MH-47D, and MH-47E aircraft (CH-47-96-ASAM-05, 241344Z Jun 96). Summary: The rotary wing head controls bolt assembly, P/N 114R3650-3, a flight safety part, is being manufactured by a vendor, Accurate Tool Co., that is not listed as an approved source in the U.S. Army Aviation Troop Command spares technical data package (TDP). Bolt assemblies, P/N 113R3650-3, that were manufactured by Accurate have been found in the field. Since they are not listed in TDP, none of Accurate's bolts have gone through as rigid a first-article testing as those manufacturers listed in the TDP. The purpose of this message is to require units to inspect and replace the rotary wing head controls bolt assemblies, P/N 114R3650-3, that were manufactured by Accurate Tool Co. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning one-time visual inspection and records check of the upper boost actuators and pull test of swashplates on all CH-47D, MH-47D, and MH-47E aircraft (CH-47-96-ASAM-06, 271541Z Jun 96). Summary: Analysis of a CH-47D aircraft that experienced unexplained control binding has identified two potential flight control problems. The first problem is an out-of-adjustment condition on upper dual boost actuators overhauled at Corpus Christi Army Depot (CCAD), and the second problem involves swashplate binding due to increased friction. The purpose of this message is to require units to inspect and perform a one-time records check to identify the upper boost actuators, P/N 145H6600 and 145H6700, that have been overhauled by CCAD, assign a maximum of 12 months operating time for CCAD-overhauled actuators from the date of this message, conduct a forward and aft swashplate full/friction test, and require upper boost actuator blocks (P/N 114E5900-17) be installed anytime the hydraulic power is off for aircraft that have one or more overhauled actuators installed. The swashplates discrepancies will be repaired as necessary in accordance with the TM or returned to depot. All aircraft that have one or more overhauled actuators installed must have upper boost actuator blocks, P/N 114E5900-17, installed anytime the hydraulic power is off. Warning: Remove blocks when the hydraulic power is supplied. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning requirement to inspect bond lines on the 114P8079-2 and -3 strap assemblies for looseness around the edges on all CH-47D, MH-47D, and MH-47E aircraft (CH-47-96-ASAM-07, 091405Z Jul 96). Summary: Following a phase maintenance inspection, the MH-47E prototype experienced a compressor stall of the No. 2 engine. The silicone rubber pad (P/N 114P8073-27) from the strap assembly (P/N 114P8079-3) had been ingested into the engine with subsequent engine failure. The strap assembly was removed and returned to Boeing Helicopters for analysis. The results of that analysis showed that a polysulfide sealant (Pro-Seal 890) had been used on the strap assembly instead of the prescribed adhesive. The purpose of this message is to require units to conduct a visual inspection to determine if the proper adhesive has been used on the subject strap assembly and corrective procedures are provided if the assembly fails the visual inspection. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

For more information on selected accident briefs, call DSN 558-3650 (334-255-3650).



In this issue:

- Before the first snowflake falls . . .
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Class A Accidents through July

		Class A Flight Accidents		Army Military Fatalities	
		95	96	95	96
1ST QTR	October	0	1	0	0
	November	0	0	0	0
	December	1	0	0	0
2D QTR	January	1	1	1	0
	February	0	0	0	0
	March	1	2	0	7
3D QTR	April	1	1	5	3
	May	2	0	2	0
	June	1	1	0	6
4TH QTR	July	0	0	0	0
	August	2		5	
	September	1		0	
	TOTAL	10	6	13	16

U.S. ARMY SAFETY CENTER

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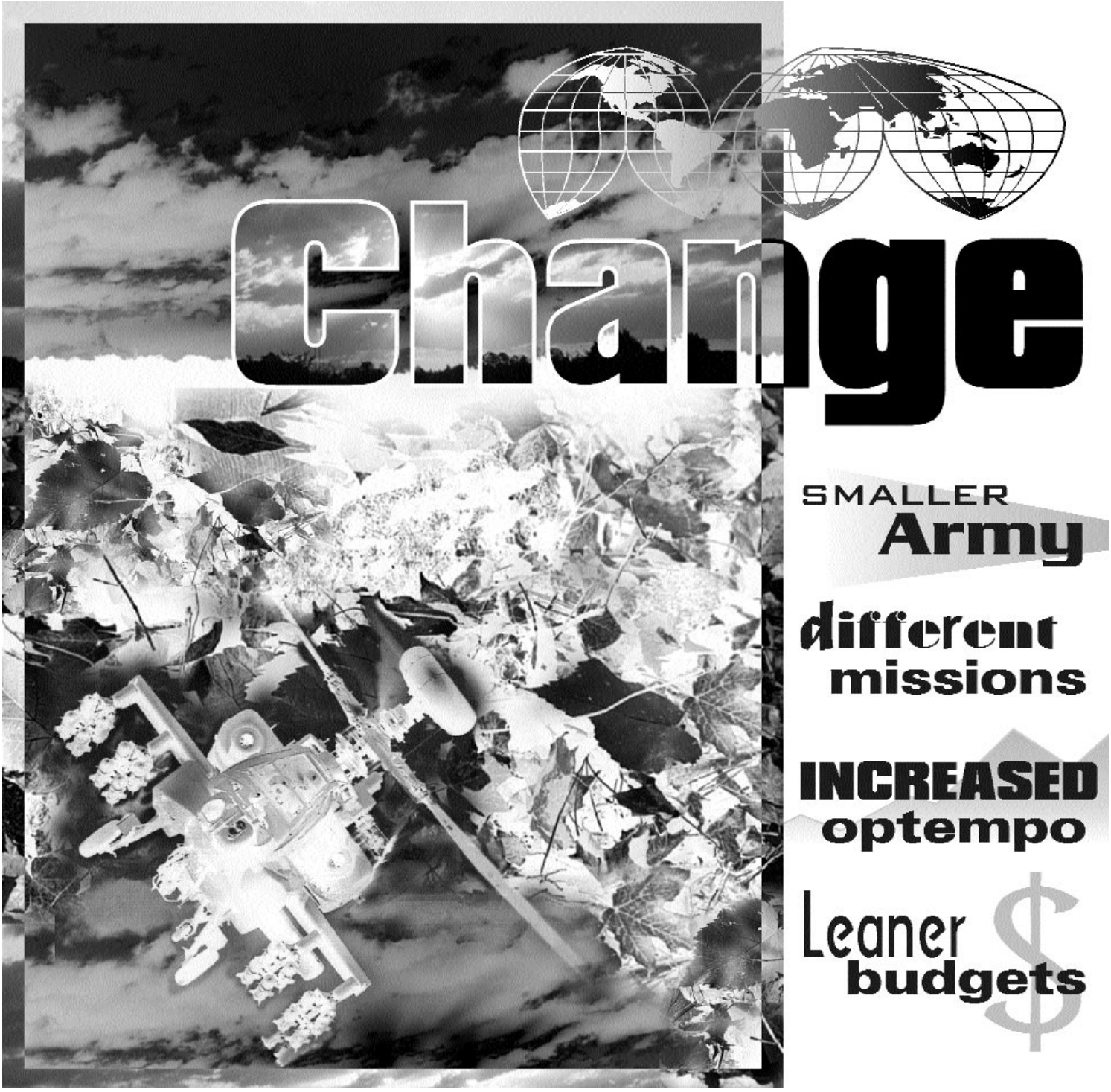
Thomas J. Konitzer
Brigadier General, USA
Commanding General
U.S. Army Safety Center

FlightFax

REPORT of ARMY AIRCRAFT ACCIDENTS
October 1996 ◆ Vol 25 ◆ No 1



The challenges of change

Change. The Army's gone through a lot of it in the past 5 years. We've become a new force, a smaller force, a force that not only defends the nation militarily but also takes on new, nontraditional missions. And much of the time, we conduct operations as part of a joint and combined force. We've transitioned from a forward-deployed, forward-defense, major-land-war Army to a CONUS-based, contingency-force-oriented, crisis-response Army that must prepare to react to uncertain threats.

The new reality

All this is now reality. It's not just coming, it's here. The radical changes we're dealing with as well as those we have yet to face require corresponding changes in the way we look at doing our business. Why? Because one thing has not changed: accidents are still a major threat. And, as the Army has shrunk in size even as our missions have grown, every accident has become more expensive not only in terms of manpower and money, but also in terms of readiness.

Today, more than ever before, every mission requires precise evaluation, precise planning, and precise execution. Risk management integration into all three is the key to protecting the force.

We have a simple risk-management process that we can apply to everything we do. All we have to do when we receive a mission is work the hazards and controls in the five-step process:

Step 1. Identify hazards.
Step 2. Assess hazards.
Step 3. Develop controls and make risk decisions.
Step 4. Implement controls.
Step 5. Supervise and evaluate.

Simple, right? So how come we're not all doing it? It has to do with our culture.

Our cultural dilemma

Some aspects of Army culture effectively exclude the risk-management process. After all, risk management leaves no place for—

- The "Hooah Factor," the "We can do any thing, any where, any time, at any cost" attitude that's so much a part of our Army culture.
- The need to "do more with less" mindset.
- Our inbred reluctance to say "No."
- Making decisions based on "the way we've always done it."
- Letting "somebody else" worry about the hazards involved in our missions.
- Doing only what we *have to do* and not giving a thought to what we *ought to do*—such as wearing flak jackets in all live-fire training even when it's not required by regulation. In other words, doing the harder right versus the easier wrong.

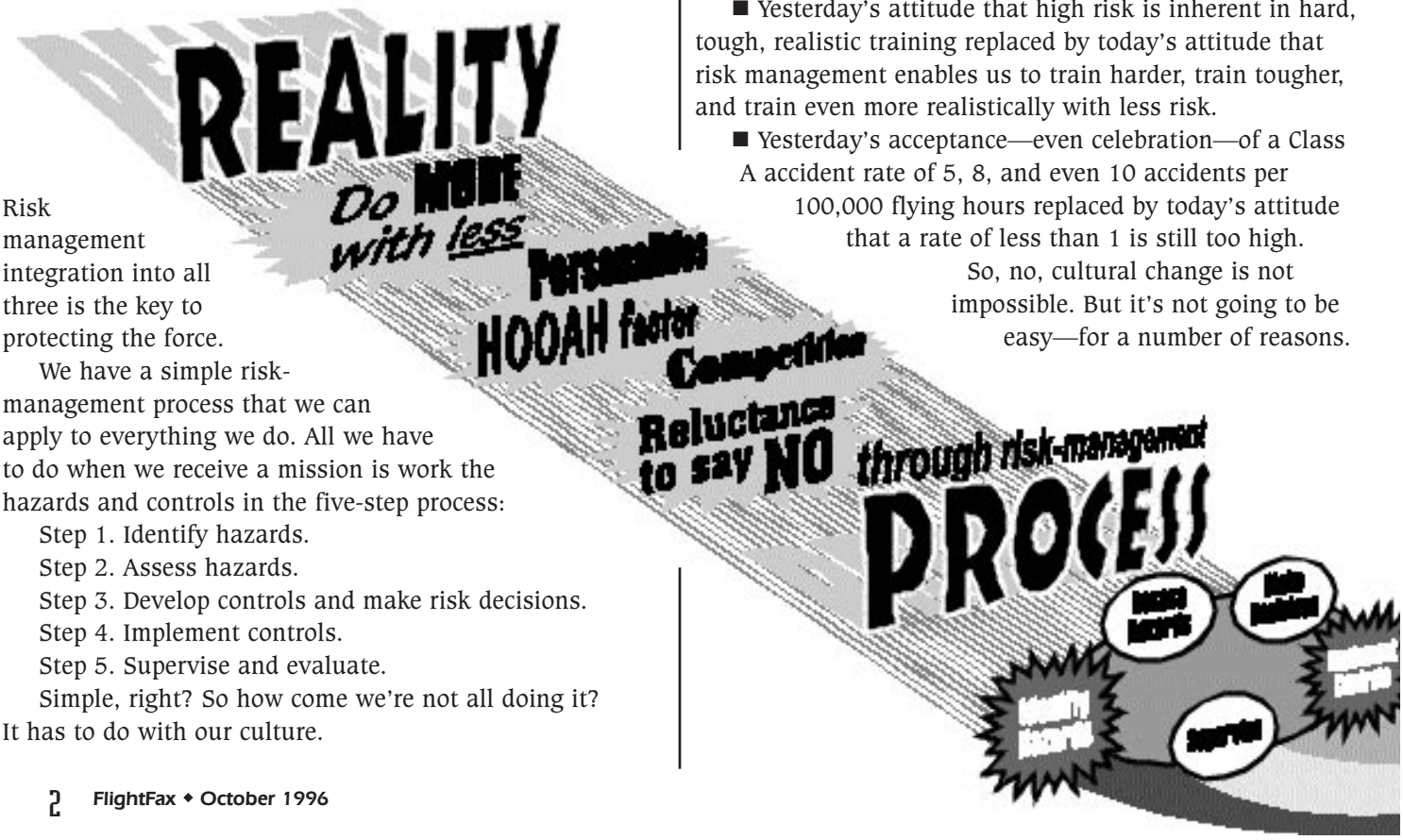
The solution to this cultural dilemma seems to be pretty straightforward: change the culture.

Can we change our culture?

Absolutely we can. And it doesn't have to take forever. We've made some huge changes in our culture during the relatively recent past. We've seen—

- Yesterday's macho image of the hard-drinkin', hell-raisin' soldier replaced by today's image of the responsible, self-disciplined soldier.
- Yesterday's attitude that accidents are simply the cost of doing the Army's business replaced by today's attitude that accidents are neither necessary nor acceptable.
- Yesterday's attitude that high risk is inherent in hard, tough, realistic training replaced by today's attitude that risk management enables us to train harder, train tougher, and train even more realistically with less risk.
- Yesterday's acceptance—even celebration—of a Class A accident rate of 5, 8, and even 10 accidents per 100,000 flying hours replaced by today's attitude that a rate of less than 1 is still too high.

So, no, cultural change is not impossible. But it's not going to be easy—for a number of reasons.



Barriers to cultural change

Certain of today's realities stand in the way of our easily changing the way we do business. For example—

■ **Smaller Army with more missions.** Doing more and more with less and less results in little or no time to learn the lessons of the last mission or to adequately prepare for the next. Leaders and their staffs are so busy that they are off planning the next mission while the troops are executing the current one. There's so much to do, we stay with what we know—*"the way we've always done it."*

■ **Personalities.** We have leaders at all levels whose style it is to say, "I don't want to hear excuses; if you can't do the job, I'll find somebody who can." And there are soldiers of all ranks who simply don't have it in them to tell the boss something he or she doesn't want to hear. And so we are encouraged to stay with what we know—*"the way we've always done it."*

■ **Competition.** It's a hard thing to point out a problem—especially when nobody else is complaining. Doing so could be perceived as whining and give our peers an edge over us. So we go along, staying with what we know—*"the way we've always done it."*

■ **Career aspirations.** Today's Army consists of quality competing with quality. May heaven forbid that leaders become more concerned about their careers than about their troops, but the opportunity exists. We all have career aspirations and, therefore, walk a cautious line. As a result, we tend to stay with what we know—*"the way we've always done it."*

The Army has experienced significant change, creating a cultural dilemma we must overcome.

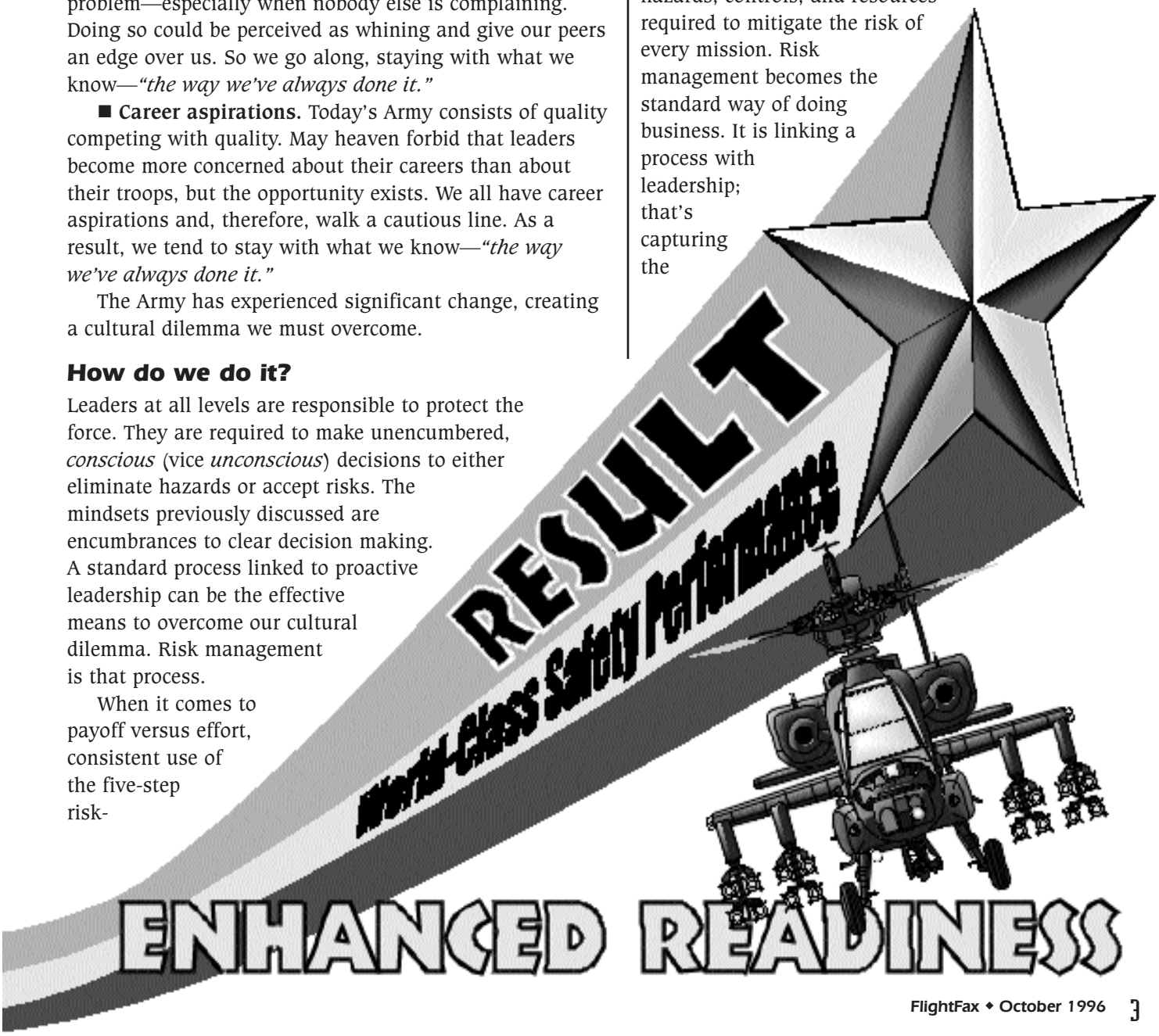
How do we do it?

Leaders at all levels are responsible to protect the force. They are required to make unencumbered, *conscious* (vice *unconscious*) decisions to either eliminate hazards or accept risks. The mindsets previously discussed are encumbrances to clear decision making. A standard process linked to proactive leadership can be the effective means to overcome our cultural dilemma. Risk management is that process.

When it comes to payoff versus effort, consistent use of the five-step risk-management process offers an unparalleled win-win opportunity—a way to get any job done with a clear focus on hazards and controls to mitigate risks. The risk-management process gives us a standard procedure, regardless of mission or force mix or location, to deal with today's realities of uncertainty and high optempo, which demand that—

■ We know and perform to established standards—every time, in every thing. Using our standard five-step risk-management process is a credible way to challenge and eliminate the "That's the way we do it in *this* unit" mentality and get everybody doing things right—to Army standards.

■ We make effective communication the norm up and down the chain of command. A by-product of the risk-management process will be improved communication as we make it not only *acceptable* but *expected* for everyone involved at every level to articulate to the boss the hazards, controls, and resources required to mitigate the risk of every mission. Risk management becomes the standard way of doing business. It is linking a process with leadership; that's capturing the



power of risk management. Consider how it is in the cockpit, where we stress aircrew coordination and cockpit communication. Every crewmember is *expected* to speak up, which eliminates many of the inhibitors to effective communications—rank, age, experience, job, and so forth. Combining this idea with the risk-management process outside the cockpit would improve communications throughout the chain of command.

"As we become smaller, protecting the force becomes even more important. Risk management . . . has resulted in a dramatic reduction of injuries and fatalities."

GEN Dennis J. Reimer
Chief of Staff, Army

"The risk-management process enables leaders at all levels to make conscious decisions to either control the hazards or accept the risks."

BG Thomas J. Konitzer
Director of Army Safety

"Applying the risk-management process in conjunction with troop-leading procedures enables NCOs to make the difference between a mission accomplished safely and a mission failed because soldiers were injured or killed."

SGM Gregory L. McCann
Army Safety Center

■ We make good decisions based on facts, not on fear of being perceived as weak or negative. If we all speak the same language and work the same process of risk management, everybody will understand and no one will mistake the articulation of hazards ("Here's the level of risk for this mission (or task), Boss, and I need your help to bring it down to an acceptable level and still accomplish the mission without any loss") for making excuses ("What's the matter? You can't do it?").

■ We make it not just *acceptable,* but *mandatory,* to tell the boss "No, we can't do that" when risks are too high. If we work the five-step risk-management process at every level, the yes will come—but only after the risks have been controlled to an acceptable level or someone with the proper authority at the proper level makes a *conscious, fully informed* decision to accept that risk.

■ We once and for all destroy the notion that we'll do things differently when the shooting starts, that we'll abandon standards and all that other "training stuff." Risk management is not only an enabler to realistic training, its across-the-board, methodical use will be the best method we have of making sure that the only threat we face in combat is the enemy.

Where do we start?

We start by making risk management—identifying hazards, putting controls in place—the standard way we do business in the Army. So, how do we do that?

We base it on doctrine.

Doctrine is the engine of change in the Army; it drives change not only in training, equipment, and organization but also to a large extent in Army culture—those attitudes and thought processes that make the Army what it is.

This being the case, the catalyst for embedding risk management in our culture is already in our doctrine. FM 100-5: *Operations,* our keystone warfighting text, was significantly updated in 1993 to stress the principles we need to learn and understand to maintain the edge in future theaters of war. A key update was the addition of safety as a component of the protection element of combat power. Safety has also been included in joint-operations doctrine since 1995 (Joint Pub 3-0: *Doctrine for Joint Operations*). That doctrine specifies that protection of the force through the integration of safety into all aspects of planning and execution is crucial to successful operations.

Just as doctrine and policy changes are capturing the top-down approach to risk-management integration, so too TRADOC is working the bottom-up approach through the integration of risk management into officer, NCO, and civilian schools. All that's left is for the field to shoot to the middle and *just do it*, just integrate risk management into all that we do.

Summary

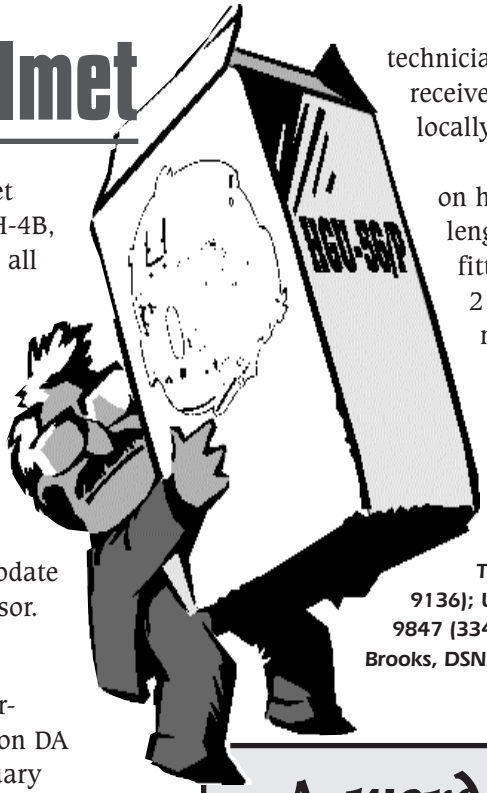
The Army has done remarkably well in reducing accidents, thus saving lives—especially in the past few years even as global responsibilities have increased. A combination of factors has had a direct impact on this success. First and foremost is proactive leadership at all levels. Second is the fact that we have clear and achievable standards for every individual and collective task soldiers are required to perform. Third is teamwork. It is the essence of how we do business. The fourth is the information flow to enhance communications between decision makers. These four elements are institutionalized throughout our Army today. The fifth ingredient that needs to be institutionalized is a process—the risk-management process. Once embedded as a systems approach to business, we can consistently achieve world-class safety performance.

We must embrace risk management as a sound investment in readiness, not as just another "safety requirement" that has nothing to do with our *real* mission. The true cost of our failure to protect the force through risk management will be paid out of lives and equipment—and thus out of readiness.

And that's a price we simply cannot afford to pay.

—BG Thomas J. Konitzer, Director of Army Safety and Commanding General, U.S. Army Safety Center, DSN 558-9360 (334-255-9360), konitzet@rucker-safety.army.mil

New aircrew helmet



The HGU-56/P Aircrew Integrated Helmet System is replacing the SPH-4 and SPH-4B, providing a common helmet for use by all Army rotary-wing aircrewmembers. The new helmet is 20-percent lighter than its predecessors and comes in six sizes for better custom fitting. In addition to better helmet retention, the HGU-56/P offers improved impact and acoustic protection and is compatible with all aviation life support equipment. It also has a dual visor assembly with clear and tinted visors and can accommodate a day (dark amber) and night (green) laser visor.

Fielding

Fielding is being managed by Project Manager-Aircrew Integrated Systems (PM-ACIS) based on DA priority. CONUS fielding, which began in January 1995, is almost complete; OCONUS fielding will begin in the fall. The Reserve Components are not funded by DA at this time.

During the fielding process, PM-ACIS will coordinate with local force-modernization cells. Normally, about 60 days before actual fielding, the PM-ACIS fielding team will brief representatives of the installation central-issue facility, maintenance supervisors, and commanders. The team will discuss the fielding schedule, helmet functions, and the transition process. They will also leave fact sheets, sample publications, and a video on helmet fitting and maintenance. During actual fielding, PM-ACIS representatives will be available to train ALSE technicians, fit helmets, and answer questions.

Sizing and fitting

Proper fit is essential to proper functioning of the HGU-56/P. Fit affects all helmet modules, NVG mounting, and, ultimately, the safety of the user. If optical systems such as ANVIS are used, helmet fit must be checked with that system attached. If M24 or M43 CB masks are used, they should be worn during helmet fitting.

The helmet's thermoplastic liner can be custom-fit through a heat-treating process if necessary to relieve "hot spots" or to allow for physical inconsistencies. Heat-treating will also help stabilize the helmet for ANVIS mounting and will enable users to bring the ANVIS closer to their eyes. (See page 6 for article on ANVIS adjustment.) PM-ACIS is fielding convection ovens to each unit to be used for the heat-treating process. Installations or units requiring additional ovens should contact the PM-ACIS POC.

Fitting and maintenance of the HGU-56/P has been taught in ALSE schools since January 1995. ALSE technicians (Q2 identifier) who have not received this instruction can be trained locally using the video mentioned earlier.

HGU-56/P helmet size is not based on hat size; it's based on "head length." Detailed measuring and fitting instructions are in TM 1-8415-216-12&P, the operators and unit maintenance manual for the HGU-56/P. The manual, in draft form dated 31 January 1995, will be available through the Army publication system sometime during the first half of FY 97.

POCs: PM-ACIS Logistics: Ms. Karen Thompson, DSN 693-9136 (314-263-9136); USASC ALSE: CW5 Dan Medina, DSN 558-9847 (334-255-9847); USASC NVGs: CW5 Bob Brooks, DSN 558-3969 (334-255-3969)

A word to aircrews

Once fielding is complete at your installation, your local central-issue facility (CIF) will issue you the HGU-56/P helmet and helmet bag, both of which will be put on your clothing record. You will also receive a Gentex operator care and use booklet that shows basic maintenance checks and services. It does not, however, include fitting instructions. You will need to see your ALSE technician for that. When you go for your fitting, be sure your hair is the same length and style you wear while flying. If you change your hairstyle, you'll need to have your helmet fit checked as well.

Pilots

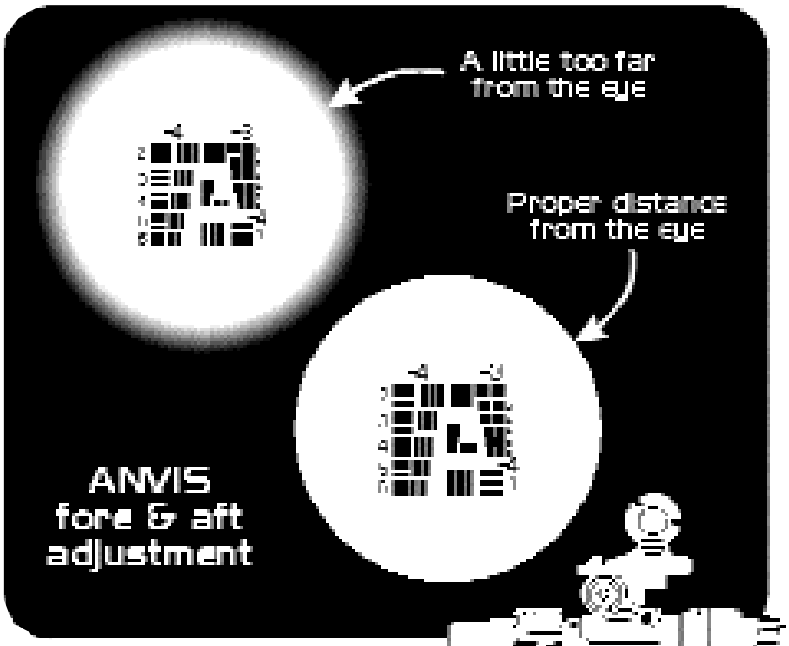
Initially, you will be allowed to keep any previously issued helmet as well as the HGU-56/P. However, you must turn in your HGU-56/P when PCSing until Armywide fielding is completed. If your new installation doesn't have the HGU-56/P, go back to using your SPH-4 or -4B until the new system is fielded at your new location. Once fielding has been completed Armywide, PM-ACIS will instruct local CIFs to collect your SPH-4 and -4B helmets when you leave an installation, and you will take your HGU-56/P to your next assignment.

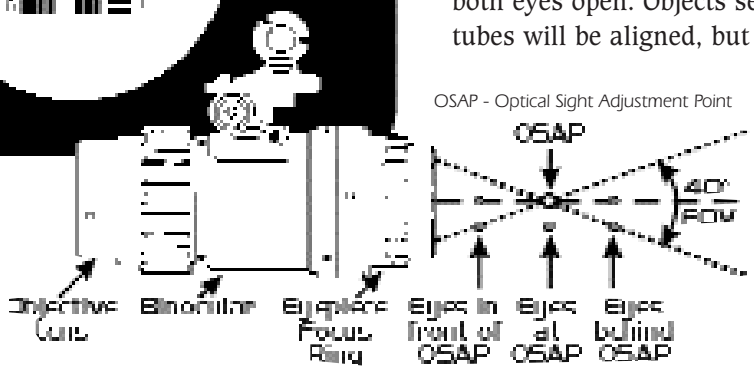
Enlisted crewmembers

Procedures for you will remain the same as they are now. When you clear, you'll turn in your helmet and bag. When you get to your new location, you'll draw whichever helmet is available there.

HGU-56/P and ANVIS: Adjusting for full FOV

As with previous helmets, some aviators are having problems getting a full field of view (FOV) with the standard eyepiece ANVIS mounted on the HGU-56/P helmet. Interestingly, aviators wearing larger-sized helmets have reported the most incidents. This is probably accounted for by the fact that, as helmet size increases, so does eye-clearance distance. And therein lies the problem.





What IS a full FOV?

Simply stated, you have a full FOV in each tube with ANVIS when you are looking in the center of the circular image and the outer edges of the FOV appear sharp all around the green pattern. When your eyes are on the proper optical axes and the ANVIS is at the maximum eye-relief position while retaining a full FOV, you will notice that when you move your eyes to look in any direction, the edge you fixate on will slightly blur or dim.

How to get a full FOV

For flight, the operators manual recommends that you adjust the fore-aft knob (standard mount) about a half-turn closer to your eyes from the maximum eye-relief position at which you can obtain a full FOV to compensate for goggle shifts that occur during flight. This ANVIS fore-aft position will produce the maximum FOV through the goggles and optimize look-under and -around unaided vision. Moving the eyepieces any closer than a half-turn will unnecessarily reduce your unaided FOV. (NOTE: Earlier NVG adjustment instructions to "move the eyepieces as close to your eyes as possible without the eyelashes touching" referred only to FULL-faceplate AN/PVS-5s, not to cutaways or ANVIS.)

Still having problems?

If you're still having trouble achieving a full FOV after making the above adjustments—

- See your ALSE specialist to verify that your helmet is the right size. If you border between two sizes, try the smaller one. You might also need to have your thermoplastic liner heat-fitted to position your head in a more forward position.
- Make sure your nape strap is snug. This will move your head forward slightly in the helmet. (It'll also improve retention.)

If you do all this and still can't get a full FOV in each tube, you may, as a last resort, try ***slightly*** misadjusting the inter-pupillary distance (IPD) either wider or narrower (no more than ½-turn of the IPD knob) to just clear the outside edges.

If you adjust the ANVIS IPD laterally narrower or wider than your eye IPD, you'll have what's called "partial overlapping FOVs." In this situation, the FOV area seen by each eye separately will be smaller than the total visible horizontal FOV with both eyes open. Objects seen in the right and left tubes will be aligned, but the outline of the right and left FOVs will appear separated laterally. The less-than-total overlap will not compromise safe operation, but it may take some time for you to adapt to this way of seeing. (NOTE: "Partial overlapping FOVs" is the technique planned for use to increase horizontal FOV in the helmet-mounted display for the Comanche.)

The future fix

The larger 25mm ANVIS eyepiece procured with the last ANVIS buy is a giant step toward ensuring every user a full FOV with ANVIS. However, it's going to take some time. A retrofit program for existing systems has not yet been funded, and, while all replacement eyepieces are now the 25mm design, turning in ANVIS with serviceable standard 15mm eyepieces only to change to 25mm eyepieces is not authorized.

POC: Bill McLean, Research Optometrist, U.S. Army Aeromedical Research Laboratory, Fort Rucker, AL, DSN 558-6813 (334-255-6813)

What's the deal?

Some publications refer to the standard ANVIS eyepiece as "15mm" and others as "18mm." What's going on?

What's going on is that they're talking about two different things: "eye clearance" and "eye relief." Those of us who use technical terms even though we don't really know what they mean frequently use these two interchangeably. We shouldn't; they're different measurements entirely.

- **Eye clearance** is measured from the eyepiece outer housing closest to the eye to the apex of the cornea of the eye.
- **Eye relief** distance is an optical term computed from the eyepiece lens to the designed exit pupil of a specified size.

Clear enough? Oh, well; when we're talking about ANVIS, most of the time we're talking about "eye clearance," not "eye relief." The more *eye clearance* we achieve with ANVIS, the better our look-under and look-around. The problem is, when we push the NVGs too far away from our eyes, we begin to reduce our optimum field of view.

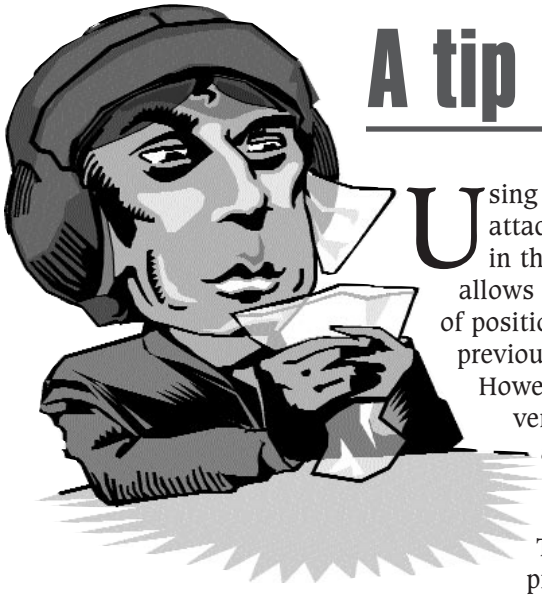
With the standard eyepiece (see next question), users have reported a beginning loss of full FOV at 19mm of eye clearance; others have reported having a full FOV out to 23mm.

With the 25mm eyepiece (see next question again), users have reported a full FOV out to more than 30mm of eye clearance.

The bottom line is, we should have a full FOV with the standard eyepiece with an eye clearance of 20mm or less, and a full FOV with the 25mm eyepiece at 30mm or less.

It's confusing. The diameter of the visible opening for the original "standard ANVIS eyepiece" is slightly more than 19mm, but we call it the "15mm eyepiece." The diameter of the new "25mm eyepiece" is actually about 27mm. What's the deal?

Trust us; you really don't want to know. To explain fully would involve discussing all manner of complicated stuff involving, among other things, distance of the pupil behind the cornea and photopic vision. Let's just agree to call the original ANVIS eyepiece "the standard eyepiece" and the more recent, larger eyepiece "the 25mm eyepiece." That way, we'll have no more confusion; we'll all understand each other.



A tip on positioning the earcups

Using Velcro® to attach the earcups in the HGU-56/P allows a greater range of positioning than previous designs. However, it can be very difficult to adjust the earcups so they fit properly. The usual process is to position the earcups, put on the helmet to see how they feel, take off the helmet, reposition the earcups, put on the helmet to see how they feel, take off the helmet, reposition the earcups, and on and on and on—you know how it goes.

CW3 Sean C. Crothers, the tactical operations officer for the 159th Combat Aviation Group at Fort Bragg, has found a better way. He uses two sandwich-size, relatively heavy-duty plastic bags (the ones that zip closed work great) to position his earcups more quickly and precisely. Here's how he does it:

1. Detach earcups from helmet.
2. Place plastic bags *between* earcups and helmet.
3. While holding earcups and plastic bags in place, put on the helmet. This will require a good bit of dexterity and patience (and, perhaps, a little cussin').
4. Press down on helmet as necessary to make sure it's properly positioned.
5. With plastic bags between earcups and helmet, position earcups (they'll move freely).
6. Once earcups are properly positioned, carefully hold them in place while slowly pulling out plastic bags. The Velcro® will now hold earcups in position.

CW3 Crothers suggests keeping the plastic bags handy in your helmet bag for use wherever you may be.

Our thanks to CW3 Crothers for sharing this tip and giving us the opportunity to encourage you to do the same. And, hey, even if you don't have a tip to share, we still want to hear from you. What you think *can* make a difference. If you have something to say about safety issues in Army aviation, *FlightFax* is the place to say it. You may—

- Fax us: DSN 558-9478/3743 (334-255-9478/3743).
- Call us: DSN 558-2676 (334-255-2676).
- E-mail us: yohns@rucker-safety.army.mil.
- Write us: U.S. Army Safety Center, ATTN: CSSC-RSA (*FlightFax*), Bldg. 4905, 5th Avenue, Fort Rucker, AL 36362-5363.

And, oh yeah, you can reach CW3 Crothers at DSN 236-9917/9660 (910-396-9917/9660).

ASO list server

The Army Safety Center is building a list server for aviation safety officers. So what's a list server? It's a high-speed way to send an e-mail message to lots of specific sites or addresses. What can it do for you? It's a way for ASOs to get the latest information. It's a way to conference across continents and oceans on topics important to you.

Subscription information will soon be published. In the meantime, address your questions to CW5 Barker at DSN 558-2443 or CW4 Helbig at DSN 558-2381, or send a fax to DSN 558-2670 (commercial prefix for all these is 334-255-XXXX). You may also e-mail to barkerm@rucker-safety.army.mil or regular mail to Commander, U.S. Army Safety Center, ATTN: CSSC-RT, Bldg. 4905, 5th Ave., Fort Rucker, AL 36362-5363.

ASO conference

The Army Safety Center will sponsor a conference for aviation brigade (and higher) safety officers 13-17 January 1997 at Fort Rucker. It is scheduled to coincide with the Aviation Brigade Commanders Conference.

More information will come to you via message and coordination with the MACOMs. Plan now to attend, and send your confirmations and agenda items to CW5 Barker or CW4 Helbig at the above addresses and phone numbers.

Accident briefs

Information based on *preliminary* reports of aircraft accidents

Aviation flight accidents

Utility

UH-1 Class E

H series - During cruise flight at 3500 feet MSL and 90 knots, aircraft yawed moderately left, right, left with no EGT fluctuation. Crew chief heard series of moderate banging noises. Aircraft landed at airfield with no further incident. Compressor-stall inspection by maintenance found no damage, and hot-end inspection revealed no adverse indications. Aircraft was grounded pending test flight. This was second suspected compressor stall with no adverse indications during maintenance inspection.

UH-1 Class F

V series - During maintenance runup, pilot noted high EGT. After shutdown, maintenance found engine ingested shop rag into compressor.

UH-60 Class C

A series - During landing to grassy area, left drag beam broke and left strut shifted to 15-degree angle, resulting in broken brake line and left-hand fairing, strut, and disk brake. Unit reports 4 drag beam breakages in the last 6 months, 3 during flight and one noted while aircraft was parked.

K series - Crew reported insufficient power for obstacle avoidance on takeoff. Crew performed No. 2 engine lockout and manually manipulated engine. Gas turbine temperature exceeded TGT limits.

K series - As PC was positioning aircraft tail to face specialized platform to disembark passengers, tip caps of main rotor blades contacted platform.

L series - While hovering in confined area during hoist training, aircraft drifted and main rotor blades contacted trees. All tip caps and two main rotor blades were damaged.

UH-60 Class E

A series - Chalk 3 crew felt vibration from tail wheel during landing at airfield, then vibration dissipated. As aircraft was repositioning to hot refuel, Chalk 4 notified crew of a problem with tail wheel. Crew chief inspected tail wheel and informed crew that tire was flat. Further inspection revealed broken rim. Suspect damage happened during earlier hard landing to unimproved LZ.

L series - During autorotational RPM check required for main rotor balance verification, left-hand fairing cover came partially loose and was caught in wind and torn. Crew chief was on right side of aircraft and didn't notice damage until he began refueling aircraft. Fairing cover was repaired.

Attack

AH-1 Class E

F series - Maintenance inspection revealed ruptured oil line from accessory gearbox to oil debris detection system. Oil line had broken due to contact with forward firewall flange. Maintenance officer ordered fleet inspection and repositioning of clamps to keep oil line away from firewall flange.

F series - Pilot felt collective binding during hover and returned to parking area. During shutdown, he smelled electrical smoke. All segment lights came on whenever master caution switch was touched. After replacing pilot's collective assembly, maintenance could not duplicate problem.

F series - Upon landing after performing OGE power check, crew discovered that logic control assembly panel was missing. Panel was found about 150 meters from landing site.

AH-64 Class E

A series - During OGE hover at 300 feet, utility oil bypass caution light came on. Utility purge valve was clogged, causing large fluctuations in hydraulic pressure.

A series - Engine No. 2 nose gearbox PSI came on during high-speed flight and remained on. Power lever No. 2 was retarded to idle and a roll-on landing was made without incident. No. 2 nose gearbox oil pump was replaced.

A series - During ground taxi for takeoff, master caution and SDC segment lights illuminated and would not extinguish. SDC replaced.

A series - After engine shutdown to APU, vibration was felt throughout airframe, accompanied by unusual noise. Primary hydraulic pressure gauge read between 4000 and 6000 PSI. Hydraulic pump was replaced.

A series - During multi-ship flight, master caution light illuminated in back seat only, followed by oil bypass primary hydraulic segment light. PC assumed controls, exited formation, and returned to airfield without incident. Switch on primary hydraulics manifold that controls light was replaced.

A series - During hot refueling, No. 2 engine was shut down and No. 1 engine was at 100 percent. Refuelers had filled forward tank and were filling aft tank when pilot put crossfeed switch in aft position. Engine No. 1 PSI illuminated and No. 1 engine flamed out about 4 seconds later. Chafed wires going to ECU were replaced.

A series - During before-landing check, oil PSI accessory pump light came on. Crew notified tower and aircraft was cleared to land. Crew then saw SDC caution light illuminate. Neither caution light illuminated the master caution light. Crew elected to land immediately at a shopping mall. Maintenance replaced shaft-driven compressor, took oil samples, and released aircraft for flight back to airfield.

A series - At 50 feet AGL and 20 knots during takeoff from FARP, No. 2 engine-out light came on. CPG was on controls and responded by lowering collective. As aircraft began to descend, CPG increased forward cyclic and collective to gain single-engine airspeed. After uneventful single-engine landing, chafed wires to ECU were replaced.

Cargo

CH-47 Class B

E series - Aircraft was Chalk 2 in aerial refueling flight behind C-130 tanker. Inadvertent disconnect during inflight refueling caused basket to contact main rotor blades, and fuel spattered on windshield. Crew conducted roll-on landing and emergency engine shutdown. Severe rotor vibration caused damage to all main rotor blades and rotor brake. Landing gear was damaged during landing. ECOD pending.

CH-47 Class C

D series - In cruise flight at 1000 feet AGL and 125 knots, upper latch on aft pylon fairing (clamshell doors) failed. Crew was unaware that both doors had come off until they reached destination and landed. Both engine FOD screens were dented, area between aft pylon and No. 1 engine was scraped, and No. 1 engine exhaust tail cone was dented.

CH-47 Class E

D series - During aerial refueling, probe tip contacted refueling drogue. Paradrogue left probe and rose into rotor blades. Refueling drogue was destroyed, and one blade was slightly damaged. Blade damage was dressed out, and aircraft returned to service.

D series - During cruise flight, PC noticed No. 2 engine oil temperature rising. Seconds later, it reached the maximum limit. PC executed emergency engine shutdown procedure, declared an emergency, and terminated with a roll-on landing. Cannon plug on engine deck was found to be loose.

D series - During OGE hover at 50 feet, fire bucket upper support ring snapped, causing bucket to collapse. Crew chief released load, causing center cargo hook to swing and strike bottom of airframe, cracking cylinder cam.

D series - During approach, pilot noticed thrust sticking excessively and N1 and PTIT fluctuations. In addition, loud bangs were heard in No. 1 engine. Caused by bleed-band actuator malfunction.

D series - On climbout during NVG training, IP simulated engine failure by decreasing No. 2 engine emergency trim switch to 70-percent N1. As maneuver continued, emergency power light came on. No. 2 N1 had fallen to 30 percent, and PTIT was at 910°C. Engine control lever was immediately brought to stop, shutting down engine. Roll-on single-engine landing was made without incident. Engine and fuel control were replaced.

D series - No. 1 engine torque split low at 10-foot hover. Both pilot and copilot attempted to adjust with No. 1 engine beep trim but got no response. Engine N2 was controlled by emergency engine trim, and aircraft landed. Maintenance replaced N2 actuator for No. 1 engine.

D series - While conducting Bambi bucket operations, crew heard banging noise from vicinity of combining transmission. Bracket on right-hand clamshell door had broken off, and door was separating. Recovery team replaced door.

D series - During runup, aircraft shuddered from hydraulic surge to boost actuators on aft rotor head with No. 2 AFCS on. No. 2 flight hydraulic pump replaced.

Observation

OH-58 Class C

A series - During minimal power descent, main rotor RPM increased to 112 percent. Upon application of power, RPM decreased to normal operating range. Blade inspection required due to overspeed. Investigation in progress.

C series - Engine failed on takeoff, and aircraft landed hard. Tail boom separated, and main rotor was damaged.

OH-58 Class D

A series - Damage to tail rotor blade was discovered following maintenance test flight and runup. Unknown object caused damage to tail rotor blade. Tail rotor was replaced.

OH-58 Class E

A series - Generator failed during low-level flight. Broken wire to generator was repaired.

C series - After aircraft entered cruise flight, knocking/banging noise was heard. Seatbelt had been left outside door.

C series - At 50 feet and 40 knots with aircraft close to max gross weight in 30-knot winds, aircraft encountered rising terrain. Pilot pulled in 95-percent torque to arrest descent and effect climb. After clearing terrain, aircraft entered high winds

and nose began turning right. Pilot corrected with left pedal, and as normal flight was resumed, torque rose to 110 percent. Pilot immediately reduced power and made precautionary landing.

C series - During engine runup, N2 stabilized at 100 percent. Upon bringing aircraft to hover, N2 dropped to 96 percent and could not be increased with increase/decrease switch. Droop compensator was rerigged.

C series - On short final with PI on controls and torque at 45 percent, IP noticed change in engine noise and took controls. One to two seconds later, low rotor RPM audio and light activated. As IP checked throttle to see if it was full open, underspeed to 95 percent occurred, which activated the warning light and audio. Landing was completed without further incident. Maintenance adjusted throttle friction clamp.

D series - Transmission oil temperature high caution message displayed with one red segment light on MPD for transmission oil temperature (110°-120°C). Aircraft landed in field until cleared for one-time flight back to home base. Problem could not be duplicated during return flight nor could MTP duplicate. Suspect prolonged hover with tailwind caused problem.

D series - Aircraft was landing to FARP when engine chips lower caution message appeared. Inspection found piece of metal on chip detector; aircraft grounded.

D series - Low hydraulic pressure message appeared on final and SCAS kicked off line. Slight feedback was felt in controls. Caused by hydraulics failure.

Training

TH-67 Class D

A series - Aircraft touched down heels first during standard autorotation. Striker plate and isolation mount were damaged.

Fixed wing

C-12 Class C

D series - During descent at night, avionics door separated from right-side nose area and struck right propeller. Right engine cowling and inboard leading edge of propeller were damaged. Investigation continues.

G series - Postflight inspection revealed lightning strike. Maintenance and ECOD substantiate Class C damage.

C-12 Class D

D series - While on takeoff at night, crew saw three deer run in front of aircraft. Crew rotated aircraft but hit one deer. Emergency was declared. After circling airfield while runway was cleared, aircraft landed without further incident. Right-side bottom dipole antenna was torn from aircraft.

C-12 Class E

C series - During flight-control check before takeoff, yoke was noticeably binding at mid travel. Pilot taxied back to ramp and terminated mission. Wire bundle coming from GPS unit had dropped down, interfering with control movements.

F series - Immediately after propeller RPM was reduced during level-off at cruise altitude, No. 1 engine surged and TGT reached 860°C for 3 seconds. Pilot maintained TGT within limits by reducing No. 1 engine power while en route to nearby airfield. Engine continued to surge, with power and TGT fluctuating within normal range. Once in traffic pattern, crew shut down No. 1 engine and made single-engine landing. Visual inspection found no damage or cause of surging. Engine was removed. Surging most likely was caused by failure of high-side engine compressor bleed valve or engine fuel control unit.

N series - Crew couldn't get landing gear to extend normally and observed unsafe gear indications. After initiating emergency procedures, crew was able to get normal extension on the third try and landed without incident. Defective switch assembly in landing gear handle was replaced.

OV-1 Class C

D series - Propeller RPM overspeed occurred during post-phase emergency unfeather procedure. Engine was secured and aircraft landed without incident. Estimated Class C damage to propeller. Investigation continues.

OV-1 Class E

D series - During climbout at about 3000 feet, PC heard popping sound coming from No. 2 engine area. Suspecting compressor stall, PC reduced power (torque) 1 to 2 percent to about 80-percent torque. As power was being reduced, EGT entered red range and No. 2 engine torque dropped to 32 percent. PC immediately reduced No. 2 power to flight idle, shut down No. 2 engine, feathered No. 2 propeller, and made single-engine landing without further incident. Suspect compressor stall, cause of which is unknown. Engine was replaced.

D series - During cruise flight, PC observed partial failure of vertical instrument display system (VIDS) and illumination of auxiliary power light on VIDS panel. He returned to base and landed. Signal data converter fuse had either vibrated loose during flight or otherwise become dislodged. Fuse was replaced.

D series - During propeller governor check as part of engine runup procedure, No. 2 propeller RPM dropped below limit. Propeller control assembly was replaced.

D series - During taxi, fuel gauge needle began to spin. Fuel gauge circuit breaker was reset, but needle rotation continued. Maintenance inspection revealed failure of both fuel quantity indicator and liquid transmitter. Indicator was replaced.

OV-1 Class F

D series - Having reached cruise altitude, crew heard popping noise. Engine instrument indications were normal. Maintenance inspection revealed probable foreign-object damage to compressor blades.

O-5 Class C

B series - During cruise flight at 15,000 feet MSL in icing conditions (OAT -3°), crew saw bright flash and heard loud bang. Navigation systems were temporarily interrupted. Aircraft returned to base. Postflight revealed delaminated mission equipment antenna and other unspecified damage from lightning strike.

O-5 Class D

B series - Significant dent was found on top side of right wing leading edge during preflight. Dent pattern indicates bird strike.

O-5 Class E

B series - During lineup check before takeoff roll, No. 4 engine torque decreased to 880 pounds, NG went to 42 percent, and fuel flow went to 100 PPH (minimum flow). No. 4 engine was shut down, and aircraft was taxied to parking. P3 tube to fuel control unit was replaced.

Flight-related accidents

UH-60 Class C

A series - During MAST mission to retrieve civilian hikers from river gorge area, hoist cable broke with two Army medics and a civilian EMT approximately 10 feet beneath aircraft. They fell 100 feet into shallow river bed. One medic sustained two broken legs, and the EMT sustained broken ribs. Investigation continues.

A series - After aerial recon of proposed static display area, aircraft returned to home base. Crew were informed that an injury complaint had been filed by a civilian who alleged being hit in back by debris from rotor wash.

AH-1 Class C

F series - As AH-1 landed to FARP pad, rotor wash blew over an empty ammo drum, causing the bellmouth guide to separate from the lid. The bellmouth guide blew into the rotor system of an OH-58 on an adjacent pad, striking both main rotor

blades. The OH-58 was shut down without further incident. There was an estimated 10- to 15-knot crosswind blowing from the AH-1 toward the OH-58.

CH-47 Class C

D series - During NVG mission at 180 feet AGL and 60 knots, crewmember monitoring external load (M998 HMMWV) announced that load had released. Pilots noticed simultaneous illumination of master caution, forward, mid, and aft hook-open lights. HMMWV was destroyed on impact. Damaged guard on hoist-control grip exposed hook-release button to inadvertent activation. Suspect crew chief inadvertently activated load-release switch.

E series - During NVG multi-ship training mission, crew chief was raising ramp after departure from LZ. As ramp came up, his foot slipped and got caught between ramp and internally loaded vehicle. He was unable to reach ramp control or ICS switch in time to prevent injury to his foot.

Aviation-ground accident

CH-47 Class C

E series - Flight engineer was performing fireguard duties during shutdown. He was beneath rotating aft rotor system when lightning struck ground nearby. He was knocked to the ground, suffering minor injuries that required hospitalization overnight. Aircraft sustained blade and bonding damage. Local weather advisory was in effect at time of incident.

Safety messages

Safety-of-flight messages

■ Safety-of-flight technical message concerning assigning of service life to UH-1H/V main rotor yoke, P/N 204-011-102-17, NSN 1615-00-757-2905 (UH-1-96-04, 211515 Aug 96) (TB 1-1520-210-20-33). Summary: Currently, UH-1H/V main rotor yoke has no service life assigned; it is on condition and is not time tracked. The purpose of this message is to assign a retirement life of 7200 hours to the main rotor yoke and to initiate tracking of these yokes. The message outlines procedures for doing so. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

Aviation safety action messages

■ Aviation safety action informational message for all UH/EH/MH-60 series aircraft concerning a UH-60A main rotor spindle crack (UH-60-96-ASAM-06, 170215Z Aug 96). Summary: TB 1-1520-237-20-143/UH-60-93-ASAM-12 was issued in April 1993 following discovery of a cracked spindle. The directives provided increased awareness of sudden vibration onset, and possibly subsequent smoothing, as a potential indicator of a main rotor spindle crack. That TB is still in effect. An abnormal vibration occurred recently in a UH-60A during a routine flight and subsequently smoothed. The flight crew recognized it as significant and notified maintenance. A potential association with the spindle was not considered, and the aircraft returned to flight status. When the aircraft entered PMS-2 a short time later, it was discovered that the spindle was completely cracked around the threaded end. The retaining rod was carrying the complete blade load. The purpose of this message is to reiterate to maintenance and operating personnel that TB 1-1520-237-20-143 provides troubleshooting and flight crew awareness information. Contact: Mr. David Scott, DSN 693-2178 (314-263-2178).

■ Aviation safety action maintenance mandatory message concerning replacement of spindle assemblies with certain spindle retaining rods installed in all H-60 aircraft (UH-60-96-ASAM-07, 201419Z Aug 96). Summary: The spindle retention rod, P/N 70102-08102/103, manufactured by the Purdy Corporation has recently completed required engineering testing. Results indicate that its endurance strength is not equivalent to that of an original equipment manufactured component and shall have a reduced retirement life of 1100 hours. Therefore, all subject retention rods manufactured by the Purdy Corporation shall be removed from service immediately if total flight time on the rod is 1100 hours or greater. Spindle assemblies having a suspect retention rod installed that has not reached the 1100-hour retirement life shall be replaced no later than one calendar year from the date of this message regardless of whether or not the rod reaches the reduced retirement life of 1100 hours. By no means shall the 1100-hour retirement life be overflown in this one-year timeframe. The purpose of this message is to list the spindle assemblies affected. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning increase in fatigue life of the Aerex-manufactured tail rotor inboard retention plate on all H-60 aircraft (UH-60-96-ASAM-08, 221645Z Aug 96). Summary: Per TB 1-1520-237-20-173, the retirement life of Aerex-manufactured tail rotor inboard retention plates was reduced to 148 flight hours. Engineering testing has been completed, resulting in increase to the previously published value of 12,000 hours for Aerex-manufactured (cage 5K840) components. The purpose of this message is to annotate the appropriate component records of Aerex-manufactured retention plates to reflect the full life as stated in TM 1-1520-237-23-1. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning one-time and recurring inspections of all UH-1H/V tail rotor blades (UH-1-96-ASAM-03, 231414Z Jul 96). Summary: Bell Helicopter has determined that a number of tail rotor blades may have been manufactured with internal leading edge doublers fabricated from alclad aluminum instead of bare aluminum material. While this material meets design strength requirements, in bonded applications alclad aluminum is not as resistant to corrosion as bare aluminum. The purpose of this message is to require a one-time inspection of the tail rotor blades for corrosion and to add this inspection to current recurring special inspection in the maintenance manual. Contact: Mr. Lyell Myers, DSN 693-2438 (314-263-2438).

■ Aviation safety action maintenance mandatory message concerning one-time visual inspection for and removal of certain serial numbered 145DS102-3 forward transmission main lubrication pumps on all CH-47D, MH-47D, and MH-47E aircraft (CH-47-96-ASAM-08, 211509Z Aug 96). Summary: Two 145DS102-3 forward transmission main lubrication pump shafts have failed in service. Three additional pump shafts inspected were cracked. All five were from the same manufacturing lot. Five additional lots have been inspected, and no cracks have been found. The suspect lot consists of serial numbers V534 through V598. Based on testing, it is likely that after a main lubrication pump malfunction, the transmission oil pressure master caution warning light will illuminate, followed by illumination of the forward transmission oil hot master caution warning light. Illumination of these warning lights requires compliance with published emergency procedures; i.e., land as soon as practicable. The purpose of this message is to direct a visual inspection of all forward transmission lubrication pump identification plates for suspect serial numbers V534 through V598. If found, these pumps are to be removed from service and returned for rework. Contact: Mr. Lyell Myers, DSN 693-2438 (314-263-2438).

■ Aviation safety action maintenance mandatory message concerning one-time inspection of aileron wing fittings on all

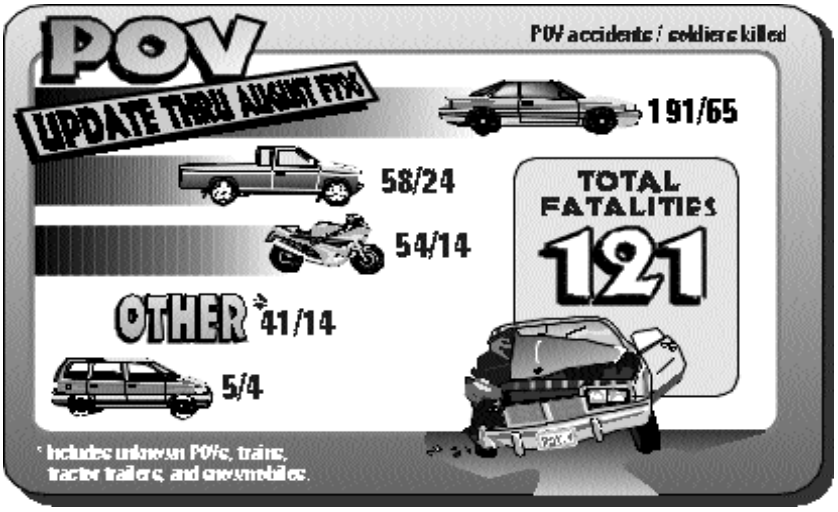
OV/RV-1D aircraft (OV-1-96-ASAM-01, 231426 Jul 96). Summary: There have been five incidents of cracked outboard aileron wing fittings on four different OV-1D aircraft. The purpose of this message is to provide inspection and correction procedures for a one-time inspection of all aileron wing fittings on OV/RV-1D aircraft. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

Maintenance information messages

■ Aviation maintenance information message concerning marking of AH-64 external fuel tank connections (AH-64-MIM-96-005, 261805Z Jul 96). Summary: Several instances have been reported of fuel vapor entering the cockpit from the environmental control unit (ENCU) vents when defog was selected. The major cause of the problem has been cross connecting of the fuel and air lines on the external fuel tanks. A survey indicated that not all lines and fittings on the external fuel tanks were properly marked or identified. This message explains proper identification/marking of external fuel tank lines and couplings. Contact: Mr. Ken Muzzo, DSN 693-5420 (314-263-5420), or Mr. Fred Banks, DSN 693-3243 (314-263-3243).

■ Aviation maintenance information message concerning AH-64 lower scissors arm bearing wear limits (MIM-96-006, 261230Z Jul 96). Summary: The scissors arm is made from an aluminum alloy and wears a little each time the steel bearing is removed and replaced. Accelerated wear has been determined to be caused by failure to fly cut the bearing before removal. This message outlines modified inspection/ maintenance procedures to be inserted into TM 1-1520-238-23-7-1, Task 11.5. Contact: Mr. Darren Baucum, DSN 490-2251 (314-260-2251), or Mr. Larry Powitzky, DSN 693-9869 (314-263-9869).

For more information on selected accident briefs, call DSN 558-3650 (334-255-3650).



Recap of FY96 safety alert messages

The Army Safety Center issued the following Army safety alert messages in FY 96. Contact your installation safety office for copies.

- 161532Z Oct 95, M1A1/M1A2 Abrams Tank
- 161543Z Oct 95, G/VLLD, AN/TVQ-2
- 171558Z Oct 95, M939 Accident Awareness
- 062143Z Dec 95, OH-58D(I) Autorotations
- 151951Z Dec 95, MOUT Training
- 211324Z Dec 95, POV Fatalities
- 301711Z Jan 96, M1A1 Tank Turret Fatalities
- 051503Z Feb 96, Civilian Accident Prevention
- 141814Z Feb 96, Civilian Accident Prevention—Injury Reporting
- 291423Z Feb 96, AH-64 Ground Fire
- 181832Z Mar 96, UH-60 Blade Strike Fatality
- 191910Z Mar 96, Parachute Fatality
- 091312Z May 96, High-Risk Behavior
- 201506Z May 96, Accident-Site Hazardous Materials
- 041835Z Jun 96, Task Overload and Loss of Situational Awareness
- 111935Z Jul 96 (e-mail), Lightning-Strike Awareness
- 061356Z Aug 96, Use of Flak Jackets and Compliance With Minimum Safe Distance Requirements
- 141306Z Aug 96, Entanglement Hazards Associated With Load-Bearing Equipment In Airborne Operations
- 201353Z Aug 96, Military Driver Selection/Training/Incentives
- 111846Z Sep 96, Seatbelt Usage

In this issue:

- The challenges of change
- New aircrew helmet
- A word to aircrews
- HGU-56/P and ANVIS: Adjusting for full FOV
- What's the deal?
- A tip on positioning the earcup
- ASO corner—ASO list server
- ASO corner—ASO conference
- Recap of FY96 safety alert messages

Class A Accidents through August

		Class A Flight Accidents		Army Military Fatalities	
		95	96	95	96
1ST QTR	October	0	1	0	0
	November	0	0	0	0
	December	1	0	0	0
2D QTR	January	1	1	1	0
	February	0	0	0	0
	March	1	2	0	7
3D QTR	April	1	1	5	3
	May	2	0	2	0
	June	1	1	0	6
4TH QTR	July	0	0	0	0
	August	2	0	5	0
	September	1		0	
	TOTAL	10	6	13	16

U.S. ARMY SAFETY CENTER

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Thomas J. Konitzer
Brigadier General, USA
Commanding General
U.S. Army Safety Center

FlightFax

REPORT of ARMY AIRCRAFT ACCIDENTS
November 1996 ◆ Vol 25 ◆ No 2

"Well, that would never happen to ME!"

We've all heard it. Most of us have said it—maybe a couple of times.

It happens when we hear a "war-story"—or read an account in *FlightFax*—about some tragic, scary, or incredibly stupid experience in aviation. Our bluster is a kind of posturing—deflecting possible notions by peers that chinks might exist in our armor.

But how many of us have actually been present as one of these aforementioned events unfolded? How many have actually sat there watching things get stupider and stupider? And it's *you* sitting there. And you find yourself essentially powerless to do anything.

I'm here to tell you that, despite aircrew coordination training, despite the "Two-Challenge Rule," despite *anything*, it can happen and it does happen every day.

My tale begins . . .

. . . in the jungles of Central America—The Last Mission Of The Last Day of a 6-month road- and school-building operation. The pilots were two senior W4s: one, an IP, PC, and UH-60 operations officer who'd been in-country for the entire operation; the other, me, at the end of my second 2-week deployment.

A Chinook was scheduled to extract a group from a hillside LZ, but the aircraft developed maintenance problems. Ops decided our UH-60 would try to do it. But it was the rainy season, and the afternoon torrent had already begun.

With the rain coming down faster than an inch per hour, visibility was nearly nonexistent as we cranked, and water poured into the cockpit from various leaks. Nevertheless, the PC thought we might make it to the pickup point by slowly working our way up the river that ran by our base camp. We crept off the ground, our young—and now drenched—crew chief clearing us past mist-shrouded trees.

We picked our way along in intense rain with the ceiling defined by getting high enough into the shower to lose sight of the ground. I remarked that it didn't seem like a very good idea to try and get through in these conditions, but the PC told me he'd seen worse. I suggested we try a route along the nearby coastline since shower activity looked to be minimal there. He agreed but wanted to press on in case we could skirt everything via the river.

Then the FIRE light came on.

Knowing that false alarms are common in heavy rain, we checked for smoke or other evidence of fire. No one was surprised that nothing was wrong. Moments later, the FIRE light went out.

We continued, conditions worsening and visibility decreasing—as low as a hundred feet or so in some of the heavier downpours. Even with the windshield wipers flailing at their highest speed, navigation was treetop-to-treetop at best. I told the PC this *still* didn't seem like a wise thing to do and he sort of agreed, admitting it didn't look good to him either. The FIRE light popped on again and went out.

This prompted us to turn around. Then the FIRE light came on and stayed on. Concerned, I suggested we call this whole thing off, but he now wanted to try the coast and asked if either of us had a problem with doing that. Considering that the crew chief and I both knew the FIRE light was a false alarm and the coast looked a lot better, we reluctantly assented.

Toward the coastline, we immediately broke out of the heavy rain, and the FIRE light disappeared. We headed along the fringe of the rain activity to try and find a spot to get through.

But it quickly became obvious that this shower was massive: a solid wall running through the hills for many miles. As we continued, conditions worsened again; the downpour resumed, and visibility in the direction we needed to go dropped to zero.

Suddenly . . .

. . . our PC turned out to sea, heading for an island about 5 miles across open water, telling us his plan was to follow a string of islands and try to reach the pickup point that way. In driving rain, at an altitude of about 500 feet above the water, without flotation gear, no navigational receiver or GPS, a marginal-at-best tactical radio, and no map, I felt like we'd been hijacked. Only I couldn't squawk 7500 because the transponder didn't work either. And besides, what the *hell* were we doing in heavy rainshowers at 500 feet and more than 2 miles from the nearest patch of solid ground? I told him I had genuine reservations about continuing.

"No problem," he told me as we followed the islands back toward The Great Wall Of Weather. He'd been here 6 months, he said, and knew exactly where he was. I told him that might be true, but *I* still didn't have a good feeling for where we were. He lamented that people sent down here didn't get the opportunity to become as familiar with the area as *he* was.

He began describing landmarks visible here and there and insisted he knew where he was. I told him none of that would matter if we got stuck behind some ridgeline. He pointed out that we had plenty of fuel.

As we continued, I imagined someone reading the account of this foolish misadventure as part of an accident report. Suddenly, all the unbelievable, fact-filled reports I'd read assumed a new reality—it was *me* being drawn ever deeper into deadly absurdity by some individual apparently obsessed with accomplishing a mission. Remembering my aircrew coordination training, I again told him I was genuinely uncomfortable with what we were doing and

that we should turn back. No response. ("Two-Challenge Rule" scoffers take note: *YOU* get into a cockpit fight under these conditions!)

Back on the mainland, we felt our way through the torrent, poking around hilltops until he decided this approach wouldn't work after all. To my—and I'm sure our crew chief's—utter relief, he headed back toward the bay and more open conditions.

But as we continued homeward, he spotted an opening and decided to follow it. I told him again how uncomfortable I was with doing this—the Cold War was over and there were no Russians chasing us. He chuckled as we followed the cloud-obscured ridgeline until finding a tiny hole.

He dropped over it despite my warnings about its volatility. No problem; we could always find another way out.

Now inside the ridgeline and committed to a yet *more* intense adventure, he joked about our spending the night at the remote camp.

Nobody laughed.

Following a dirt road and a few treetops, we located the edge of a village and picked up the road our Task Force had built. We traced it up the mountain, slowly ascending through the downpour toward the ragged cloud bottoms. The LZ came into view just beneath the ceiling. The PC gave me the controls and I landed.

Our contact was "Shark Fin 07," and the radio operator sounded amazed as he answered our call. The PC asked for ten passengers and they sent them. I told him that once—and *if*—we got back, that was *it* for this day as far as I was concerned. Sensing by now that I was somewhat troubled by the enormous amount of unnecessary risk this mission represented, he told the radio operator this would have to be our only load. The radio operator assured us that was okay; because of the weather, they'd already set up rides back to the base camp for everyone via ground vehicle anyway. He thanked us for our efforts.

Loaded up, I pulled in power to find our rotor in the clouds. The PC took the controls. He'd spotted some trees down the hillside and headed for them. We began picking our way back along the base of the ridgeline, now looking for an escape.

As we approached what looked to be a hole, I angrily told him I thought what we were doing was foolish and absolutely unnecessary, that we now threatened the lives of ten innocent people in addition to our own. The crew chief, who had been keeping quiet all this time, came on the intercom to say he wanted out when we got back.

The hole turned out to be a good escape, and we dove for it. All at once, visibility improved and we headed back. He gave me the controls again. He'd proved he could "accomplish the mission." And he'd certainly impressed me.

All I wanted was out.

After landing and shutdown, I grabbed my gear and stormed off in the still-pouring rain, more angry at myself than anything else.

Stupidly, I had let myself be drawn under the control of someone with an obsessive compulsion to "accomplish the mission" regardless of risk. What happened to myself and the crew chief is the very stuff I "tsked" about when reading accounts of events leading up to accidents. It will never happen again.

Every day during my deployment, I'd posted a "Thought for the Day" in Flight Ops; that day's was: "Experience is something you don't get until just after you needed it." Apparently, I'd missed my own point.

I had a long talk with the aviation OIC but to little avail; after all, the operation was over now. The next day, I took the ops officer/IP/PC aside for a half-hour discussion about how stupid it had been: I was lucky because *he* was lucky; how would he like his excessive motivation to be responsible for killing a bunch of innocent people? I think he listened. Or perhaps he didn't.

What might have prevented the whole debacle would have been a serious pre-mission brief stressing risks, controls, and the criticality of continually verifying *everyone's* desire to continue. Plying a razor-thin line between treetops and cloud-bottoms is hardly the place to discover your PC has flushed everything he learned in aircrew coordination training. And that seems the most important lesson, since in today's "can-do," "Hooah!," "good-to-go" world, excessive motivation increasingly replaces calm, considered judgment.

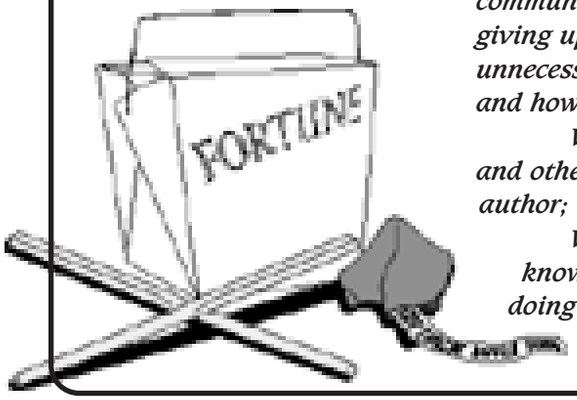
And, sorry, but I don't want to hear, "Yeah, well *I* woulda took them controls!" or "*I* woulda put it on the ground right then and there!" or any other armchair quarterback chin music. Like any genuine war-story, you had to *be* there.

And remember too . . .

. . . this guy is *still* out there.

—Anonymous

Food for thought



"Recipe for disaster" is a true story written by a senior warrant officer. It's full of food for thought about a lot of things: about weather; about cockpit communication; about aircrew coordination; about speaking up, giving in, giving up—about saying "Enough"; about mission at all costs, about unnecessary risk; about judgment, about lack of it; and about craziness*—and how good aviators can let themselves get caught up in it.*

What do you think? We invite you to share your thoughts on these and other topics. If you like, we'll protect your identity as we're doing for this author; it's the lesson, after all, that's important.

We'll start the ball rolling by talking about the weather. We don't know that these guys were doing anything illegal*, but they certainly were doing things that were* imprudent*. Luck is all that got them back alive.*

And that should be food for thought for all of us.

About the weather . . .

Ask yourself: Even if it's *legal* to go, how *prudent* is it?
What happens if it's right at the limit—just good enough to take off? What if you do take off and then it turns to soup 15 minutes into the mission? What are you going to do now? Can you land where you are and wait it out? What are you going to do if you can't?

What if it gets so bad that you decide to turn around, and there *ain't no turning around*—you bump into the clouds? What are you going to do now? Do you have a plan? Do you have enough fuel? Are you prepared to deal with IMC?

Ask yourself: Am I truly prepared to deal with IMC? Do you have excellent proficiency? Are you totally prepared? Do you have a plan that you've coordinated with the rest of the aircrew? Have you briefed it? Is the aircraft properly equipped? Do you have navaids and instrument approaches available? Do you have a coordinated plan to reduce the effects of spatial disorientation should it strike you or another crewmember in inadvertent IMC?

Ask yourself: How bad does it have to get before *I* say no? If you are routinely flying in the worst weather that's legal to fly in, it's only a matter of time until you find yourself inadvertently IMC. And if you're not ready—not fully prepared—this could be where the statistics catch up with you and you have an accident. And please remember that accidents resulting from inadvertent IMC situations are *very rarely* minor accidents.

Ask yourself: Is *this* mission worth doing in *this* weather? Maybe your unit should establish some weather criteria of its own. How much experience does the unit have? Are you a bunch of old-timers who've got a lot of IFR time and are well prepared to deal with IMC? Or are most of you rookies who haven't been inside a cloud since you were with your IP in flight school? Or are you somewhere in between? Maybe you should have different unit minimums that consider not just crew experience but mission criticality as well. And what if you establish ahead of time the level at which go-no-go decisions are made—that if the weather is *here*, then the decision must be made at *this* level. In other words, what if you elevate the decision to a level that's consistent with the level of risk?

Sound familiar? Good! That's basic risk management.

And basic good sense.

ASO conference update

The Aviation Brigade Safety Officer Conference is scheduled to coincide with the Aviation Senior Leaders' Conference 13-17 January 1997 at Fort Rucker. The theme of the conference is "Protect the Force through Risk Management." Agenda items to date include risk-management integration, the latest from the Army Safety Center, FY96 conference followup actions, and emerging issues that require action by a MACOM, the Aviation Branch, or the Safety Center. Workshop time will also be given to MACOM safety offices.

Attendance is limited to 50 brigade, division, corps, and MACOM ASOs. If you plan to attend, you need to preregister right away. Send your name, rank, SSN, unit address, duty position, and e-mail address to Ms. Mary Ward by any of the following means:

- Phone: DSN 558-2445/2947 (334-255-2445/2947)
- Fax: DSN 558-2670 (334-255-2670)
- E-mail: wardm@rucker-safety.army.mil
- Mail: Commander, U.S. Army Safety Center, ATTN: CSSC-RT (Ms. Ward), Bldg. 4905, 5th Ave., Fort Rucker, AL 36362-5363.

There's still time—but not much—to add issues to the agenda. To do so, e-mail or fax them to Ms. Ward in the following format: issue, discussion, and recommendation.

Fifty rooms at the Fort Rucker BOQ are reserved for conference attendees. You may call the Billeting Office at DSN 558-3780/3782 (334-255-3780/3782) to reserve yours.

When we receive your preregistration, we'll send you a welcome letter containing more information. You may also contact CW5 Barker at barkerm@rucker-safety.army.mil, CW4 Mahoney at mahoneyp@rucker-safety.army.mil, or CW4 Helbig at helbigc@rucker-safety.army.mil. If you prefer to call, you can reach them at DSN 558-2443/2381 (334-255-2443/2381).

More on ASO list server

Last month, we gave you a heads-up on the new list server for ASOs. We promised you subscription information when it became available. It's now available.

The new list server is called "ASOLIST." To subscribe, e-mail your request to—

lstserv3@pentagon-hqdadss.army.mil

Be sure to use the e-mail system on which you want to receive ASOLIST, because the server will automatically detect your user-ID and e-mail address from your request.

The first line of your request must read: SUB ASOLIST YOUR NAME YOUR POSITION YOUR LOCATION DSN [or commercial phone number] (example: SUB ASOLIST JOHN SMITH ASO FT ANYWHERE STATE DSN 555-5555). No other information is required. As soon as you sign up, you will receive an e-mail message giving you the rules of engagement (ROE) for the list server. The ROE message will list all the commands that make the list server work. Please review the ROE before sending a message to ASOLIST.

In the simplest terms, ASOLIST automatically distributes messages to everyone on the list. That means that everyone who subscribes to the list receives a copy of every message addressed to ASOLIST. It's similar to a command radio net in that everyone "hears" your message. So, although ASOLIST is a *closed* rather than a *public* list (not just *anyone* can subscribe), you should be sensitive to the information you transmit.

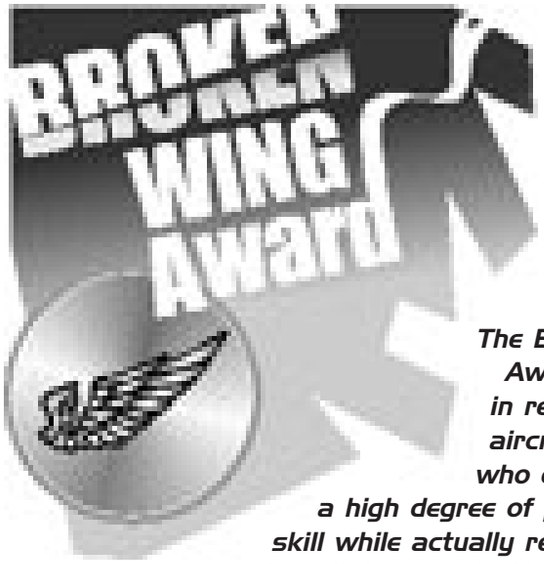
Sample topics of discussion include the following:

- Problem solving (How do I...? Has anyone ever heard of...? Given XYZ, what are the alternatives?)
- Sharing experiences (We figured out how to.... We found a great source of info on....)
- Expediting messages (Here's the recent DA message on.... Here's the Safety Center's guidance on.... We have critical assignment openings in.... Anyone interested?)
- Sharing information (conference, meeting, exercise, and product announcements; safety lessons learned; current safety topics and issues.)

Disclaimer

ASOLIST is an unofficial, unmoderated list provided only as a clearinghouse for general safety information. Classified or privileged information, Privacy Act data, for-official-use-only information, and Scientific and Technical Information (STINFO) are not allowed on this mailing list. Messages posted on this list do not necessarily represent DOD, Service, or organization policy.

POCs: CW5 Mark Barker, DSN 558-2443 (334-255-2443), or CW4 Carlton Helbig, DSN 558-2381 (334-255-2381)



The Broken Wing Award is given in recognition of aircrewmembers who demonstrate a high degree of professional skill while actually recovering an aircraft from an in-flight failure or malfunction necessitating an emergency landing. Requirements for the award are spelled out in AR 672-74: Army Accident Prevention Awards.

■ **CW3 Floyd S. Werner Jr., 1st Squadron, 1st Cavalry Regiment, APO AE 09076.** The mission was for three AH-1Fs to take off from a FARP and reposition to a sod strip about 400 meters away, where they would link up with six OH-58Cs for return flight to home station. CW3 Werner was pilot in command of Chalk 2 in the flight of three Cobras. On climbout as the flight departed the FARP, CW3 Werner applied 95 percent torque to remain above the lead aircraft's rotorwash. As Chalk 2 was climbing over 40-foot pine trees, the copilot in the front seat called out that there was a reduction in engine noise and a corresponding droop in N2. CW3 Werner confirmed the droop to be at 97 percent N2, and both crewmembers ensured that the throttle was in the full-open position. CW3 Werner went to full increase with the INC/DEC switch, with no response. He then started a left turn back to the FARP, which was the only suitable area available. At 20 to 30 knots over 40-foot pine trees, numerous stumps, and 12-foot earthen berms, the low RPM audio sounded and the low RPM light came on. CW3 Werner lowered collective slightly to regain some rotor RPM and unload the engine. Both rotor and engine RPM continued to decay. Realizing that the aircraft would not clear the trees, the berms, and the stumps in the flight path, he decided to trade some rotor RPM for some altitude to clear these obstacles. As the aircraft cleared the trees, the copilot announced that he was going to the emergency-governor position. When he did this, the engine surged twice and continued to spool down. As the aircraft cleared the 12-foot berms, CW3 Werner applied remaining collective in an attempt to cushion ground impact. The collective hit the upper stop at about 5 feet AGL as airspeed dropped to less than 10 knots. Observers stated that they could count the rotor blades as CW3 Werner maneuvered the aircraft into an acceptable landing attitude. The aircraft hit the ground tail low as it crossed a packed-gravel road. The force of impact spread the skids and caused the aircraft to rock forward onto the 20mm cannon, which dug into the ground. CW3 Werner had the presence of mind to apply full aft cyclic, which kept the main rotor blade from compromising the gunner's station. While the aircraft sustained Class B damage, both crewmembers walked away.

■ **CW3 William R. Long, Headquarters, Tennessee Army National Guard, Nashville, TN.** The UH-1H was at 1,000 feet AGL when the tail-rotor pitch change link bolt broke, resulting in airframe vibration and loss of tail-

rotor thrust. The aircraft yawed right and assumed a nose-low attitude. The PI reduced collective and airspeed and transferred the controls to CW3 Long, the PC. CW3 Long quickly determined that pedal inputs aggravated the airframe vibration and provided no aircraft control. A muddy, wet, plowed cotton field was available and appeared suitable for a run-on landing, so, due to the extreme airframe vibration, CW3 Long decided to land immediately. Maintaining directional control with throttle and collective, he accomplished a power-on running landing with no loss of heading, completing touchdown to stop in about 45 feet. Neither crewmember was injured, and there was no significant damage to the aircraft.

■ **Mr. John Ralph Bechtold, APG Support Activity, Aberdeen Proving Ground, MD.** Mr. Bechtold was conducting single-pilot flight in a UH-1H over a marsh inside a range impact area. At 40 knots and 300 feet above 15-foot-deep water and 1000 meters from dry land, the aircraft yawed hard followed by rapid loss of N2. N2 indicator then failed as RPM was passing below 5200. As Mr. Bechtold lowered collective, the rotor began to overspeed. He quickly reacted by adjusting collective and throttle to retard the overspeed while simultaneously making an emergency call to report his position and instructing the crew chief and four passengers to prepare for possible crash landing in the water. As the RPM came momentarily under control, he realized that it was going to underspeed. Again he reacted by increasing throttle and reducing collective. At this point it became apparent that the RPM was not going to stabilize as the engine was continuing to rapidly accelerate and decelerate. So rapid and severe were the increases and decreases of engine (5000 to 7000) and rotor RPM that maintaining heading control became almost impossible. With each increase, the aircraft climbed, and with the accompanying decrease, it descended. Fighting to maintain control of engine and rotor RPM as the aircraft began to settle toward the water, Mr. Bechtold turned the aircraft toward land 1000 meters away. As he neared the shore, he realized that 35-foot trees remained between him and the landing zone. He increased collective and adjusted throttle to gain just enough altitude to clear the trees. Upon reaching the landing area, he rolled off throttle and executed an autorotation, cushioning the landing with collective and slight forward airspeed. No one was injured, and the aircraft was not damaged. The N2 spur gear had failed, causing loss of drive to the N2 accessory drive gearbox.

■ **CW2 Robert J. Augugliaro, Aviation Brigade, 25th Infantry Division (Light), Wheeler AAF, HI.** During hover taxi for takeoff from a parking ramp heavily congested with operating aircraft and a large concentration of troops awaiting deployment, CW2 Augugliaro's AH-1F began an uncommanded rapid spin to the left. He applied full right pedal to arrest the spin, but doing so had no effect because the tail-rotor control linkage had separated. After three rapid 360-degree turns to the left, CW2 Augugliaro managed to level the Cobra and execute a hovering autorotation. The aircraft touched down level, with a slow left spin and a slight left drift. No one was injured, and nothing was damaged.

■ **CW2 Howard B. Brandt, Sacramento Army Aviation Support Facility, California Army National Guard, Mather, CA.** The UH-1V was on final approach after completion of maintenance test flight. CW2 Brandt was flying from the right seat with a nonrated crewmember in the left seat. At about 10 feet AGL, he heard a loud noise, and the master caution and hydraulic segment lights came on, followed by complete hydraulics failure. CW2 Brandt immediately began to lower collective and close throttle as the aircraft started a rapid yaw to the right. He was able to close the throttle after about 90 degrees of rotation, and he completed a successful autorotation. The aircraft landed with some rotation but remained upright. The tail rotor stopped rotating just seconds after touchdown. Maintenance inspection revealed failure of a helical gear that drives the tail-rotor output quill and the hydraulic-pump gear. A hard-landing and sudden-stoppage inspection found no other damage to the aircraft. ❑

Observers stated that they could count the rotor blades as CW3 Werner maneuvered the aircraft into an acceptable landing attitude.

ShortFAX
Keeping you up to date

ASE/EW course available

The proper use of aircraft survivability equipment (ASE) can greatly increase the survivability of aircraft on the modern-day battlefield. A 2-week course designed to train officers in all aspects of ASE employment procedures is being taught at Fort Rucker. The ASE/Electronic Warfare Officer's Course (ASE/EWOC) is open to Army aviators who—

- Possess a SECRET security clearance.
- Have completed one utilization tour.
- Are ASET II proficient.
- Are identified to be placed in a unit EWO position.

Warrant officers who complete the course will be qualified for an additional skill identifier of H3. The course is also a prerequisite for the tactical operations officer track for warrant officers.

Twelve courses are scheduled for fiscal year 1997.

Class	Course dates
97-01	28 Oct-8 Nov 96
97-02	2-13 Dec 96
97-03	6-17 Jan 97
97-04	3-14 Feb 97
97-05	3-14 Mar 97
97-06	7-18 Apr 97
97-07	5-16 May 97
97-08	3-13 Jun 97
97-09	7-18 Jul 97
97-10	28 Jul-8 Aug 97
97-11	8-19 Sep 97
97-12	29 Sep-10 Oct 97

Officers wishing to attend the course should submit DA Form 4187 through their commander.

POCs: CW3(P) Joseph Smith or Mr. Robert Wynkoop, ASE/EWOC, Fort Rucker, DSN 558-2379 (334-255-2379)

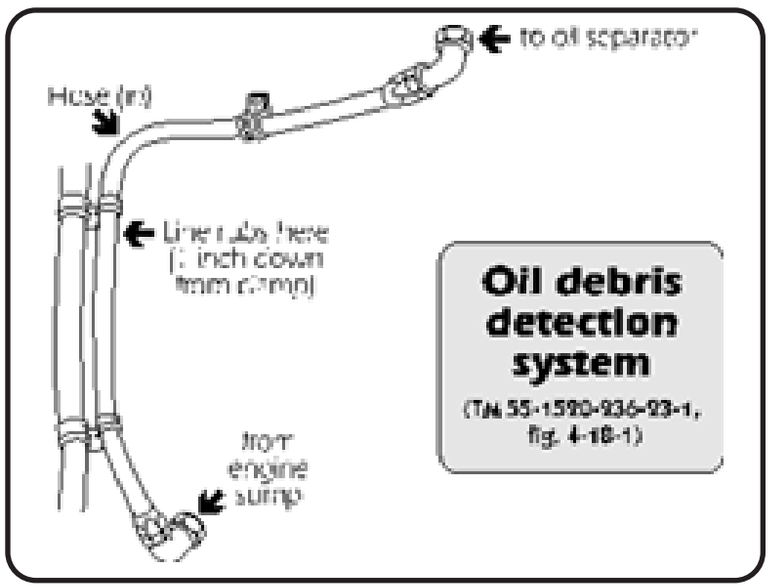
Attention AH-1E/F maintainers

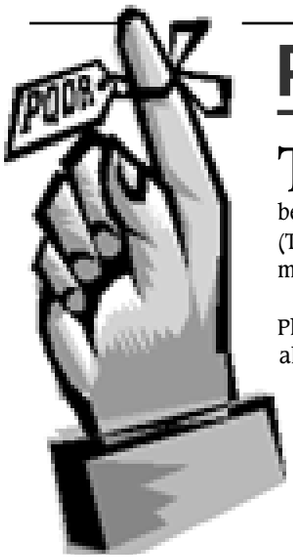
Recently, an oil line from the accessory gearbox to the engine oil debris detection system (ODDS) on an AH-1F ruptured in flight. Luckily, the aircraft, which was on an IFR training mission, was on short final when the line ruptured. Otherwise, this Class E mishap could have been much more serious.

Subsequent maintenance inspection found that the oil line had ruptured due to contact with the sharp edges of the flange on the improved particle separator (IPS) modification. The unit has found three other aircraft with the same problem and has had to replace the oil lines.

It'd be a good idea to inspect ***all*** AH-1s with the ODDS installed (MWO 55-1520-236-50-30) to ensure that the oil line is not rubbing against the IPS flange.

POC: CW5 Bill Ramsey, USASC Aviation Branch, DSN 558-2785 (334-255-2785)





PQDR reminder

The Safety Center still needs a copy of all aviation Category I Product Quality Deficiency Reports (PQDRs). However, over the past couple of years, the number we've gotten has gone down drastically. The problem may be that DA Pam 738-751: Functional Users Manual for the Army Maintenance Management System—Aviation (TAMMS-A) lists only our address for the old DD Form 173/3: Joint Message Form—and hardly anyone uses that message system anymore.

The newly revised DA Pam 738-751 contains updated addresses and phone numbers for the Safety Center. Please use them to furnish us an information copy of all aviation Category I PQDRs. For your convenience, we're also publishing them here:

- **E-mail:** cssc@rucker-safety.army.mil
- **Fax:** ATTN: CSSC-SIR, DSN 558-9528/2266/9478 (334-255-XXXX)
- **Mail:** Commander, U.S. Army Safety Center, ATTN: CSSC-SIR, Bldg. 4905, 5th Ave., Fort Rucker, AL 36362-5363.

POC: SFC John Morthole, USASC Aviation Branch, DSN 558-3650 (334-255-3650)

Accident briefs

Information based on *preliminary* reports of aircraft accidents

Aviation flight accidents

Utility

UH-1 Class B

H series - At about 10 feet AGL during shallow approach to open field, aircraft abruptly yawed right 20 degrees. It continued to spin and descend until it hit cross-slope in a gully nose-low and rocked rearward, contacting ground with tail. Tail rotor dug into ground, separating one blade. Aircraft became airborne again, lost tail rotor authority, and spun approximately 90 degrees to the right, hitting ground a second time. Aircraft sustained major structural damage. Two of the eight occupants were injured; one had a broken nose and the other a back injury.

UH-1 Class E

H series - Low RPM audio and light activated during flight. RPM sending unit was adjusted.

H series - Master caution and inverter caution panel light came on in flight. Spare inverter turned on and aircraft returned to base. Inverter circuit breaker popped. Main inverter replaced.

UH-60 Class B

A series - During low-level turn, tail rotor hit treetop. Postflight inspection revealed damage to all main rotor blade tip caps, surface damage to some main rotor blades, and damage to tail rotor paddles and one side of stabilator.

UH-60 Class E

A series - At 500 feet AGL and 60 knots, master caution light came on. Maintenance replaced 90-degree gearbox assembly.

A series - During No. 2 engine start, PC noticed power control lever idle stop was rotating out of position, interfering with PCL movement. Aircraft was shut down, and stop block was reset.

A series - No. 2 torque began fluctuating erratically in cruise flight. Rotor RPM remained at 100 percent, and TGT remained within normal limits. Aircraft was returned to airfield and shut down without incident. Maintenance replaced electrical control unit.

Attack

AH-1 Class C

F series - At about 300 feet AGL and 60 KIAS after takeoff during traffic-pattern training, one main rotor blade hit one or more seagulls in a flock that was crossing the traffic pattern.

AH-1 Class D

F series - IP sitting in rear seat initiated hovering autorotation to sod taxiway from 3-foot moving hover. Crew reported that aircraft landed rocking forward and aft. Neither crewmember felt landing was excessively hard and flew aircraft back to home station. After setting down, crew felt that aircraft was sitting right-side low. Postflight inspection revealed crosstubes were spread and UHF and VHF antennas and surrounding sheet metal were damaged.

AH-1 Class E

E series - On shutdown, hydraulic fluid was seen beneath transmission and in hydraulic compartment. No. 2 hydraulic pump was replaced.

E series - High-frequency vibration was felt through airframe during hover, and aircraft landed. Oil cooler bearing had failed. Oil cooler was replaced, and aircraft was released for flight.

F series - During runup, engine oil bypass caution light came on. Inspection revealed that 1 quart of oil had leaked from engine.

F series - During climb, all SCAS channels disengaged. With SCAS power remaining on, dc SCAS power circuit had popped. Circuit breaker was reset, but attempts to engage SCAS channels popped it again. Cause not reported.

F series - Pilot's torque gauge failed at 5-foot hover. Aircraft landed without further incident. Torque gauge was replaced.

F series - Alternator/rectifier caution lights came on and SCAS kicked off line during IGE hover. Aircraft landed, and crew tried unsuccessfully to reset alternator. Aircraft was shut down. Maintenance could not duplicate problem on subsequent runup.

F series - DC generator failed to come on line during runup. Aircraft was shut down. Maintenance replaced starter generator.

AH-64 Class A

A series - During multiship NVS NOE training, main rotor blades of Chalk 3 contacted a tree that was upslope and to the right of the aircraft. Crewmembers' attention was focused on Chalk 2, which was in a stationary hover to the left and downslope from Chalk 3. Aircraft sustained major damage to main rotor, tail rotor, tail boom, and cockpit area. Crew suffered superficial injuries.

AH-64 Class B

A series - Aircraft returned to airfield for maintenance for intermittent functioning of heading attitude reference system. After system was reset and appeared to function, aircraft hovered to departure point and crew held for landing aircraft, at which time system once again malfunctioned. Aircraft drifted left and tail rotor contacted main rotor of parked AH-64.

AH-64 Class D

A series - Bird struck windshield over copilot's head during contour flight. Windshield sustained significant crack top to bottom and side to side. Aircraft landed without incident.

AH-64 Class E

A series - Transmission chip detector light came on during hover. Cause unknown.

A series - During cruise flight, all engine (Marconi) indicating instruments dimmed and could not be read. Attempts to adjust brightness control knob had no effect, so aircraft returned to base. Problem could not be duplicated by maintenance.

A series - Nose gearbox chip caution came on during approach to firing point. Approach was aborted and aircraft returned to base. Cause not reported.

A series - During HIT check, smoke and fumes were emitted from left console near power levers. Crew relocated aircraft back on pad. Smoke and fumes increased during shutdown. Cause not reported.

A series - During rollout of run-on landing, crew smelled odor of burning rubber. Crew returned to airfield, where it was discovered that tire had blown. Brake was not set on landing; however, wheel brakes were applied to slow aircraft after touchdown. Tire was replaced.

A series - No. 2 engine failed during ECLL lockout when SP in front seat retarded power lever from lockout position. After test flight, aircraft released for flight.

A series - Pilot detected change in aircraft attitude during cruise flight and determined that stabilator automatic mode had failed. Control authority in manual

mode was limited to -13º to -35º trailing edge down. Pilot performed precautionary landing without incident. Maintenance determined that stabilator electromagnet relay had failed. It was replaced.

A series - During straight and level flight at 800 feet AGL and 100 knots, oil PSI accessory pump caution warning light came on. Postflight inspection revealed no damage or leaking fluids.

A series - During formation flight, crew of Chalk 3 noticed that Chalk 4's left engine cowling was open. Both aircraft exited the formation and landed in nearby field. Engine cowling was replaced to return aircraft to flight status; cowling is being repaired.

A series - After preflight, crew chief opened hydraulic access door (panel T325) to wipe up excess hydraulic fluid then failed to close it. When pilot started APU, edge of open door was burned.

A series - During shutdown after NVS mission, crew chief reported unusual noise coming from main rotor. Inspection revealed 2-inch portion of No. 3 main rotor blade was debonding. Main rotor blade was replaced.

A series - Utility hydraulic low light came on during OGE hover. Inspection revealed leaking fitting on line in No. 1 pylon. Packing was replaced and fitting was retorqued.

A series - During cruise flight on NVS mission, aircraft encountered flock of birds. Crew felt single impact and saw bird glance off to right side of aircraft. Postflight inspection found impact site but no damage.

Cargo

CH-47 Class C

D series - During NVG multi-ship false-insertion operation, aircraft landed hard with right rear landing gear. Top mounting bolt separated, and top portion of strut was propelled into right engine. Debris damaged all main rotor blades.

E series - During fast-rope operations at stabilized 36-foot hover, roper exited on left side of cargo ramp. His machinegun hung up on the ramp, causing the weapon's sling to ride up to the soldier's neck. The sling choked him and prevented him from proceeding down the rope. As the roper was trying to climb up the rope to free himself, the flight engineer/fast-rope safety reached down and released the weapon from the ramp just as the roper reached up to free himself. His weapon now free of the ramp, the roper could not hold on to the rope with one hand. He lost his grip and fell to the ground. Fast-rope operations ceased, and the aircraft landed. The roper was hospitalized with a punctured lung and two broken ribs.

CH-47 Class E

D series - On final with 18,000-pound external load, crew smelled burning hydraulic fluid and landed. Caused by leaking fitting on No. 1 power transfer unit. Lines were tightened and aircraft returned to service.

D series - No. 1 flight hydraulic pressure gauge was reading 0 PSI with no associated caution light. Fluid levels and temps indicated normal. No. 1 flight hydraulic pressure transducer was replaced.

D series - Loss of right-side bubble window during maintenance test flight was discovered on postflight inspection.

D series - During cruise flight, centering device would not release. Maintenance replaced magnetic brake assembly.

D series - After setting down external load, crew noticed unusual noise and vibration from forward transmission area. No. 1 flight boost pump was replaced.

D series - During NVG multi-aircraft external load training, debris blew into aft rotor system, damaging last 36 inches of trailing edge of aft rotor blades.

D series - At 10-foot hover with load, PTIT went to 800°C and No. 1 engine torque spiked to 150 percent. Torque needle then started spinning backwards. Maintenance could not duplicate. Suspect faulty indicator.

D series - During takeoff, IP noticed forward longitudinal cyclic trim indicator had not fully retracted to ground position. Airspeed was adjusted, and aircraft landed to runway. Test flight could not duplicate. MOC'd and released for flight.

D series - While climbing from terrain flight to cruise altitude, No. 1 engine N1 torque and rotor indicated an increase. Rotor increased to 103 percent. Crew performed emergency procedure for high-side failure and prevented an overspeed. Aircraft landed without further incident. N2 actuator on No. 1 engine was replaced.

D series - Flight engineer reported vibrations and unusual noise in aft area as he began ramp check during cruise flight. Moments later, noise vibrations increased, becoming audible in cockpit. Landing procedure was initiated, and moments before landing, the utility hydraulic pump panel light illuminated and utility pressure began falling to zero. Utility pump was replaced and aircraft released for flight.

D series - During two-wheel back taxi from parking, rotor wash blew tunnel covers off two parked aircraft. Tunnel covers had been closed but not secured. No damage to operating aircraft.

D series - During final approach, No. 1 engine beep trim failed. Aircraft landed. N2 actuator was replaced.

Observation

OH-6 Class C

J series - Hot start. Turbine outlet temperature reached 1013°F on engine start-up for training flight.

OH-58 Class C

A series - Checklist was left on horizontal stabilizer during engine runup for flight. As aircraft was raised to hover, checklist blew into tail rotor, damaging both blades. Aircraft was landed without further incident.

C series - Engine failed on takeoff as maintenance test pilots were recovering a downed OH-58C. Aircraft landed hard. Tail boom separated, and main rotor was damaged.

OH-58 Class E

A series - PC applied excessive power during NOE deceleration. N2 droop occurred and low RPM light and audio activated, followed by N2 recovering to 100 percent. Maximum torque observed was 100 percent. Aircraft landed without further incident. Precautionary overtorque inspection was conducted, and no damage was found. Aircraft was released for flight.

A series - Master caution and dc generator segment lights came on in cruise flight. Attempts to reset the generator were unsuccessful, so precautionary landing was made. Maintenance inspection revealed the generator shaft had sheared at the point where the splines begin.

A series - Master caution and dc generator caution light came on in cruise flight. Emergency procedures were immediately executed, but generator would not come back on line. Aircraft was flown to nearest airfield and landed without further incident. Cause not reported.

C series - After bird strike, aircraft developed severe 1:1 vertical vibration. Red PC link was bent.

D series - During engine start, TGT exceeded start limit of 927ºC. PI executed hot-start emergency procedures without further incident. Maintenance review of engine history page indicated TGT of 1019ºC for "blank" seconds, and engine monitor page indicated TGT of 1010ºC for "zero" seconds. Turbine section replacement is required whenever TGT exceeds 999ºC. Maintenance removed engine and AVIM replaced turbine section.

D series - Flight master controller processor unit (MCPU) fail message displayed during cruise flight on NVG mission. MCPU was replaced and aircraft was released for flight.

Training

TH-67 Class E

A series - Battery power would not start aircraft. N1 only 10 percent on attempt.

A series - After 1.25-hour flight, fuel gauge showed 72 gallons, and aircraft was refueled with 30 gallons. As soon as cap was removed and fueling began, gauge dropped to normal. After 45-minute flight, gauge stuck at 70 gallons.

Fixed wing

C-12 Class D

C series - Multiple bird strikes occurred during takeoff roll. Takeoff was aborted and aircraft taxied to maintenance hangar, where it was washed, inspected, and cleared for flight to home station. Radome and leading edges of wings were damaged.

C-12 Class E

C series - During climbout, No. 1 engine torque dropped to 50 percent, then fluctuated followed by illumination of No. 1 engine chip light. Engine was secured and aircraft landed. Removal of chip detector revealed excessive metal on detector and in engine oil. Engine was replaced.

C series - Aircraft was in straight and level flight at 25,000 feet. Attitude indicator made uncommanded pitch down 15 degrees, but aircraft attitude did not change. Attitude indicator then made uncommanded 10-degree pitch up, and aircraft returned to base using standby attitude indicator. Vertical gyro was replaced.

C series - Right engine was shut down in flight due to erratic engine operation and large fluctuations in torque, TGT, and N1. During cruise, 5.25 hours into training mission, crew noticed 15-percent drop in torque associated with coughing sound coming from right engine. This occurred several times in span of 1 minute. Pilot and passenger on right side saw flames shooting from exhaust stacks every time engine "coughed." PC called for and executed engine-shutdown-in-flight checklist, and aircraft flew single engine to nearest airfield. Cause of failure not known.

F series - During cruise flight, forward inboard corner of upper engine cowling came unlocked. Maintenance replaced fastener on cam lock latch assembly.

F series - During en route phase of low-level training mission, IP retarded No. 2 engine power lever to idle, simulating engine failure. Aircraft yawed, and PI proceeded with -10 emergency procedures. Torque was 104 percent with fuel-flow indication of 490. IP and PI immediately checked other engine instruments, which were all normal. IP and PI then assumed torque indicator malfunction as No. 2 engine torque needle was oscillating around 104 percent. IP then discovered that engine power lever had failed, and engine control was lost. Engine indications remained stable until final approach to airfield. On short final, IP feathered No. 2 prop lever to maintain directional control. Approach and landing to touchdown were accomplished, and engine was secured at touchdown using No. 2 engine condition lever. Aircraft was taxied off runway and shut down. Engine was replaced.

OV-1 Class E

D series - During engine runup while preparing to taxi, VHF radio was determined to be inoperative and UHF intermittent and unreliable for single-radio communications. Aircraft was shut down and VHF transmitter-receiver was replaced. While at runup area following second start, INS failed. Aircraft was shut down, and INS was replaced. While preparing for taxi following the third start and successful INS runup, left fuel transfer pump caution light came on. Aircraft was shut down, and defective transfer pump was replaced.

D series - During engine runup, No. 2 engine fuel flow indication was excessively high (1000 lbs/hr) at ground idle. Aircraft was shut down. Broken ground wire to fuel flow pressure transmitter was replaced.

D series - Having started No. 1 engine with GPU, PC attempted twice without success to start No. 2 engine. Maintenance investigation revealed battery charge was too low to allow instrument power supply relay to open or undercurrent relay to close. Battery was replaced.

O-5 Class E

B series - During runup, crew noted torque, T5, and fuel flow on No. 3 engine oscillating. Aircraft was shut down without incident. Maintenance changed fuel control unit, conducted MOC, and released aircraft for flight.

Safety messages

Aviation safety action messages

■ Aviation safety action maintenance mandatory message concerning stabilator actuator clevises on all EH/UH/MH-60 aircraft (UH-60-96-ASAM-09, 281327Z Aug 96). Summary: Recent contracts to procure stabilator clevises, P/Ns 70400-06638-043 and -044, identified a discrepancy involving omission of epoxy primer to the .375-inch diameter bore on the threaded shank. The purpose of this message is to require removal and visual inspection of all previously installed and new requisitions of the above referenced clevises. This inspection is to ensure that the bore is coated with epoxy primer to protect from corrosion. The message outlines procedures for removing corrosion and applying epoxy primer. Contact: Mr. Lyell Myers, DSN 693-2438 (314-263-2438).

■ Aviation safety action maintenance mandatory message concerning spindle assemblies and spindle elastomeric bearings on all H-60 series aircraft (UH-60-96-ASAM-10, 111656Z Sep 96). Summary: During a recent 500-hour phase maintenance inspection, a spindle shank was found to be circumferentially cracked in the area of the thread root and spline. Preliminary indications are that excessive wear on the elastomeric teflon sleeve bearing caused an increased gap between it and the spindle sleeve bearing, resulting in greatly increased loads carried in the spindle thread area. The purpose of this message is to (1) establish requirement to replace teflon sleeve bearing in the spherical elastomeric bearing assembly at every 500-hour PMS-2 inspection, and (2) for aircraft currently undergoing PMS-2 inspection or depot maintenance, to complete inspection outlined in message and, as a one-time requirement, collect statistical data. Contact: Mr. Lyell Myers, DSN 693-2438 (314-263-2438).

■ Aviation safety action maintenance mandatory message concerning increase in fatigue life of the Fenn-manufactured main rotor blade cuff (P/Ns 70150-09109-041 and -043) (UH-60-96-ASAM-11, 201410Z Sep 96). Summary: Engineering testing has resulted in an increase in the interim retirement life of Fenn-manufactured (cage 82001) main rotor blade cuffs from 75 to 450 hours. The purpose of this message is to give instructions for annotating component records to reflect this increase. Contact: Ms. Tammy Nelson, DSN 693-1601/2085 (314-263-1601/2085).

■ Aviation safety action maintenance mandatory message concerning inspection of all H-60 main rotor hub assemblies (UH-60-97-ASAM-01, 071958Z Oct 96). Summary: During manufacture of some main rotor hub assemblies, the proper edge break was not applied to the inside edge of one of the damper bracket attachment holes. Stress risers can result from this condition, which increases the opportunity for cracks to develop. The purpose of this message is to require inspection of all main rotor hub assemblies for proper edge break, NDI inspection and edge break of all assemblies found deficient, and NDI inspection of all main rotor hubs for cracks during the 500-hour phase inspection.

Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

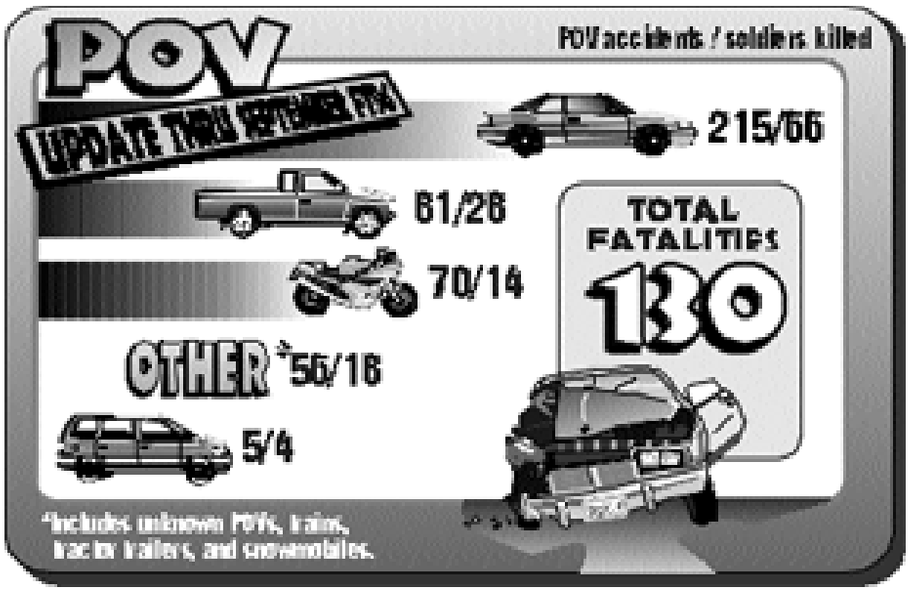
■ Aviation safety action informational message concerning the area weapon system (AWS) on all AH-64A series aircraft (AH-64-97-ASAM-01, 091420Z Oct 96). Summary: It has recently been discovered that, under certain conditions, the AWS can continue to fire or resume firing in an uncommanded direction. The purpose of this message is to alert the field to these conditions, which will continue to exist until the AWS control logic is modified. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning inspection and repair of aft pylon clamshell door lower latch on all CH-47D, MH-47D, and MH-47E series aircraft (CH-47-96-ASAM-09, 121316Z Sep 96). Summary: Several aircraft recently have lost the aft pylon clamshell doors in flight due to failure from vibration of the lower latch pin or fitting that holds the doors together. These in-flight separations have caused damage to rotor systems, engine tail cones, and airframes. The purpose of this message is to require inspection of the aft pylon clamshell doors for proper fit and to affix a strap assembly with latch to the lower left-hand door assembly at the bottom edge of the opening. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

Maintenance information message

■ Aviation maintenance information message concerning AN/AVS-7 heads-up display (HUD) signal data converter (SDC) survey (MIM-GEN-96-05, 130229Z Sep 96). Summary: Project Manager, Night Vision/Reconnaissance, Surveillance, and Target Acquisition is in the process of completing retrofit of CV-4229/AVS-7 SDC, NSN 5895-01-361-8986, part of the AN/AVS-7 HUD. The purpose of this message is to ensure that all systems have been retrofitted by requesting that all UH-60A/L, MH-60K, CH-47D, and MH-47E units survey and check the software number ID tag on the top of the SDC to verify that they have the latest data. Contact: Mr. Dick Mooy, DSN 693-9315 (314-263-9315).

For more information on selected accident briefs, call DSN 558-2785 (334-255-2785).



In this issue:

- Recipe for disaster
- Food for thought
- About the weather . . .
- ASO corner—ASO conference update
- ASO corner—More on ASO list server
- Broken Wing awards
- PQDR reminder
- Attention AH-1E/F maintainers
- ASE/EW course update

Class A Accidents through September

		Class A Flight Accidents		Army Military Fatalities	
		95	96	95	96
1ST QTR	October	0	1	0	0
	November	0	0	0	0
	December	1	0	0	0
2D QTR	January	1	1	1	0
	February	0	0	0	0
	March	1	2	0	7
3D QTR	April	1	1	5	3
	May	2	0	2	0
	June	1	1	0	6
4TH QTR	July	0	0	0	0
	August	2	0	5	0
	September	1	1	0	0
	TOTAL	10	7	13	16

U.S. ARMY SAFETY CENTER

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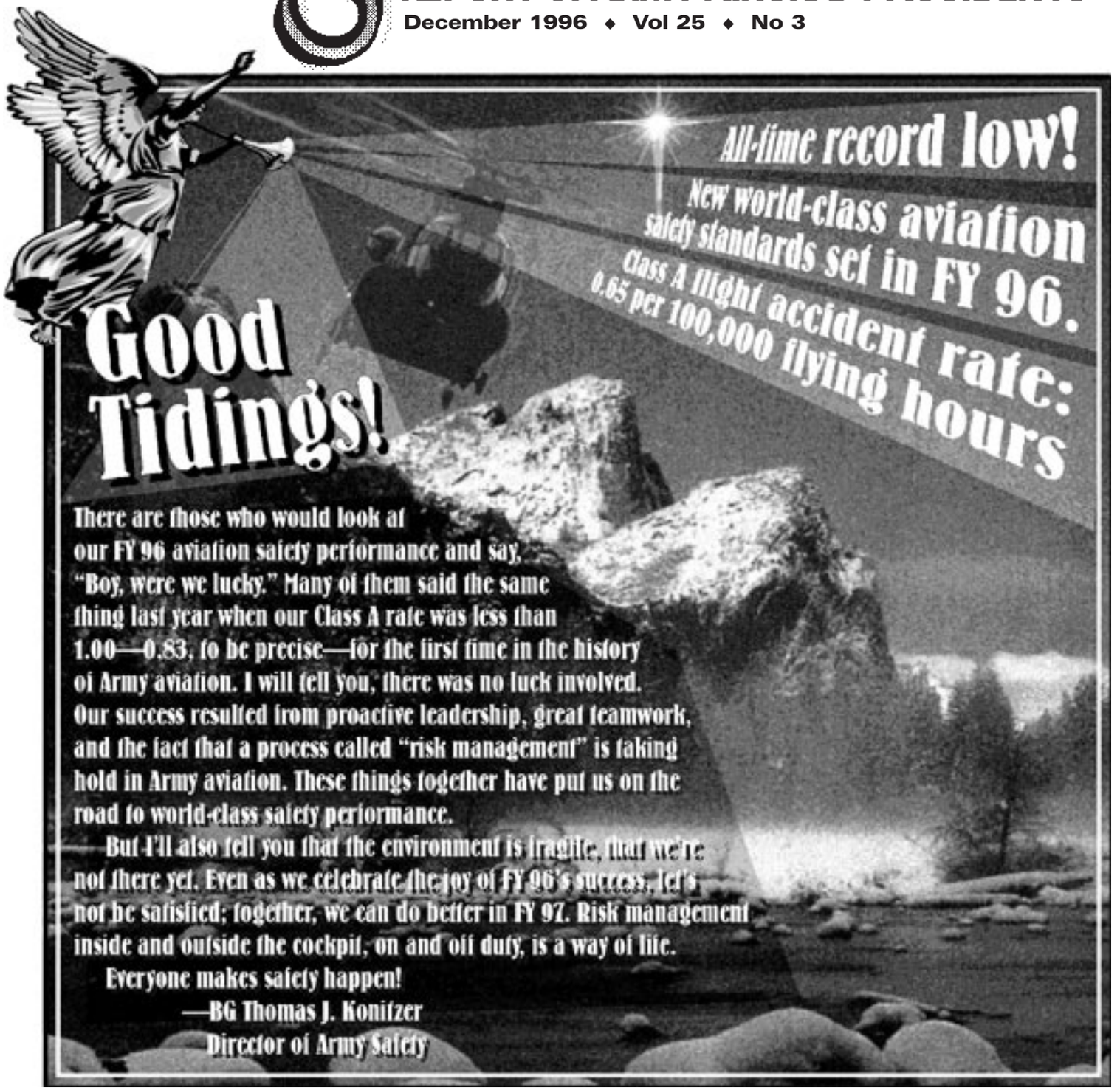
Thomas J. Konitzer
Brigadier General, USA
Commanding General
U.S. Army Safety Center

FlightFax

REPORT of ARMY AIRCRAFT ACCIDENTS

December 1996 ◆ Vol 25 ◆ No 3



All-time record low!

New world-class aviation safety standards set in FY 96.

Class A flight accident rate: 0.65 per 100,000 flying hours

Good Tidings!

There are those who would look at our FY 96 aviation safety performance and say, "Boy, were we lucky." Many of them said the same thing last year when our Class A rate was less than 1.00—0.83, to be precise—for the first time in the history of Army aviation. I will tell you, there was no luck involved. Our success resulted from proactive leadership, great teamwork, and the fact that a process called "risk management" is taking hold in Army aviation. These things together have put us on the road to world-class safety performance.

But I'll also tell you that the environment is fragile, that we're not there yet. Even as we celebrate the joy of FY 96's success, let's not be satisfied; together, we can do better in FY 97. Risk management inside and outside the cockpit, on and off duty, is a way of life.

Everyone makes safety happen!

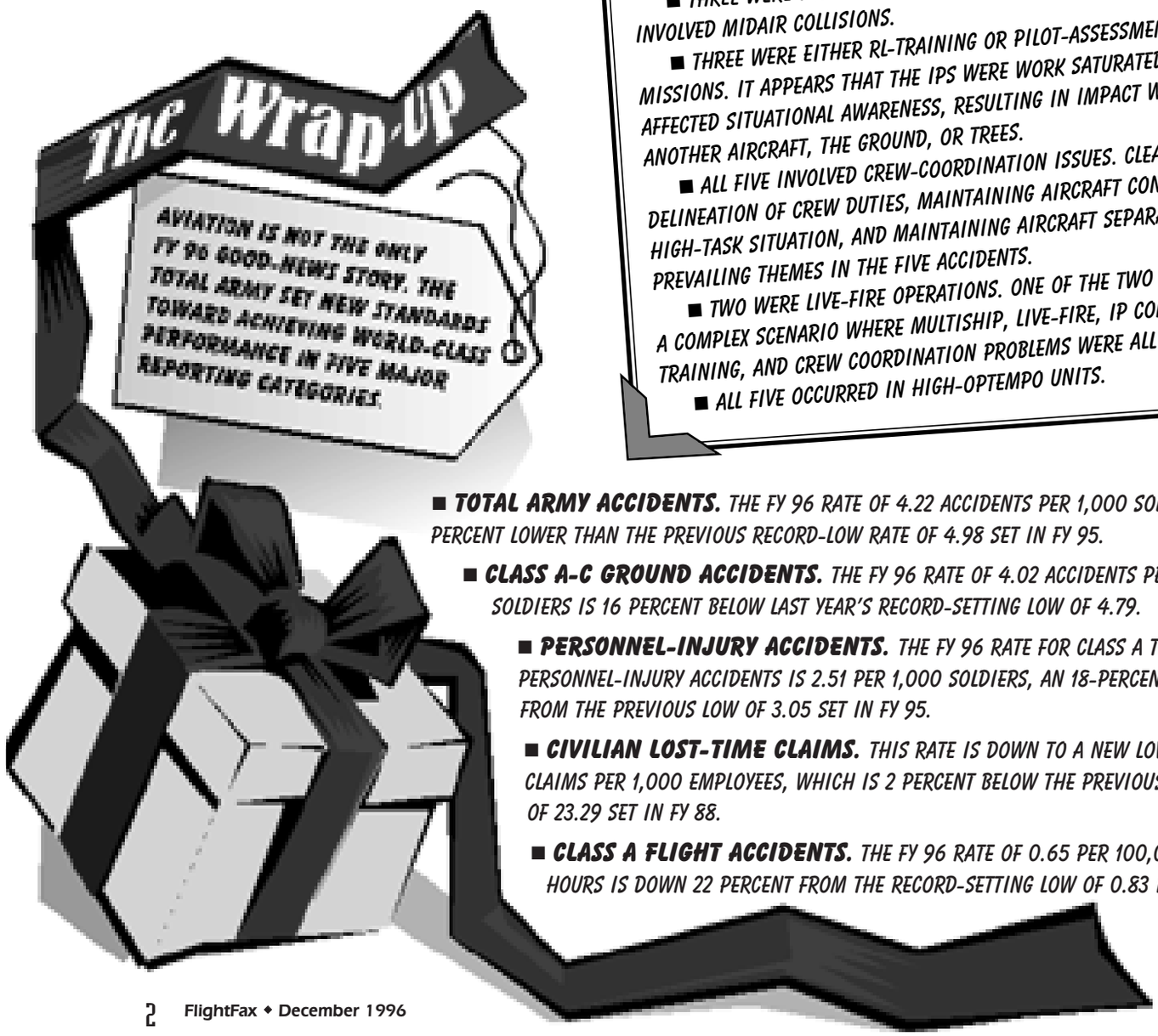
—BG Thomas J. Konitzer
Director of Army Safety

FY96 snapshots

The human factor

FIVE OF THE SEVEN FY 96 CLASS A FLIGHT ACCIDENTS WERE CLASSIFIED AS HUMAN-FACTOR ACCIDENTS. THESE 5 ACCIDENTS KILLED 14 PEOPLE AND DESTROYED 5 AIRCRAFT. FOUR OF THE FIVE HAPPENED AT NIGHT. THEY INVOLVED FOUR DIFFERENT TYPES OF AIRCRAFT CONDUCTING FIVE DIFFERENT MISSIONS. THEY REPRESENTED FIVE UNITS AND FOUR MACOMS IN ALL PARTS OF THE WORLD. BUT DESPITE ALL THE DIFFERENCES, THERE WERE SEVERAL COMMONALITIES:

- THREE WERE INVOLVED IN MULTISHIP OPERATIONS; TWO INVOLVED MIDAIR COLLISIONS.
- THREE WERE EITHER RL-TRAINING OR PILOT-ASSESSMENT MISSIONS. IT APPEARS THAT THE IPS WERE WORK SATURATED. THIS AFFECTED SITUATIONAL AWARENESS, RESULTING IN IMPACT WITH ANOTHER AIRCRAFT, THE GROUND, OR TREES.
- ALL FIVE INVOLVED CREW-COORDINATION ISSUES. CLEAR DELINEATION OF CREW DUTIES, MAINTAINING AIRCRAFT CONTROL IN A HIGH-TASK SITUATION, AND MAINTAINING AIRCRAFT SEPARATION WERE PREVAILING THEMES IN THE FIVE ACCIDENTS.
- TWO WERE LIVE-FIRE OPERATIONS. ONE OF THE TWO REPRESENTS A COMPLEX SCENARIO WHERE MULTISHIP, LIVE-FIRE, IP CONDUCTING TRAINING, AND CREW COORDINATION PROBLEMS WERE ALL PRESENT.
- ALL FIVE OCCURRED IN HIGH-OPTEMPO UNITS.



- **TOTAL ARMY ACCIDENTS.** THE FY 96 RATE OF 4.22 ACCIDENTS PER 1,000 SOLDIERS IS 15 PERCENT LOWER THAN THE PREVIOUS RECORD-LOW RATE OF 4.98 SET IN FY 95.
- **CLASS A-C GROUND ACCIDENTS.** THE FY 96 RATE OF 4.02 ACCIDENTS PER 1,000 SOLDIERS IS 16 PERCENT BELOW LAST YEAR'S RECORD-SETTING LOW OF 4.79.
- **PERSONNEL-INJURY ACCIDENTS.** THE FY 96 RATE FOR CLASS A THROUGH C PERSONNEL-INJURY ACCIDENTS IS 2.51 PER 1,000 SOLDIERS, AN 18-PERCENT REDUCTION FROM THE PREVIOUS LOW OF 3.05 SET IN FY 95.
- **CIVILIAN LOST-TIME CLAIMS.** THIS RATE IS DOWN TO A NEW LOW OF 22.83 CLAIMS PER 1,000 EMPLOYEES, WHICH IS 2 PERCENT BELOW THE PREVIOUS RECORD LOW OF 23.29 SET IN FY 88.
- **CLASS A FLIGHT ACCIDENTS.** THE FY 96 RATE OF 0.65 PER 100,000 FLYING HOURS IS DOWN 22 PERCENT FROM THE RECORD-SETTING LOW OF 0.83 IN FY 95.

The Bad News

193 fatalities

POV ACCIDENTS ACCOUNTED FOR 130, OR 67 PERCENT OF ALL FATALITIES DURING FY 96. THE AVIATION COMMUNITY LOST 7 OF ITS MEMBERS IN POV ACCIDENTS.

$201 million

AVIATION ACCOUNTED FOR $122 MILLION, OR 61 PERCENT, OF THE TOTAL COST OF ACCIDENTS IN FY 96.

It's not a pretty picture

FOOD for THOUGHT

ARE YOU AS AN AVIATION CREWMEMBER LESS LIKELY THAN OTHER SOLDIERS OF YOUR SAME AGE AND GRADE TO BE INVOLVED IN A POV ACCIDENT BECAUSE YOU'RE MORE RELIABLE, MORE DISCIPLINED, AND MORE MATURE?

OR ARE YOUR CHANCES OF A POV ACCIDENT ACTUALLY HIGHER THAN AVERAGE BECAUSE YOU'RE AN AVIATION CREWMEMBER?

MAYBE THE FACT THAT THE ARMY TRUSTS YOU WITH RESPONSIBILITY FOR HIGH-COST HELICOPTERS AND PRICELESS PEOPLE MAKES YOU TAKE SEEMINGLY LESSER RESPONSIBILITIES FOR GRANTED.

MAYBE THAT CAR OR TRUCK OR MOTORCYCLE DOESN'T SEEM LIKE TOO BIG A DEAL WHEN YOU'VE JUST CRAWLED OUT OF AN APACHE OR A CHINOOK OR A BLACK HAWK.

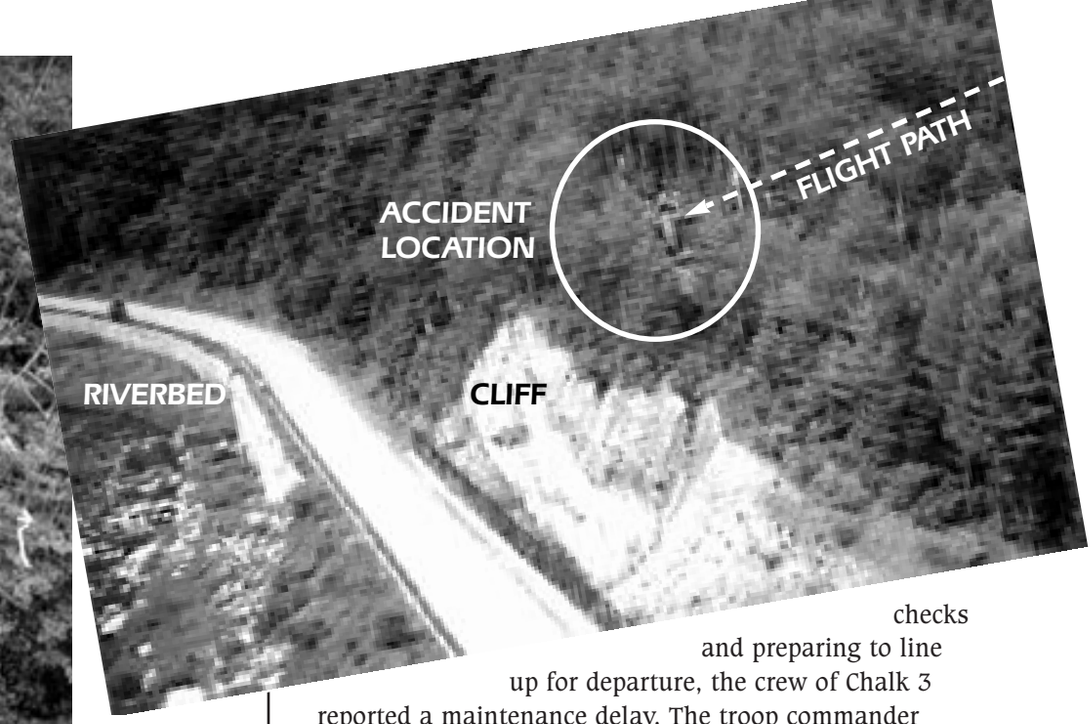
BUT, STATISTICALLY SPEAKING, THAT HELICOPTER'S NOT WHAT'S GOING TO GET YOU KILLED. YOU'RE MUCH MORE LIKELY TO DIE IN YOUR POV.

THAT BEING THE CASE, WHY ARE WE SO INTO APPLYING RISK MANAGEMENT IN THE COCKPIT BUT NOT IN THE CAR?

WE OUGHT TO THINK ABOUT IT.

POV ACCIDENTS REMAIN THE NUMBER-ONE KILLER OF SOLDIERS: 130 OF THE 193 SOLDIERS WHO DIED IN ACCIDENTS IN FY 96 WERE KILLED IN CAR AND TRUCK AND MOTORCYCLE ACCIDENTS. SPEED WAS A FACTOR IN MOST OF THE ACCIDENTS, AND FATIGUE FIGURED INTO MANY OF THEM. FAILURE TO USE SEATBELTS IS STILL A HUGE CONTRIBUTOR TO DEATHS AND INJURIES IN POV ACCIDENTS DESPITE THE FACT THAT SEATBELT USE HAS BEEN REQUIRED FOR YEARS, NOT JUST BY ARMY REGULATIONS BUT BY LAWS IN ALL 50 STATES.

THE ARMY SAFETY CENTER HAS DEVELOPED A NEW RISK-MANAGEMENT TOOL THAT CAN BE USED AT UNIT LEVEL TO ATTACK THE POV PROBLEM. THE AUTOMATED RISK ASSESSMENT AND CONTROLS (ARAC) PROGRAM FOR POVS WAS DESIGNED TO ENABLE INDIVIDUAL SOLDIERS TO ESTIMATE THEIR OWN RISK OF HAVING A POV ACCIDENT AND HELP THEM CHOOSE CONTROLS THAT WILL LOWER THAT RISK. THE ARAC PROGRAM WILL BE DISTRIBUTED TO UNITS ARMYWIDE THIS MONTH. FOR MORE INFORMATION, CHECK WITH YOUR LOCAL INSTALLATION SAFETY OFFICE; IF THEY CAN'T HELP YOU, CALL MS. MARY ANN THOMPSON AT THE ARMY SAFETY CENTER, DSN 558-3842 (334-255-3842).



Written by accident investigators to provide an accident synopsis and major lessons learned from recent centralized accident investigations.

AH-64A. The aircraft was Chalk 3 in a three-ship, night system (NS), nap-of-the-earth training flight that included bounding overwatch training. Chalk 3 was providing overwatch from the trail position while Chalks 1 and 2 bounded forward through a narrow river valley. While crossing a ridge line at a 45-degree angle, Chalk 3's main rotor blades struck a tree that was located upslope and to the right of the aircraft. The Apache came to rest upright but received major damage to the rotor systems, tail boom, and underside of the fuselage. Both the pilot and copilot-gunner sustained superficial injuries.

● ***What happened.*** The mission had been fully briefed, and a full-force rehearsal had been conducted during the afternoon. As the crews were completing communication checks and preparing to line up for departure, the crew of Chalk 3 reported a maintenance delay. The troop commander decided to depart with two aircraft to conduct a day recon of the NOE route. The delayed aircraft would join the flight at the release point of the NOE route. After completing the maintenance required, the crew joined the flight as Chalk 3 (trail). At a predesignated point on the NOE route, the troop commander directed the flight to begin bounding overwatch. Chalk 1 established an overwatch position, and Chalk 2 bounded around the right side of Chalk 1 and forward along the river valley. During this time, Chalk 3 was moving forward to establish a cover position behind Chalk 1. As Chalk 3 was crossing a ridge line in preparation for moving forward with Chalk 1, the crews' attention was focused on Chalk 1, which was in a stabilized hover to the left front and downslope from Chalk 3. While moving forward at about 2 KIAS, Chalk 3's main rotor blades contacted a tree located to the right front and upslope from the aircraft. As the main rotors began to disintegrate due to tree strikes, the aircraft settled into the trees. During the descent, the aircraft turned 45 degrees to the right and drifted rearward approximately 30 feet. It came to rest upright with major damage to the main and tail rotors, the tail boom, the underside of the fuselage, and the cockpit area. Both pilots received only superficial injuries and were able to complete emergency shutdown and exit without assistance.

● ***Lessons learned.*** Lack of situational awareness played a major part in this accident, as did the proficiency (not to be confused with *currency*) of the pilot on the controls. While extensive briefings and rehearsals were conducted regarding the actions of each crew in the formation, crew coordination within Chalk 3 was extremely limited. Even though not battle rostered, the crew had flown several missions together and were confident that each knew his responsibilities during the flight. At that critical moment when they were closest to the obstacles

along the ridge, the attention of both pilots was focused to their left front, when the greatest danger at that time was to their right side.

Was the crew aware of the hazards that were along the ridge line; i.e., the trees located upslope from the aircraft? The investigation board determined that the crew probably never did see the tree that was struck first even though it was about 12 feet taller than the surrounding trees. This was partly due to the decreased FLIR capability that each crew reported during the flight. While conditions had not degraded to the point where the FLIR was unusable, each crew reported that conditions provided for less-than-average performance of the system. Therefore, it's likely that the tree they hit "blended" into the trees located behind it and upslope.

Crews must be aware that, when using AH-64 night systems, the "eye" is approximately 10 feet forward and 3 feet below where the pilot is seated. Therefore, as an object departs the pilot's "field of regard," it appears to have already passed by the crew station; in reality, it is just coming abeam of the pilot's position.

Even though the PC was *current* in all tasks to be performed during this mission, the question of *proficiency* came up. We all know that what is needed to be "proficient" in a skill varies from one individual to the next. In this case, the PC had flown only two NS training flights for a total of 4.5 hours in the 3 months preceding the accident. One flight had been 33 days earlier, and the other about 90 days before the accident. They had been neither multiship nor NOE.

Flight using any night vision system is a perishable skill. While one flight every 60 days (as per the ATM) is enough to maintain *currency,* more than that is required to maintain a high level of *proficiency.*

The unit had established a training program that required weekly multiship collective training with a minimum of three aircraft per mission. However, due to outside constraints that limited troop-training opportunities for the 90-day period prior to the accident, the troop was able to conduct only four of the scheduled training flights. The PC had been unable to participate in any of the four.

Aviation Axiom:

CURRENCY IS NOT PROFICIENCY

As training is curtailed or restricted, the largest deficit almost always will be felt at the troop or company level. For that reason, it is imperative that every reasonable effort be made to ensure that team- and troop/company-level training be accomplished as often as possible to ensure that pilots do not maintain only *currency* but also the highest level of *proficiency* possible. ❑

Accident briefs

Information based on *preliminary* reports of aircraft accidents

Aviation flight accidents

Utility

UH-1 Class C

V series - Crew noted drop in oil pressure during flight. Transmission seized as crew was preparing to land on runway, resulting in hard landing. Crosstube/skid assembly was damaged due to spreading. Aircraft will also undergo sudden-stoppage inspection.

UH-60 Class B

A series - At 20 feet agl after completing IFR approach, aircraft lost tail-rotor thrust. As crew attempted autorotation, aircraft struck ground and rolled onto its right side. No injuries.

A series - Aircraft struck light pole while ground taxiing into position for refueling. All four blades were damaged. No injuries.

UH-60 Class C

A series - Master warning panel low rotor light and audio came on during cruise flight. Rotor rpm increased during emergency autorotation and left turn toward a soccer field. At no time did rotor rpm appear to regain engine-driven power. During descent, generators dropped off line, causing loss of all cockpit indications. Aircraft sustained Class C damage as bottom of fuselage and tail section were dragged through small trees and shrubs before aircraft settled into a swampy area short of the soccer field.

K series - On short final, main rotor blades contacted two small trees. Crew heard a bang and felt a slight vibration but were unable to detect the cause. Aircraft landed at intended landing point and passengers disembarked. After takeoff, crew again felt minor vibration and performed precautionary landing.

L series - While at stable 30-foot hover during NVG FRIES mission, aircraft drifted right and contacted trees at edge of LZ. Postflight inspection revealed damage to three main rotor tip caps.

Attack

AH-1 Class C

S series - During NVG assessment with zero illumination under NOE flight conditions, aircraft tail rotor system contacted tree.

AH-1 Class E

F series - When IRCM switch was turned on for inflight check, aft fuel boost caution segment light came on. Light went out when IRCM was switched off. Aircraft returned to airfield and landed.

F series - When PC turned on alternator switch during runup, it did not come on line. Aircraft was shut down without incident. Inspection revealed faulty alternator control unit. Alternator control unit was replaced, and aircraft was released for flight.

F series - During runup at 100 percent N2, engine oil pressure indicated 70 psi. Crew shut down aircraft without incident. Maintenance replaced faulty engine oil transducer and released aircraft for flight.

F series - During runup, dc generator would not come on line. Maintenance replaced engine cut-out relay.

AH-64 Class C

A series - NVD shroud separated during cruise flight at night. Location unknown.

AH-64 Class E

A series - Oil psi nose gearbox #2 light came on during runup.

A series - Smoke from shaft-driven compressor entered cockpit during taxi. Crew heard grinding noise during shutdown. Smoke dissipated.

A series - Press-to-test for pilot caution warning panel failed to illuminate any segments.

A series - During cruise flight at 1000 feet agl, the CPG's ICS failed. He could receive but not transmit. Maintenance replaced ICS cord, which had developed a short.

A series - During terrain flight at night, chips main transmission and master caution lights came on. Aircraft was landed immediately with no further incident. Oil samples were taken; sample came back with instructions for a 5-hour flight and then a special oil sample. A week later, chips main transmission warning light came on again, this time at 5-foot hover. PC performed a precautionary landing, and aircraft was cleared for one-time flight to home base. Maintenance took oil sample and flushed transmission oil system. Oil sample came back good, and aircraft was cleared for flight.

A series - During NVS training, aircraft completed two roll-on landings without incident. Upon landing at home base, crew noticed that right main tire was flat. Inspection revealed that brake pistons were so dirty that the piston was not completely releasing the brake even though the brake handle was in. Caliper housing was cleaned and pistons were replaced.

A series - During formation flight, crew heard unusual intermittent noise coming from transmission bay area. Noise was accompanied by loss of ECS air pressure. Crew returned to airfield, where maintenance replaced shaft-driven compressor.

A series - During high-speed flight, primary hydraulic bypass light came on. Postflight inspection revealed hydraulic fluid around switch.

A series - Utility hydraulic bypass light illuminated in flight.

A series - Oil PSI nose gearbox No. 2 warning light came on at 80-foot OGE hover. Aircraft was landed without incident. Maintenance replaced No. 2 nose gearbox oil switch.

A series - TADS failed during engine start, and odor was detected in cockpit. TADS was turned off and odor went away.

A series - After ground runup, test pilot found two small dents about 3/8-inch long and 1/8-inch deep in the leading edge of one of the tail-rotor blades. They looked to have been caused by a bolt because thread markings were visible. Complete inspection found no bolts out of place or missing. Blade was replaced.

AH-64 Class F

A series - During low-level flight over water, crew heard rapid-fire noise from right side of aircraft. PIC checked his instruments and called out compressor stall. Torque and tgt were fluctuating on No. 2 engine. PIC reduced collective, but that did not correct the problem, so he retarded No. 2 power lever to idle. Stall then went away. Aircraft was turned back, and once over land PIC attempted to bring engine back on line. Engine began stalling again, and PIC immediately retarded engine to flight idle and left it there. Aircraft was flown to nearest airport with crash rescue, where crew completed single-engine roll-on landing without incident. Inspection revealed engine had FOD damage.

Observation

OH-6 Class B

J series - When aircraft landed to plowed field, skids settled into soil and main rotor blades contacted ground forward of main fuselage. Aircraft rolled onto left side.

OH-58 Class C

A series - After shutdown in parking area, rotors were coasting down. Civilian ground guide became impatient and directed a Canadian aircraft to hover to a parking spot behind the OH-58 before the blades stopped turning. Rotor wash caused the blades to flap and hit the tail boom. The blades had almost stopped turning, so damage to the aircraft and blades was minimal.

D series - Postflight inspection after NVG training mission revealed Class C damage to both tail-rotor blades. Cause undetermined.

OH-58 Class D

C series - IP initiated unannounced simulated forced landing while hovering at 5 knots and 3 feet agl. PI responded with abrupt control inputs, causing aircraft to touch down left skid first. Aircraft rocked forward onto skid toes, then landed hard on right skid. Aircraft then bounced forward 3 feet and to the right 1½ feet, where it came to rest. Aircraft sustained damage associated with spike knock. K-flex drive shaft, landing gear, and pylon fairing were also damaged.

C series - After unmasking vertically to about 40 feet, aircraft entered descending right turn. When pilot increased collective to slow descent, torque reached 120 percent. Aircraft landed without further incident.

OH-58 Class E

A series - During engine start, N1 needle began spinning counterclockwise. Gas producer tachometer indicator was replaced and aircraft released for flight.

A series - Engine compressor stalled when collective was reduced after HIT check. TOT climbed to 750°C. Stall continued until emergency shutdown was completed. Maintenance replaced fuel nozzle, and aircraft was released for flight.

A series - Low rpm warning sounded momentarily during cruise at 500 feet agl. All engine and rotor systems appeared to be operating normally. Two additional momentary rpm audio and warning light illuminations occurred during the 2 minutes it took to make a precautionary landing.

A series - Pilot dual tach needles split during traffic pattern flight. Aircraft was landed immediately.

A series - After aircraft was picked up and hovered 10 feet, high-pitched noise came from engine area. TOT increased to 910° and remained there for 10 seconds. Pilot landed and reduced throttle. Once throttle was reduced to flight idle, TOT stabilized at 700° through normal shutdown.

C series - During descending right turn from 300 to 100 feet agl during NVG mission, power was applied to stop descent. Aircraft continued to descend at 100-percent torque. Torque went to 109 percent for 1½ seconds. Aircraft was landed without incident.

C series - During climbout from FARP, PI overtorqued aircraft. PC noticed overtorque, transferred flight controls, and immediately reduced collective to bring torquemeter within normal limits. Aircraft was landed without incident, and maintenance inspection revealed no damage.

D series - Inverter-failure message appeared during hover taxi for takeoff. Cannon plug was found loose. Plug was tightened and aircraft released for flight.

D series - Hydraulics failed during runup, and aircraft was shut down. Maintenance replaced hydraulics pump, which was discharging internally with pump gears, and released aircraft for flight.

Training

TH-67 Class C

A series - During clearing turn before takeoff, left turn could not be arrested with full right pedal. IP took controls, entered autorotation, and touched down with low NR, resulting in spike knock and collapse of tail boom.

TH-67 Class E

A series - Generator was inoperative during engine start. Voltage regulator was replaced.

A series - Fuel pump caution light stayed on during runup. Fuel boost pump was replaced.

A series - Rotor tach failed during engine start. Maintenance replaced dual tachometer indicator.

Cargo

CH-47 Class D

D series - During PMD, flight engineer found extensive damage about 15 feet inboard on aft rotor blades. Aircraft had been on a mission the day before to move a damaged footbridge in a state park. Probable tree strike.

CH-47 Class E

D series - Hydraulic caution light came on during cruise flight, and crew made precautionary landing. Postflight inspection found fluid loss. Fitting was tightened, and aircraft was released for flight.

D series - At 35-foot hover with zero forward airspeed during NVG external load operations, crew was attempting to lift 17,000-pound training load. When load was about 5 feet off the ground, center cargo hook released, dropping load. Inspection revealed minor damage to center cargo hook. Locking cams were corroded and not properly seated.

D series - During approach to landing, transmission hot light came on and temperature read 145°C. Engine was shut down and aircraft landed. Combining transmission was replaced.

D series - No. 2 advanced flight control system (AFCS) was making circular oscillation into flight control during cruise flight. System was turned off and aircraft returned to base. AFCS computer was replaced.

D series - During pinnacle approach with external load, crew noticed smoke in cockpit. Load was set down, and aircraft was landed and shut down without further incident. Maintenance inspection revealed that forward transmission had failed. Transmission was replaced.

D series - No. 2 flight control caution light came on in cruise flight, with zero hydraulic pressure reading on maintenance panel. Aft swiveling actuator was replaced, and aircraft returned to service.

D series - Crew chief saw hydraulic fluid leaking from aft transmission area during shutdown. Postflight inspection revealed sheared bolt on No. 2 hydraulic pump. Hydraulic pump was replaced.

D series - Forward green blade pitch variable housing lost all fluids while aircraft was on ground. Maintenance replaced seal parts.

D series - Extended-range fuel system tank was leaking fuel. Internal tank was replaced.

D series - Rated student pilot was performing emergency engine trim system check during runup when No. 2 engine failed. During subsequent shutdown, when No. 1 ECL was placed to ground, N1 stabilized at 40 percent and PTIT increased rapidly and reached 1000° for 2 seconds. No. 1 engine was replaced.

D series - Forward longitudinal cyclic trim actuator would not program automatically in flight. Actuator was replaced, and aircraft was released after test flight.

D series - Forward transmission chip detector caution light came on at 1000 feet and 120 knots. Caution panel would not reset, and aircraft landed in a river bed. Forward transmission was replaced.

D series - Forward longitudinal cyclic trim actuator failed to extend on landing. Cyclic trim switch was placed to manual, but manual circuit breaker popped any time forward switch was placed to extend position. LCT actuator was replaced.

Fixed wing

UV-20 Class D

A series - During takeoff for parachute operations, gusty winds caused aircraft to make sudden turn and leave runway. Aircraft traveled 750 feet over rough terrain, made a sharp 270-degree right turn, and came to rest about 75 feet from the runway. Operation of tail wheel over extremely rough terrain caused damage to aft section of fuselage.

C-12 Class E

C series - During climbout, No. 1 engine fire light came on. There were no visual indications of fire, and engine instrument readings were normal. Crew elected to return to airfield. En route, light went out. Aircraft landed without incident and was released for one-time flight back to home base. Maintenance could not duplicate.

C series - On landing, PIC noticed rough vibration. After rollout from landing, he feathered engines and PI exited aircraft and confirmed two flat tires on left main landing gear.

C series - During runup check, power levers were advanced to 1950 rpm for the overspeed governor check. Pilot noticed No. 2 engine oil pressure exceeding limits and immediately retarded power levels to idle. No. 2 engine oil pressure reached 160 psi for 5 seconds. Aircraft was taxied to ramp and shut down without incident. Engine oil pressure valve was replaced.

D series - During taxi, crew detected smoke and fumes in cockpit and noticed left main tank fuel quantity low. Mission was aborted. Caused by failure of fuel check valve and forward vent blower motor.

D series - During takeoff, landing gear would not retract. Right hand gear safety switch was replaced.

D series - Immediately after takeoff, No. 1 fire handle illuminated. Aircraft landed without incident. Postflight revealed no indication of fire. Maintenance inspection revealed fire warning system detector had failed; it was replaced and aircraft was released for flight.

D series - During fuel pump crossfeed operation check, No. 2 firewall shutoff valve switch did not operate. Switch was replaced.

D series - Right bleed-air-off warning light came on, and aircraft landed. Right bleed air pressure switch was replaced.

D series - Right bleed-air-off warning light came on, and aircraft landed. Leaking polyflow tubing was replaced.

D series - During gear retraction after takeoff, gear hung momentarily (2-3 seconds) halfway through cycle, then completed the cycle normally. Caused by failure of gear handle selector switch.

D series - No. 1 engine fire light came on in cruise flight. Caused by faulty fire detector.

N series - On downwind leg of traffic pattern, PC noted unsafe landing gear indication. After tower personnel confirmed that gear was not down, PC manually extended gear and landed without incident. Cause is under investigation.

C-23 Class E

B series - Copilot's attitude indicator gyro failed in cruise flight.

O-5 Class E

B series - During runup, mechanic noted fuel leak in No. 4 engine area. Fuel control unit was replaced.

B series - During taxi for takeoff, roll spoilers failed to extend in ground mode. Maintenance inspection revealed moisture in cannon plug connection to nose gear limit switch. Plug was dried out and sealed.

B series - Upon gear retraction after takeoff, right main gear light indicated gear down. Flight attendant in cabin confirmed gear had retracted. On final approach at destination, gear extended normally and landing was uneventful. Maintenance inspection revealed corrosion on connector pins in cannon plug on proximity switch.

B series - Hydraulic leak was discovered during postflight. Maintenance inspection revealed fatigue crack at union of hydraulic line to center section of ground spoiler. Line was repaired, MOC completed, and aircraft released for flight.

OV-1 Class E

D series - When pilot placed landing-gear handle in up position after takeoff, he didn't hear gear retracting and saw transient indication in gear handle. After several unsuccessful attempts to retract gear, he placed gear handle in down position. With landing gear indicating down and locked, he landed at home base without incident. Maintenance replaced check valve leading to selector valve and released aircraft for flight.

D series - After normal start of No. 2 engine, crew chief (fireguard) repositioned for No. 1 engine start when he saw hydraulic fluid leaking from left wing. He signaled to pilot to shut down aircraft, and leak was isolated and contained. Maintenance inspection revealed ruptured hydraulic (flexible) line. Line was replaced, hydraulic system was serviced, and aircraft was returned to service.

Safety messages

Aviation safety action messages

■ Aviation safety action maintenance mandatory message concerning one-time inspection of tail drive flexible coupling connections on all UH-60A/EH-60A/UH-60L/MH-60K aircraft (UH-60-97-ASAM-02, 231535Z Oct 96). Summary: A Black Hawk experienced loss of tail-rotor drive due to failure of the section-one tail drive shaft, which had been incorrectly attached directly to the main transmission tail takeoff flange. The purpose of this message is to require one-time inspection of all tail rotor drive shaft flexible coupling connections and to correct erroneous reference in the manual. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning replacement of undamped gas generator (GG) rotor/stator assemblies on all UH-60A and EH-60A aircraft with T700-GE-700 engines (UH-60-97-ASAM-03, 251455Z Oct 96). Summary: ATCOM and the Utility Helicopters PMO have been directed to change out all undamped GG rotor/stator assemblies installed in T700-GE-700 engines. The changeout will be done on site by a GE field team. The purpose of this message is to identify remaining assemblies. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

■ Aviation safety action informational message concerning all Army aircraft utilizing AN/AVS-7 system (GEN-97-ASAM-01, 251502Z Oct 96). Summary: The navigation symbology displayed in the AN/AVS-7 system does not function properly when connected to the ASN-128B doppler/GPS system. The purpose of this message is to inform users of certain functions they should deselect. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

Maintenance information messages

■ Aviation maintenance information message concerning standardization and control of industrial-quality tools (GEN-MIM-97-001, 151341Z Oct 96). Summary: The majority of tools in the new aviation tool set (NATS) have either a lifetime or extended commercial warranty. The purpose of this MIM is to ensure that soldiers in the field are aware of the warranty program. Contact: Mr. Dick Mooy, DSN 693-9315 (314-263-9315).

■ Aviation maintenance information message concerning replacement of nitrogen inerting unit (NIU) check valve with a poppet valve (AH-64A/D-MIM-97-001, 161901Z Oct 96). Summary: Due to approximate 5-degree tail-down attitude of subject aircraft when parked, fuel will leak through the "gate style" check valve and contaminate the NIU. The purpose of this MIM is to recommend installation of new "poppet" style check valve. Contact: Mr. Kenneth Muzzo, DSN 490-2257 (314-260-2257).

■ Aviation maintenance information message concerning APU fuel solenoid valve on AH-64 helicopters (AH-64-MIM-97-002, 311623Z Oct 96). Summary: A discrepant APU solenoid valve will allow fuel to escape and be ignited by either the hot power turbine plenum or a flashback (APU backfire). The purpose of this MIM is to modify inspection procedures to confirm proper assembly of APU solenoid valve. Contact: Mr. Ken Muzzo, DSN 490-2257 (314-260-2257).

For more information on selected accident briefs, call DSN 558-2785 (334-255-2785).

ShortFAX
Keeping you up to date

Height-velocity-avoid region

The dual-engine UH-60 brought a safety margin to utility-helicopter operations that wasn't possible with single-engine aircraft. However, as mission demands expand and new equipment is added, Black Hawks frequently operate at higher gross weights than in the past.

UH-60 crews should be aware that operating in height-velocity-avoid regions can be hazardous to them, too, if one engine becomes inoperative.

Avoid regions vary based on gross weight and atmospheric conditions. Pilots should review the information in the operator's manual on the height-velocity-avoid regions for single-engine failure and avoid flying in these danger zones as much as possible.

POC: Mr. Michael Lupo, Utility Helicopter PM Office, ATCOM, DSN 693-0475 (314-263-0475)

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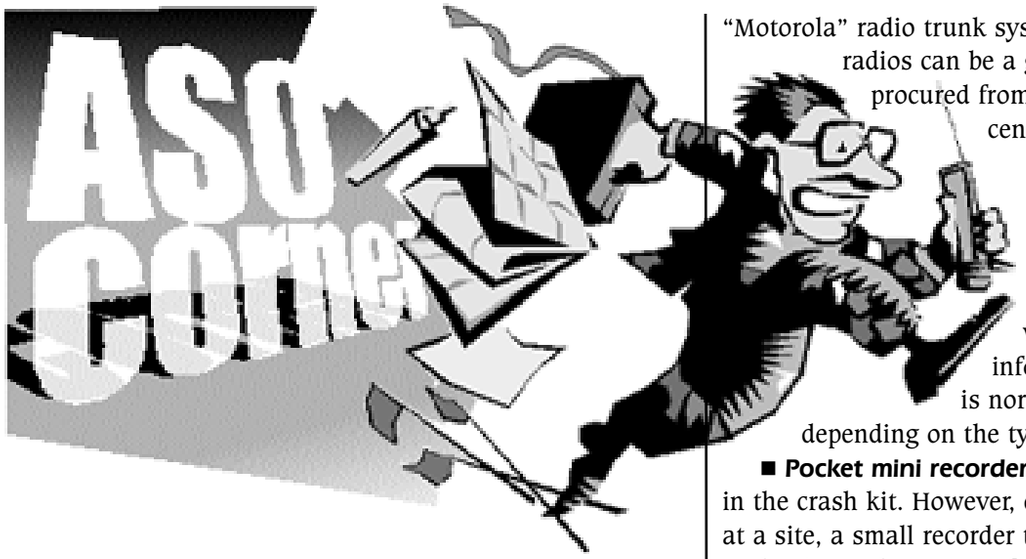

Where's the crash kit?

How many of you ASOs have had the opportunity to be the first respondent in an aircraft crash scenario? If your experiences have been like mine, you are notified of a situation and have time only to throw your crash kit and maybe a coat together before boarding an awaiting aircraft for transport to the site. Sound familiar?

The last time it happened to me, I was returning to my office when the standards officer got my attention and suggested I might want to check with base operations. Being in the same building, I immediately did an about-face and went to base ops. There, the dispatcher informed me of having just received a report of an aircraft accident about 12 miles north of our airfield.

Base ops immediately activated the crash-alarm and made arrangements for the medevac standby aircraft to transport the flight surgeon, the commanding general, and me to the site. After dropping us off, it returned to home station to pick up security personnel.

The accident site was spread over quite a large area. It was at this time that it was reinforced to me that our issued standard Army crash-investigation kit is severely lacking in many areas. Upon my return, I augmented my crash kit with the following items:

■ **Polaroid camera.** Although the crash kit contains a standard 35mm camera, instant pictures can greatly assist if portions of the accident site must be disturbed before the investigation team arrives. The Polaroid Spectra SE is a great quality camera that costs about $110.

■ **Engineer flags.** These are wire stakes with a 4x5-inch flag on one end. The flags come in a variety of colors and are sold in bundles of 100 for about $20. They're available through any engineering supply store.

■ **Hand-held radio.** Most installations have a "Motorola" radio trunk system, and having one of the radios can be a great help. They usually can be procured from the installation information center.

■ **Cell phone.** With today's technology, cell phones are relatively inexpensive and are of vital importance at a crash site. There is no better way of keeping your command informed or to make requests. Cost is normally $10 to $25 per month, depending on the type phone service ordered.

■ **Pocket mini recorder.** A large cassette recorder comes in the crash kit. However, quality is severely lacking. Also, at a site, a small recorder that can be carried in your pocket is much more useful than the larger, shoulder-carried standard recorder. Mini recorders can be purchased locally for about $30.

■ **Space blankets.** These can be used for a variety of needs. The most important is to cover sensitive areas of the crash site. These blankets normally can be obtained from local aviation life-support equipment (ALSE) shops.

■ **Surgical gloves.** These are important for the retrieval of items in and around a crash site. They can be obtained from the local dispensary or hospital. One box of 50 should be ample.

■ **Global positioning system.** The exact location of the site is extremely important, and a GPS is a great tool in "mapping" the crash area. Normally, they're available through supply channels (AN/PSN-11 Navigational Set, Satellite Signals, NSN 5825-01-374-6643).

I have all this equipment broken down into three units. First, I have the basic crash kit with the standard contents. Next, I have a wooden box that contains my engineer flags, space blankets, engineer tape, reflectorized tape, clipboard, paper, specimen bags, pens/markers/pencils, and extra batteries. Last, I have a large briefcase (pubs bag) that houses the cameras, tape measure, GPS, telephone, radio, compass, flashlights, and maps. In this way, the items that are most important initially are in my briefcase; the other items can comfortably follow me.

When you approach your commander with this laundry list of additional and costly items, he or she will probably tell you that everything is available within the installation. That's true. However, in an actual situation, you won't have time to assemble all the above items and make it to the crash site in a timely manner. In addition, most ASOs will find most of these items invaluable on a day to day basis.

Unfortunately when the crash alarm goes off, there's no time for planning. All of this must be done ahead of time.

—CW4 Andrew E. Sickler, Installation Aviation Safety Officer, Fort Benning, GA, DSN 835-2425 (706-545-2425)

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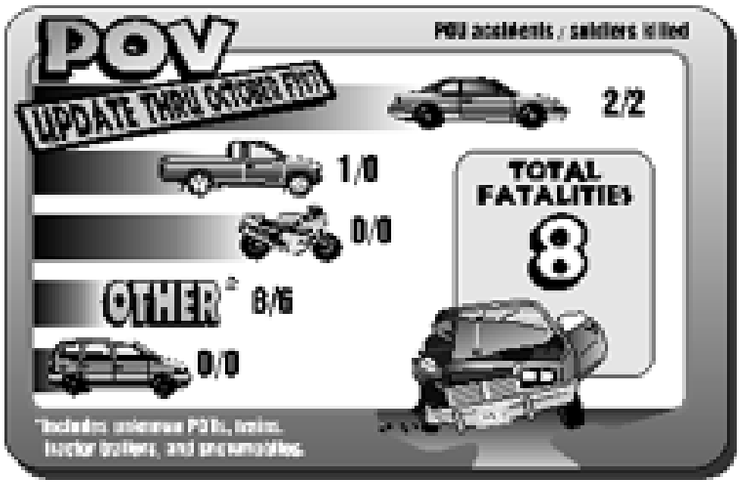

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Class A Accidents through October

		Class A Flight Accidents		Army Military Fatalities	
		96	97	96	97
1ST QTR	October	1	0	0	0
	November	0		0	
	December	0		0	
2D QTR	January	1		0	
	February	0		0	
	March	2		7	
3D QTR	April	1		3	
	May	0		0	
	June	1		6	
4TH QTR	July	0		0	
	August	0		0	
	September	1		0	
	TOTAL	7	0	16	0

U.S. ARMY SAFETY CENTER

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