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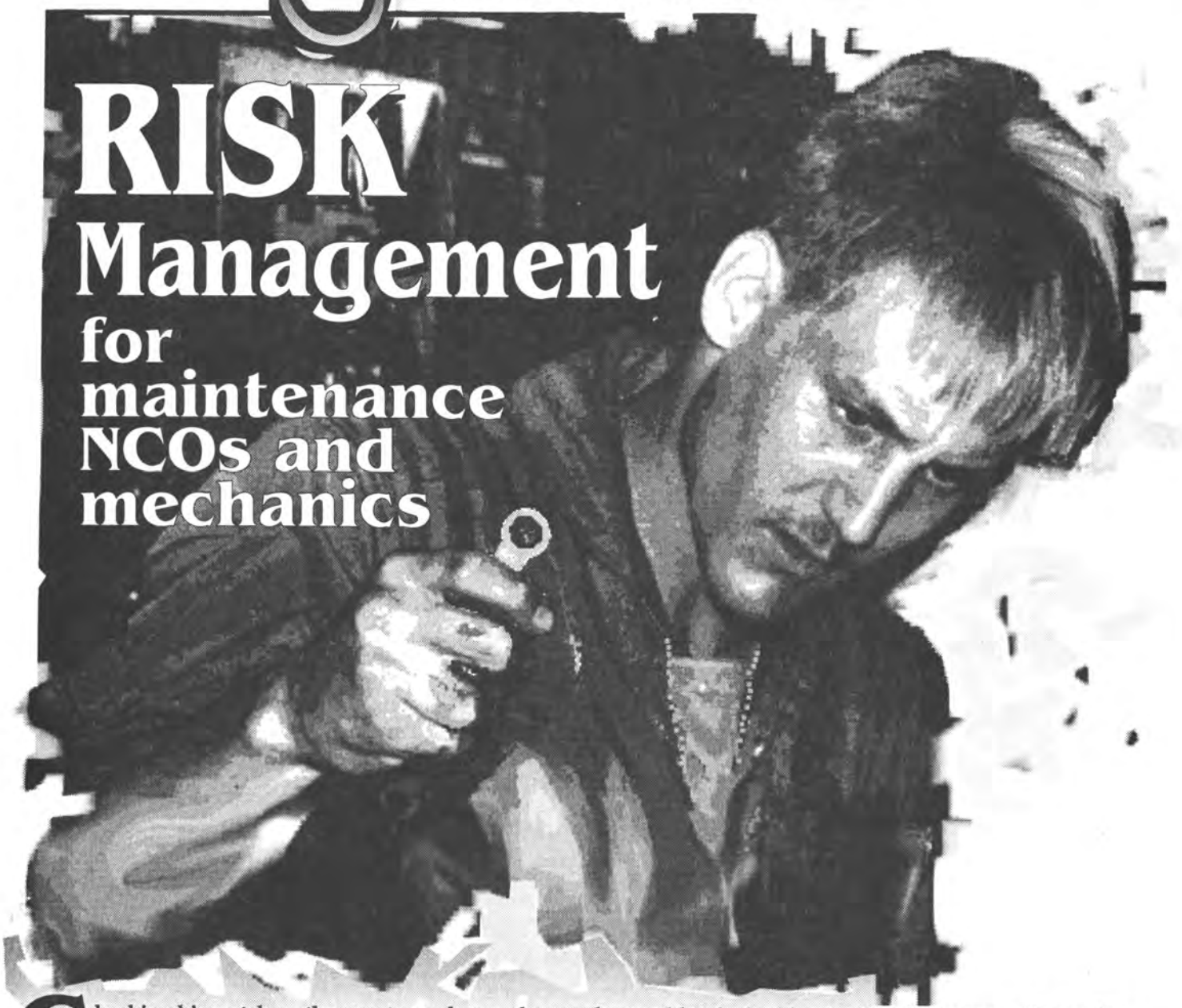
RISK Management for maintenance NCOs and mechanics



Checking his watch on the way to work to make sure he wouldn't be late for the 0530 first sergeant's meeting, SSG Smith was thinking about the helicopter in phase and the one that had been grounded following weekend missions. After providing support for the first sergeant's taskers he was sure he was about to get, he was worried about how many people he would have left in his maintenance platoon to actually work on the aircraft.

1SG Jones looked up from the mound of paperwork to make sure all of his platoon sergeants were present. Today, he was going to need all the support he could get to fill the sergeant major's detail requirements. After all, he had promised the sergeant major that A Company would pull their weight at the battalion's annual weapons qualification range.

At 0530, 1SG Jones began issuing assignments for the day and requesting people from each of the platoons. He then turned to SSG Smith and said "John, I need you to be in charge of the range detail. You're the only available NCO. Any questions?" he asked quickly. "If not, it's time for PT formation."

After PT, SSG Smith took all but three of the people in his maintenance platoon to report to the sergeant major for range-detail assignments. Before leaving, he turned to SPC Pierce and said, "You take PFC Wilson and PVT Oates and go to the hangar. Work on the phase aircraft and see what's wrong with the one that was red X'ed this weekend."

Once SPC Pierce, PFC Wilson, and PVT Oates got to the hangar, the production control (PC) NCO and the maintenance officer called them together along with the technical inspector (TI) to set the priorities for the day. SPC Pierce was tasked to work on the phase aircraft along with PVT Oates. PFC Wilson was assigned to repack a tail-rotor quill on an AH-1.

Getting his assignment, PFC Wilson mused to himself, "I've never repacked a tail-rotor quill, but how hard can it be?" The PC NCO had told him that one of the TIs would supervise the job to make sure he was doing it right. PFC Wilson got out the manual, quickly scanned the maintenance task, put the book away, assembled the special tools along with his general mechanic's tool box, and started to perform the assigned task. He decided in the interest of time that he would do the paperwork after the job was done.

An hour later, the PC NCO called PFC Wilson and told him that he was needed to help with an engine flush on a UH-1 because the crew chief was at the range and the aircraft was needed for an urgent mission. SPC Pierce was assigned to complete the job on the AH-1 when he finished his present task.

About 45 minutes after starting work on the tail-rotor quill job, SPC Pierce walked to the TI shop and informed the TI that he needed someone to sign off the tail-rotor quill repack. When the TI and SPC Pierce arrived at the aircraft, the TI was surprised to find the tail-rotor drive shaft already installed. "Why did you install the drive shaft before I inspected the tail-rotor quill? I have to see if the grease was properly installed." SPC Pierce looked puzzled and replied "PFC Wilson had the quill installed when he had to go to the flight line. I just installed the drive shaft."

The TI went to his office and called the flight platoon and asked to speak to PFC Wilson. "That's the way I thought you did it" was the reply to the TI's questions. After several minutes of questioning the young private, the TI took SPC Pierce out to the aircraft and had him sign off the entry requiring the quill lube. Although the TI knew he should have SPC Pierce remove the drive shaft and plate assembly so that he could properly inspect the grease repack, he signed off the red X because he knew that SPC Pierce was needed to perform other tasks and PFC Wilson would be at the flight line for some time yet. The TI rationalized that surely no one could mess up a simple repack.

The next morning while the aircraft was being test flown for the tail-rotor repack and for rotor tracking, it experienced a complete loss of tail rotor thrust. The aircraft entered a right spin, rotated several times, and crashed. The aircraft was totally destroyed, but fortunately no one was seriously injured.

Inspection revealed that the tail-rotor quill output coupling had been improperly assembled. PFC Wilson had failed to install the centering spring, plate assembly, and retaining ring in the coupling as required by the maintenance manual, which caused the drive shaft coupling to disengage from the spherical coupling, resulting in loss of tail-rotor thrust.

This scenario is a composite of events from actual accidents and illustrates possible actions of sergeants and soldiers who, while trying to do a good job, get into trouble by failing to apply risk-management techniques in day-to-day business. How could a maintenance error of this magnitude have happened?

Applying risk management

Risk management is not a new concept. By now, everyone in America's Army should know the 5-step process (see below). If you still don't fully understand the process, invest some time in learning the basic concepts. Having a good theoretical understanding of the concept will make it a lot easier to apply the process to everyday situations.

Risk management is a tool that commanders, officers, NCOs, and mechanics alike can use to help them get the job done safely, but applying it effectively does take practice. Let's go back and see where and how the first sergeant, platoon sergeant, technical inspector, and mechanic could have more effectively used the risk-management process and principles to guide them in making some changes that might have prevented the serious maintenance error that resulted in the accident. While all the steps within the process are necessary, identifying the hazards and establishing control measures are key to success.

Risk Management Process

Hazards and control measures

■ **First sergeant**. The first sergeant failed to recognize the impact of taking so many people out of the maintenance platoon to support weapons qualification. At a minimum, he should have notified the commander to ensure the commander understood the impact on maintenance for that day. He should also have asked for guidance from the commander with regard to priorities in maintenance. If he had known the priorities, he could have selected better-qualified personnel to perform the maintenance tasks required and still supported the range detail. If necessary, he could have required personnel to be rotated from the range to ensure the maintenance work was continued throughout the day.

Discipline is doing the right thing without supervision

■ **Platoon sergeant**. The platoon sergeant failed to ascertain the tasks to be completed versus the capability of the mechanics left behind to do the work. He also failed to notify the PC NCO of their capabilities so that the PC NCO could assign tasks accordingly. This lack of communication led the PC NCO to believe the mechanics could do the work unsupervised. As a result, PFC Wilson was given a task he was not capable of doing without supervision. If the platoon sergeant had communicated the mechanics' general capabilities and limitations to the PC NCO, the PC NCO may not have assumed PFC Wilson was capable of accomplishing the quill repack without supervision.

■ **Technical inspector**. This NCO made the most grievous of all the errors in this scenario: he took shortcuts. The TI failed to accurately assess the impact of the hazard of an improperly installed input-drive quill. Although the task might have been an easy one, the TI failed to assess its criticality. He also failed to identify as a hazard the fact that there were no writeups in the logbook for the tasks completed by PFC Wilson. How could he possibly know what the mechanic had done? He also failed to see that changing mechanics in midtask was a potential hazard. Taken individually, these hazards may not seem to amount to much, but cumulatively, small, seemingly insignificant actions can lead to improper decisions and more critical actions. The TI should have immediately noted that the inexperience of PFC Wilson was a primary hazard.

The TI could have placed several controls on PFC Wilson to ensure he completed the task properly. The mechanic's inexperience was not a reason not to do the task but simply a warning to the supervisors to watch carefully and control his actions. The TI should have made absolutely sure PFC Wilson used the manual on site and reminded him to make the appropriate logbook entries. And he could have had one of the other mechanics work with PFC Wilson to guide him through the task properly. Failing to apply any controls before signing off the work the inexperienced mechanic had performed and his decision to sign off the work without seeing writeups was not in accordance with the standards. The TI failed to accept the responsibilities placed on him to ensure quality work was accomplished and the aircraft was safe to fly. Don't think this couldn't happen. It did happen!

■ **Mechanic**. PFC Wilson failed to realize that not using the manual while performing the repack was a hazard. He thought he could do it without the book. He also failed to understand that not completing logbook entries created a hazard for the person who tried to complete his task after he was pulled away to do another job.

Individual responsibility

Discipline is doing the right thing without supervision. And individuals can apply risk-management procedures through self-discipline. If you know the standard, perform to the standard. If you do not know the standards, find out what they are. Soldiers should know their capabilities and limitations. If assistance is needed, ask for it. Following by-the-book procedures is a simple control measure for all individuals, regardless of the task being performed. Applying the risk-management process to everyday situations is one means of helping ensure that the right decisions are made regardless of whether we're in the planning or execution phase of a task or mission.

Summary

Risk management is not conducted only during planning and is not performed only by leaders and primary staff officers. Although we hold leaders responsible and accountable for running their organizations, safe mission accomplishment depends on individual soldiers accepting responsibility for risks associated with hazards discovered at their particular level. Only when every individual soldier makes decisions on the spot to manage risks as they occur during the task will an organization function as safely and efficiently as possible.

For further information concerning this article and application of the risk-management process to maintenance operations, questions may be addressed to the USASC Aviation Branch DSN: 558-3770/2119/3051/3754 (205-255-3770/2119/3051/3754).

Another FOD prevention reminder

Every person associated with aviation should know how terrible the consequences of a misplaced tool, waste material, a fastener, or a nut and bolt can be:

> *During the daily inspection of the OH-58, the crew found a ½-inch puncture in the leading edge of the red tail-rotor blade. While inspecting the tail-rotor drive shaft for evidence of foreign object damage (FOD), the crew found a drive-shaft coupling bolt. Further investigation revealed that this bolt and an L-4 nut had been left in the drive shaft area after maintenance on the tail-rotor drive shaft. During a cross-country flight, the nut had worked its way out of the drive-shaft cover and struck the tail rotor.*

Fortunately, no one was injured in this scenario and only the red tail-rotor blade required replacement. However, we must remember that the threat from FOD is never trivial. We simply cannot afford the threat to lives and the cost that FOD causes.

Results of FOD

FOD is damage to or malfunction of an aircraft caused by an object that is alien to an area or system. This damage can occur when foreign object debris is ingested by or becomes lodged in a mechanism of the aircraft and interferes with the normal functioning of the aircraft or aircraft system. FOD may cause materiel damage, or it may cause a system or piece of equipment to be unusable, unsafe, or less efficient, as in the case of fuel contamination.

Sources and objectives

Although the sources of FOD are just about unlimited, some of the more common examples of FOD are ingestion of loose hardware or grass by an engine, flight controls jammed by hardware or tools, tires cut by objects on taxiway, or propellers or tail rotors damaged by debris on the ramp or taxiway.

The objectives of FOD prevention are to eliminate these sources of FOD and find and correct any other potential hazards. Appropriate training in FOD prevention techniques, SOPs directly dictating proper procedures to use around aircraft, discipline, and motivation are key factors of a sound FOD prevention program.

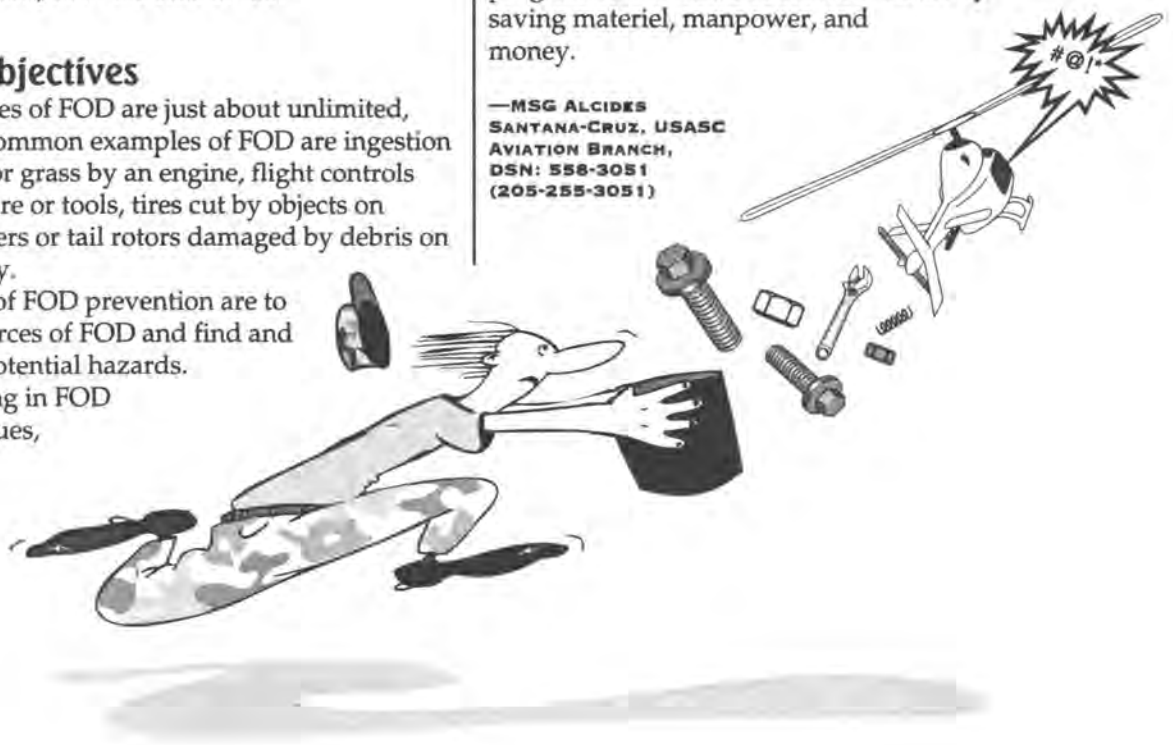
Participation in FOD prevention

FOD prevention is everyone's responsibility. It must be an essential part of each unit's aviation accident prevention program. The following are some ways individuals can take an active role in FOD prevention:

- Perform all maintenance tasks according to prescribed technical data
- Use the clean-as-you-go approach to maintenance
- Complete a thorough check of the area after each task is completed
- Ensure all aircraft openings, ports, lines, holes, ducts, and so forth are properly protected to keep foreign objects from accidentally entering
- Ensure all tools, hardware, and other equipment are properly accounted for at the end of each maintenance operation
- Check engine inlet screens for loose, trapped, or broken objects that may produce FOD
- Conduct regular FOD sweeps of the flight line

FOD prevention isn't an easy task. It takes constant supervision, lots of discipline, and well-trained and motivated personnel. But it will be well worth your effort. Accepting your responsibility for this recurring problem and participating in an effective FOD prevention program can enhance combat readiness by saving materiel, manpower, and money.

—MSG Alcides Santana-Cruz, USASC Aviation Branch, DSN: 558-3051 (205-255-3051)



Safety and the law—some departing thoughts

About 80 percent of our losses during Desert Shield/Storm resulted from accidents, not from enemy action. As the senior defense counsel for the 101st Airborne Division (Air Assault), I saw firsthand the impact of those losses. At a time when we could least afford them, accidental losses eroded our combat readiness.

Following the Gulf War, I have served as the U.S. Army Safety Center Command Judge Advocate. In this position, I've not only again seen the impact accidents have on our Army, I've also had the opportunity to see the impact that our accident investigation process has had in preventing additional accidental losses.

Impact of accidents

Force protection (safety) is a critical component of combat power and overall combat readiness. The devastating impact of accidents is apparent when we consider that a single incident in the Gulf resulted in the Army's most costly accident. Although the economic loss alone was more than $40 million in destroyed and damaged equipment, the cost in terms of personal injuries and death is simply incalculable.

A large part of my job as the Safety Center's Command Judge Advocate has involved responding to family members who have lost their sons, daughters, husbands, and wives in an accident. There are simply no words to describe the anguish they experience.

Family members can come to grips with the fact that a loved one was lost to enemy fire in combat. That is an inherent cost of defending our Nation and its allies. Coping with the fact that a loved one died as the result of something as senseless as being run over by a tank or killed when a helicopter crashed into a sand dune is an entirely different situation.

Those killed in accidents leave behind bewildered survivors—survivors who trusted the Army with their most precious asset. Those survivors now look to us for answers and assurance that we are doing everything possible to prevent another family from feeling the pain they are experiencing. We owe it to them to continue our diligent efforts to prevent accidents.

The loss of even one soldier in an accident cannot be accepted. Failing to do everything we can to understand what happened and prevent it from ever happening again—the goal of accident investigation—would be unconscionable.

Accident investigation

The accident investigation process focuses exclusively on accident prevention. Its results are not used in any other context—neither to condemn or incriminate nor clear anyone from any alleged fault. Whether the results of our accident investigation process indicate human error or materiel failure, they are used only to prevent a similar such tragedy.

Even if the results of the accident investigation would completely clear the Army of any responsibility for an accident, those results are not used to defend the Army against claims or litigation. In many cases, I have explained to the Army's litigation and claims personnel that our accident investigations cannot be used for that purpose even if it would be of significant economic advantage to the Government. The reason is simple: our accident investigation process is focused on prevention, which is something that far transcends any immediate economic advantage.

Does the process really work?

Many still wonder if the accident investigation system really is what we say it is. Some are suspicious of the process and its motives. What is the substance of the claim that the results of a safety investigation are only for accident prevention? "Doesn't the commander see both the safety and the collateral investigations?" people often question.

The fact is that witnesses will tell accident investigators things that they might tell their spouses, their priest, and their attorney—but nobody else. When questioned by the collateral investigator and asked for a formal statement, witnesses do not reveal what they willingly reveal to the Safety Center's accident investigation team. Instead they invoke the 5th Amendment in an effort to protect their own interests or the perceived interests of a friend.

In effect, witnesses who talk to the accident investigators are given a form of immunity. Anything they tell the accident investigator *cannot* be used against them and may be used only for accident prevention. The rule as stated in Army Regulation 385-40 is that the results of safety investigations may not be used either as evidence or to obtain evidence for any purpose other than accident prevention. This operates, in effect, as an exclusionary rule, preventing the use of this information for what would be an improper purpose. It is actually even broader than a grant of immunity because it covers administrative and civil as well as criminal action.

If the command were to improperly use the safety accident investigation to support taking adverse action against a soldier (which is what the collateral investigation is for), this would jeopardize the entire

accident prevention process—a process that is designed to protect that commander's people and equipment. To put that system at risk by intermixing the collateral and safety investigations would be foolish and reckless. Still, no system is any better than the people who administer it. The question then remains: Is the safety investigation used only for accident prevention purposes, or do commanders use it improperly to support taking adverse action against their soldiers?

Yes—the process works

Although most accidents result from some form of human error, the taking of adverse action against those involved has not been the norm. When it has happened (and there are cases where such action is certainly warranted), commanders have been extremely careful to ensure that such action is based solely on the results of the collateral investigation and not the safety investigation.

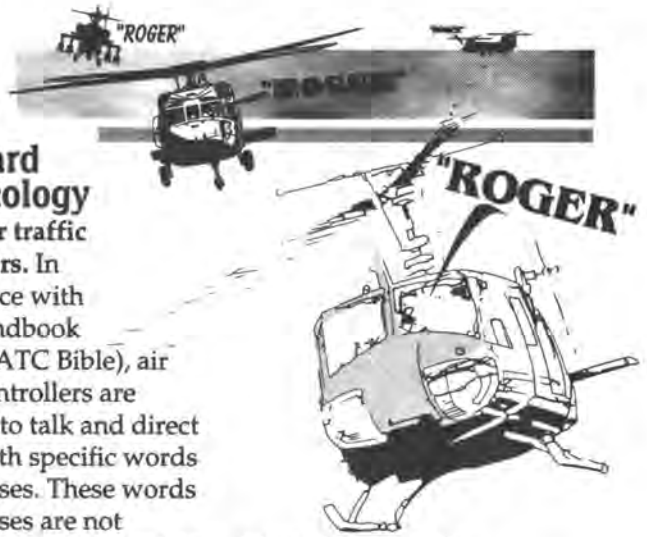
In the 3 years that I have been part of the Safety Center team, I know of only two cases in which improper use of the safety investigation was even alleged. The rarity with which this issue has arisen is a testament to the seriousness with which commanders regard the accident investigation process. It is a process that successfully saves their soldiers' lives and conserves their equipment; it is a process that works. Attempting to use this process for any other purpose than accident prevention thwarts the very purpose of accident investigation. Commanders realize the adverse repercussions that would ensue are simply not worth the cost.

Speaking as the departing Command Judge Advocate for the Army Safety Center and as a former senior defense counsel and one with many years' experience in both the prosecution and defense of military criminal cases, **the truth is that witnesses can feel free to talk to the accident investigator**. What they say will not be provided to criminal investigators or used in the context of a criminal or disciplinary proceeding. The information will be used for one purpose and one purpose only—accident prevention.

—MAJ WILLIAM R. RODIS, DEPARTING USASC COMMAND JUDGE ADVOCATE

(Editor's Note: MAJ Rodis has been a valuable asset to the Army Safety Program. We're sorry to see him go, but we wish him well in his new assignment at Fort Sam Houston.)

ATC and Army aviators



Approach: Army 24239, Approach—radar contact 1 mile south of Hood Army Airfield.
Army 239: Roger.
Approach: Army 239, confirm you wanted to hold at the Georgetown NDB.
Army 239: Roger that Approach.
Approach: Army 239, climb and maintain 5,000.
Army 239: Roger.
Approach: Army 239, traffic 12 o'clock, same altitude, 3 miles on a converging course, a Piper Warrior squawking VFR.
Army 239: Roger.
Approach: Army 239, hold south of the Georgetown NDB on the 230 course inbound, maintain 5,000, expect further clearance in two zero minutes.
Army: Roger.

Sound familiar? Know anybody like Army 239? I do—lots of them. As a former air traffic controller for the Air Force, the last person I wanted to talk to was an Army aviator. Why? Because they were the worst communicators on the radio. They were also not very well versed in procedures and almost everyone of them overused the word "Roger."

By definition, the word "Roger" means that I heard and understood you. It doesn't mean affirmative, negative, okay, got it, done it, I have the traffic, or anything else that it is typically used for.

Standard phraseology

■ **Air traffic controllers.** In accordance with FAA Handbook 7110.65 (ATC Bible), air traffic controllers are required to talk and direct traffic with specific words and phrases. These words and phrases are not optional; they are regulatory. Most of the specific language is written by lawyers in the hopes of precluding any possibility of confusion or lawsuits.

Air traffic controllers are prohibited by the .65 from making any transmissions of a personal nature—not to say that it never happens—but they are prohibited from doing so just the same. They also can usually start looking for another job in the event they resort to any colorful four-letter language, whether it is intentional or not.

Everything from the automated terminal information system recording to the decision height on a precision approach radar is dictated by regulation. There is no room for creativity. A controller can only use the word "cleared" for instance in a takeoff or landing clearance. He or she is only allowed to give a certain amount of numbers in one transmission; for example, heading, altitude assignment,

squawk, altimeter setting, and a time hack are too many numbers for anyone to handle all at once. In one transmission, two or three sets are plenty.

■ **Aviators.** Enough about controllers—back to the aviators. Most of those who fly instrument flight rules regularly (fixed wing, CH-47, and some UH-60 pilots) are better at communicating on the radio than those who don't. The rest of us (me included) are usually more "tactically" inclined and, therefore, not as proficient in the use of proper terminology. This is not to say that tactical communications is above reproach—it isn't.

The most recent version of the TC 1-214, the AH-64 aircrew training manual, describes "preferred" methods of how aviators should communicate and things to avoid. Again, the word "Roger" is used far too often. Using it repeatedly is confusing, clouds communications, and is unprofessional.

If you mean "yes," say "affirmative." If you understood and will comply, say "wilco." If you have the traffic in sight, call "contact, visual, or tally." Whatever you say, be clear and specific. Unlike ATC, everything out of your mouth is not dictated by regulation. Using plain, easy-to-understand language is usually the best.

The intent of this article is not to be judgmental or overly critical. If I got "under your skin" a little or "pushed your buttons," . . . Good! My challenge to you is this: get rid of that "R" word for every response. It doesn't always communicate what you mean to say. Don't just talk at the air traffic controllers, *communicate* with them by doing it right the first time. Roger?

—CW2 David H. Rhyne, B Troop, 4-6 Cavalry, Fort Hood, DSN 737-7470 (817-287-7470)

There I was...

. . . behind the power curve and still trying to play catch up when suddenly I heard the heart-stopping whoosh of fuel igniting.

It was a crystal clear, crisp January day, and everything began smoothly as we got our mission brief for a single-ship familiarization ride. I was a new RL 1, fresh out of the AH-1 qualification course pilot with just 17.5 hours in country.

We got our weather brief and filed our flight plan. The PC for the mission had 500+ hours with 6 months in country. Although he was going so fast that I felt a little behind the power curve, I figured this was normal and I would be just as fast once I made PC. We had briefed the crew, strapped in, and were at 100 percent, ready to pull pitch. Through the runup and armament checks, I had barely been able to keep up. We taxied onto the active and were finally airborne—now I would have time to catch my breath, I thought.

We had just initiated our fuel check and were established on the route when the PC asked me to start navigating. I responded, reached for my maps, and much to my dismay realized that I had left them in our maintenance shop. After the PC shared a few choice expletives with me, we were in a hard-left 180-degree turn back to base.

With the elusive maps safely in our possession, we realized that we didn't have enough fuel for the mission. We air taxied to hot refuel and idled down. The PC got out to stand fireguard. I was in the front seat with my door closed because it was a cool winter's day.

The PC was on the fire extinguisher, one refueler was at the 12 o'clock position as a ground guide, and another refueler was working the closed-circuit refueling nozzle. I was dividing my attention in and out of the cockpit, writing down some doppler checkpoints and occasionally checking outside.

Suddenly, all hell broke loose. Simultaneously, I saw bright flashes reflecting off my instruments, heard a deafening whoosh, and looked up to see the PC jumping in the air with his hands at his neck giving me the cut-engine signal. I fumbled through an emergency shutdown, opened the cockpit door, and tried to exit the aircraft but I was stuck. Just like the Navy guys had warned me I would do during dunker training, I had forgotten to release my seatbelt! I pulled the quick release, launched myself head first out of the aircraft, and ran about 50 feet away.

The PC had run to an idling Black Hawk to call for firefighters. One refueler was drenched in JP-4; the other refueler had hit the emergency shutoff. About 50 percent of the aircraft was now engulfed in fire. Flames danced through the still coasting down rotor head and a 10-foot flaming ring ignited the ground where the nozzle lay. Things seemed to be happening in slow motion as I waited for what I truly thought was going to be one giant explosion.

About 5 to 10 seconds after the fuel first ignited, I saw one refueler wheel a 50-pound halogen extinguisher over and start fighting the blaze. It looked like a smart move, so I joined him with another extinguisher. We emptied both extinguishers, checked for residual flames, and

patted each other on the back. Both of us were more than a little shook up, pumped up on adrenaline, but glad to still be around and unhurt.

Looking back, it's easy to identify some of the hazards that I had failed to identify earlier and to see the mistakes we as a crew had made. Individually, they were small, but combined, failure to properly identify and control those hazards resulted in more than $100,000 in damage to the Cobra. Luckily, the c-nite system was not damaged.

Many of you reading my account of this accident most likely regularly make some of the same mistakes we made.

- Do you as an experienced PC rush your new pilots through runups, briefs, and preflights?
- Do you keep the gunner's door closed to stay warm on cold days while your aircraft is being refueled?
- Do you stay on the extinguisher until the refueler has totally finished before you start signing for the fuel when you are on fireguard?
- Do you have the patience to singularly monitor the refueling operation, or do you try to use that time to plan a flight route, look up frequencies, or work up some doppler waypoints?
- Do you anticipate contingencies by planning actions and priorities if your situation deteriorates while you're in hot refueling?

The cause of the accident was a total failure of the closed-circuit refueling nozzle combined with the ingestion of fuel into the idling engine. But many of the mistakes that the PC and I made also played a significant role.

Although it has been about a year since the hot-refueling accident, I still don't like to talk about it. But the lessons to be learned from the mistakes we made are just too important not to be shared. We've already paid the price for this piece of education. It's yours for free if you choose to learn from it. Otherwise, you may repeat these same mistakes later.

—WO1 Spiro Davis, B Company, 3-25 Assault Helicopter Battalion, Fort Drum, NY, DSN 341-6619 (315-772-6619)

Survival equipment—an ALSE technician's point of view

As other professionals, life support technicians have their creed which states that "From a medical standpoint, life support equipment must function as effectively on the last day of its service life as the day it was engineered and service tested." As a school-trained ALSE technician, I am responsible for maintaining the equipment under my care to these standards. And I do that to the best of my ability.

The February 1994 issue of *FlightFax* contained an article citing an incident where survival vests were inspected following an OH-58 accident and many items were either expired, missing, or unserviceable. While I firmly believe that individuals who do not perform their duties to ensure that ALSE meets the standards set in the regulations and manuals are the exception rather than the rule, I do recognize some problem areas.

Command emphasis needed

Proper command emphasis on the care, maintenance, and funding of ALSE would eliminate many of the problems such as those cited in the recent *FlightFax* article. Funding for the ALSE budget must be a priority. Otherwise, ALSE requisitions will always take a back seat to other class items.

ALSE MOS needed

If there were an MOS for ALSE personnel, these instances of improperly maintained equipment could be nearly eliminated. Since there is no MOS for ALSE, it falls to the "new kid" both officer and enlisted as an additional duty. With the drawdown of forces, personnel are at a premium. Individuals are needed for their primary duties; therefore, time allowed for additional duties is often insufficient. A possible solution to the problem would be the creation of an MOS compatible with the equipment.

The U.S. Army has the best trained, best equipped aviation force. We must have the MOS-trained personnel and command emphasis to keep it that way.

POC: CW3 T. David Fisher II, Aviation Life Support Officer, Louisiana Army National Guard, 1-800-752-3114

Broken Wing award

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.

■ **CPT Anthony S. Pelczynski and SGT Donald R. Andreasen, Headquarters, 5th Battalion (Attack), 501st Aviation Regiment, APO AP 96297-0626.** The OH-58A crew was performing duties as observer-controllers for an external evaluation of an attack helicopter battalion. CPT Pelczynski, the PC, was flying behind the unit being evaluated, which was in free cruise formation. At 90 knots and 85 percent torque indicated, the aircraft was crossing a ridgeline en route to the FARP when it lost engine power. SGT Andreasen told CPT Pelczynski, whose attention was outside the aircraft, that cockpit indications suggested an engine failure. CPT Pelczynski immediately lowered the collective and confirmed indications inside the aircraft. Faced with the possibility of landing on a treacherous mountain slope or in the valley, the crew immediately scanned for a landing area within the inhabited valley to their left. SGT Andreasen located a small field that appeared free of obstacles and large enough to land the aircraft. CPT Pelczynski made a 180-degree left turn into his final landing direction to the field. SGT Andreasen then made a mayday call to the flight and set the transponder to emergency. As CPT Pelczynski prepared for the landing, he realized the aircraft was going to be dangerously close to the trees at the front of the landing area. He made a slight reduction in airspeed to reduce the glide distance. As he applied deceleration at the bottom of the approach, he realized the approach was slightly more vertical than desired but believed the aircraft would make the intended landing area. CPT Pelczynski applied sufficient initial collective to minimize the rate of descent and ground speed. Knowing that any ground run in the unimproved field would jeopardize the crew and the aircraft, he elected to land the aircraft with zero ground speed. As the aircraft settled from the initial pitch application, CPT Pelczynski began to level it and apply cushion. Because the terrain was slightly downsloping, the aircraft contacted the ground at the aft portion of the landing gear, which slightly bent the aft crosstube. CPT Pelczynski completed an emergency shutdown without further damage to the aircraft.

■ **WO1 Kim D. Rutledge, Aviation Brigade, 7th Infantry Division (Light), Fort Ord.** During a deployment from Fort Ord to Fort Hunter-Liggett, WO1 Rutledge was the PC of an OH-58C with an aerial observer and passenger on board. With the OH-58C as lead and two AH-1Fs following, the flight was heading southeast at 2,000 feet AGL and 100 knots in level flight over mountainous terrain. As the aircraft turned up a mountain pass for entry into Fort Hunter-Liggett, the crew heard a loud knock and the aircraft yawed left. WO1 Rutledge immediately observed the N1 (engine gas producer) deteriorate to 63 percent, the needles split with N2 (power turbine) decreased to 75 percent, and he saw the low rotor RPM light come on. He entered an autorotative descent for an open field directly in front of the aircraft and completed immediate-action emergency steps. Passing through 1,000 feet AGL, he detected uneven terrain that made the intended landing area unsuitable. While manipulating the collective to control rotor speed, he immediately initiated a right turn to a smaller pasture. Although he had only 289 total flight hours and just 10 hours as a PC, WO1 Rutledge successfully completed the autorotation with minimum ground run on a rugged, muddy surface without injury to the aerial observer and passenger or further damage to the aircraft. Inspection revealed a failed third-stage compressor.

■ **CW3 Boyd A. Tackett, III, Company C, 4th Battalion, 229th Attack Helicopter Regiment, APO AE 09140.** During a battalion night deep attack, the AH-64A was the lead aircraft of the lead company. CW3 Tackett was using the pilot night vision system, and his copilot/gunner was a very inexperienced RL 3 aviator.

At 60 feet AGL and 20 knots just after taking off and beginning a right turn, the No. 1 engine failed completely. The aircraft had not reached minimum single-engine airspeed and began to descend rapidly. CW3 Tackett applied collective; however, the aircraft began losing rotor RPM and continued to sink. At the time the engine failed, the aircraft was over a 3-foot by 3-foot ditch and a 50-foot tree. There was a stand of 30-foot trees 30 meters to the front, a stand of 50-foot trees 30 meters to the right, and a 30-foot set of wires 30 meters to the left. The only available landing area was a field beyond the stand of trees to the front. CW3 Tackett instantly evaluated his options and chose to attempt to land the aircraft in that area. He managed to get the aircraft over the 30-foot trees and land it safely in an area that was about 5 degrees nose up and 3 degrees left wing up with no further damage.

ShortFAX
Keeping you up to date

Info on aviation maintenance doctrinal literature

Don't throw away your copy of FM 1-511: Quality Control and Technical Inspection. It has been reinstated in DA Pam 25-30: Consolidated Index of Army Publications and Blank Forms. FM 1-511 will be incorporated into the new FM 1-500: Army Aviation Maintenance, which will be fielded in the first quarter of FY 95. Hang on to your FM 1-511 until the new FM 1-500 is fielded.

FM 1-509: Aircraft Penudraulics, FM 1-514: Rotor and Powertrain, and FM 1-563: Airframe Procedures have also been reinstated in DA Pam 25-30 as the need for these manuals still exists.

POC: CW2 Thomas E. Massey, Directorate of Training and Doctrine, U.S. Army Aviation Logistics School, DSN 927-6792 (804-878-6792)

Attention AN/AVS-6 users and maintainers

The Aviation and Troop Command has recently issued a general aviation safety action message to provide users and maintainers up-to-date information on the AN/AVS-6 25mm eyepiece lens assembly (GEN-94-ASAM-06, 222100Z Mar 94).

The new 25mm eyepiece lens assembly, NSN 5855-01-380-5102 is an improved version of the current 15mm eyepiece, NSN 5855-01-242-2570. The 15mm and 25mm eyepieces can be distinguished because the 25mm has a larger diameter lens and has diopter markings on the focus ring instead of on the indicator plate.

All available stock for the 15mm eyepiece has been used, and the 25mm eyepiece is being provided as the replacement. When replacing the eyepiece in the goggles, the new 25mm eyepieces must initially be replaced in pairs. The 25mm eyepiece cannot be used with the 15mm eyepiece on the same binocular. Use two of the same type eyepieces at all times.

This advance information will be included in the updated AN/AVS-6 technical manuals, TM 11-5855-263-10 and TM 11-5855-263-23 and P. Both TMs are scheduled for availability in about 10 weeks.

Contact your local CECOM logistic assistance representative (LAR) to receive a copy of "Tag Number 001-94" that details additional operation and maintenance information on the new AN/AVS-6 25mm eyepiece.

Points of contact

- PM NVEO—Mr. Glen Nowak, DSN 654-3453 (703-704-3453)
- CECOM logistics and maintenance—Mr. Michael Ayers, DSN 992-2407 (908-532-2407)
- CECOM LAR—Mr. Bill Cooper, DSN 992-5327 (908-532-5327)
- ATCOM safety—Mr. Brad Meyer, DSN 693-2085 (314-263-2085)

Accident briefs
Information based on preliminary reports of aircraft accidents

Utility

UH-60 Class A

A series - Aircraft was proceeding east downslope (45-degree) of ridge when it crashed for unknown reason and came to rest on its right side. No fatalities.

UH-60 Class C

A series - Medevac crew departed to recover medical gear from previous mission. About 5 minutes into flight while flying in contour mode, pilot unsuccessfully pulled in collective and aft cyclic to avoid tree. Tree penetrated chin bubble, knocked out bottom anticollision light, and damaged both sides of stabilator. Crew landed in nearby drop zone, assessed damage, and then flew aircraft back to station.

A series - While performing hover checks, PC transferred controls to pilot. Shortly after pilot took controls, he told PC to take controls back because he could not control aircraft. PC immediately took controls and found cyclic was locked up in right aft quadrant. Aircraft started to spin right, roll, and then impacted ground, breaking off front right main landing gear, drag beam, and strut. Inspection revealed that incorrect push rod assembly had been installed on aircraft.

Attack

AH-1 Class A

F series - Flight of three was preparing to return to station following gunnery training when crew of Chalk 2 reported power loss during takeoff. Crew executed

180-degree turn and aircraft landed hard on sod strip. No fatalities.

AH-64 Class A

A series - During night VFR terrain flight mission, flight of four encountered adverse weather. AMC elected to abort mission and return to base. As flight was making left 180-degree turn, Chalk 3 impacted the ground at an airspeed of 20 to 30 knots. No fatalities.

A series - During hot-refueling operation, fuel hose separated from D-1 nozzle, spraying JP-8 over aircraft. Fire started in engine area and covered aircraft before it could be extinguished. Both crewmembers sustained burns.

AH-64 Class C

A series - Aircraft was in battle position when crew from scout aircraft informed crew that No. 2 engine cowling was open. Crew landed, secured cowling, and continued mission. Postflight inspection revealed cracks in engine-cowling braces.

Cargo

CH-47 Class C

D series - Upon touchdown, aircraft began to slide and then shudder. Hydraulic light came on, and crew repositioned aircraft for shutdown. Postflight inspection revealed strut steering module damage that had resulted in loss of hydraulic fluid. Further inspection revealed damage to wheels and skids.

CH-47 Class E

D series - During slingload training for air assault school, sling leg caught under hood of shotgun HMMWV as aircraft was picking up load. Ground guide attempted to direct pilots to land. Pilots were unable to see ground guide and were taking directions from crewmember calling load. Crewmember saw ground guide's signal and instructed pilots to land. Left corner of hood was cracked.

Observation

OH-58 Class A

C series - At 50 feet AGL and 80 knots over rugged, rising terrain during day VFR flight, Chalk 2 in a flight of two transmitted two mayday calls before impacting the ground. Chalk 1 heard mayday calls and proceeded to crash site. Two fatalities.

C series - During day VFR flight, aircraft struck power line and impacted ground. No fatalities.

OH-58 Class C

A series - IP initiated simulated engine failure at altitude, and pilot entered autorotation. IP directed pilot to make power recovery at 600 feet AGL. As pilot attempted to join needles by advancing throttle, engine flamed out. IP took controls and continued autorotation to ground. Aircraft landed hard and came to rest upright.

A series - While conducting JAAT operations, aircraft experienced downdraft and main rotor blades contacted trees. Crew completed landing without further incident. Two main rotor blades sustained damage, and transmission is undergoing sudden-stoppage inspection.

Messages

■ Safety-of-flight technical message concerning removal of main rotor stretched strap assembly, P/N 7-311411146 (basic), on all AH-64 aircraft (AH-64-94-02, 061515Z April 94). Summary: This message requires units to physically inspect all AH-64 main rotor strap assemblies to identify and remove basic configuration strap packs and replace them with the new -5/-7 configuration packs within 10 flight hours or 30 days whichever occurs first. Active and Reserve units will turn in strap pack assemblies to their supporting supply management, Army (formerly stock fund) activity (SMA) to receive 100-percent turn-in credit. National Guard units must submit turn-in documents to ATCOM according to instructions in this message. SMA and National Guard units will ship the strap pack assembly to McDonnell Douglas Helicopter Systems according to instructions in this message. For P/N 7-311411146-5 and -7 configurations, units shall continue inspection in accordance with AH-64-94-01 and with the clarification in this message. The purpose of this message is to provide visual inspection procedures and require removal of all basic configuration strap packs, P/N 7-311411146, within 10 flight hours or 30 days whichever occurs first and provide clarification of SOF message AH-64-94-01. Contact: Mr. Lyell Myers, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message clarification of UH-1-94-ASAM-03 concerning modification to left cyclic rigid connecting link (UH-1-94-ASAM-04, 221820Z Mar 94). Summary: UH-1-94-ASAM-03, 022000Z Mar 94 requires modification to servo assemblies, P/N 205-076-056. Early production units of these assemblies do not have P/N 205-076-056 on the data plate. These assemblies have a subassembly part number of 205-076-055 on the data plate. Servo assemblies with subassembly P/N 205-076-055 on the data plate are also required to be modified IAW UH-1-94-ASAM-03. Contact: Mr. Brad Meyer, DSN 693-2085 (314-263-2085).

■ Aviation safety action maintenance mandatory message concerning removal of certain primary servo assemblies on all H-60 aircraft (UH-60-94-ASAM-09, 042009Z Apr 94). Summary: During a CAT I EIR analysis, a primary servo piston was found to be fractured. The fracture was caused by a vendor using an electric arc pencil to make the serial number of the piston during overhaul. A total of 28 Black Hawk servo assemblies may have this problem. Six of the primary servo assemblies were assembled with packings that are not compatible with MIL-H-83282 hydraulic fluid. The purpose of this message is to require units to remove the 28 servo assemblies for inspection and repair. Contact: Mr. Jim Wilkins, DSN 693-2258/2085 (314-263-2258/2085).

■ Aviation safety action maintenance mandatory message revision to UH-60-94-ASAM-03 concerning one-time refurbishment of main rotor spindle and replacement of certain main rotor thrust bearings for all UH-60 aircraft (UH-60-94-ASAM-10, 121420Z Apr 94). Summary: This message adds a part number to paragraph 4.C(2)(a) line two of UH-60-94-ASAM-03. Contact: Mr. Lyell Myers, DSN 693-2258 (314-263-2258).

■ Aviation safety action informational message concerning main rotor blade deice heater mat resistance measurements test method for all UH-60 and EH-60 series aircraft (UH-60-94-ASAM-11, 131950Z Apr 94). Summary: When the resistance of the main rotor blade deice heater mats is performed IAW FIP 72, some of the readings on some blades appear to be out of specification. This can cause rejection of otherwise functional blades. The acceptable resistance range is 7 to 10 ohms. Examination of high-resistance blades shows that silver-brazed connections of the deice heater mat have a "dry filming" effect where resistance will increase with time. It has been determined that when a current is passed through the same heater mats, the resistance comes back into acceptable range. The purpose of this message is to inform the field to perform the blade deice preflight test before measuring the heater mat resistance with an ohmmeter. Contact: Mr. Jim Wilkins, DSN 693-2258/2085 (314-263-2258/2085).

■ Aviation safety action informational message concerning all AH-1 aircraft

with the hub spring installed (AH-1-94-ASAM-05, 231748Z Mar 94). Summary: Recent calls from the field have inquired about the operating limits of the AH-1 with the hub spring installed IAW MWO 55-1520-244-50-3. The hub spring was designed for operation at temperatures ranging from -25°F to +125°F. The hub spring elastomeric springs will withstand the above temperature conditions. The purpose of this message is to inform AH-1 users with hub springs installed that the hub spring elastomeric springs shall be removed when the outside air temperature (OAT) is below -25°F or if this temperature is anticipated to occur during flight. If sub -25°F temperatures are encountered during flight with the hub spring elastomeric springs installed, change altitude in an attempt to find warmer OAT. Elastomeric springs shall be reinstalled when the OAT is expected to remain above -25°F or the threat of sub -25°F temperatures no longer exists. Contact: Mr. Jim Wilkins, DSN 693-2258/2085 (314-263-2258/2085).

■ Aviation safety action maintenance mandatory message concerning collective bellcrank, P/N 7-311512088, and forward fuel cell, P/N 320-4-44733-101, chafing inspection on all AH-64A aircraft (AH-64-94-ASAM-03, 311440Z Mar 94). Summary: Reports have indicated a possible chafing condition can exist between the collective bellcrank and the forward fuel cell. The purpose of this message is to provide an inspection procedure and require units to contact the POC listed in the message if chafing and damage exist. Contact: Mr. Lyell Myers, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning one-time inspection of wire harness W108 for chafing on all AH-64A aircraft (AH-64-94-ASAM-04, 141910Z Apr 94). Summary: A Category I deficiency report identified wire harness W108 chafing against the bottom right-hand corner (FS 223) of the air particle separator. This caused a major electrical short, and the harness was burned extensively. The purpose of this message is to require units to inspect for chafing and proper clearance of wire harness W108 in the air particle separator vicinity and apply antichafe material to wire harness W108. Contact: Mr. Brad Meyer, DSN 693-2085 (314-263-2085).

■ Aviation safety action maintenance mandatory message concerning one-time inspection of landing gear crosstubes on all OH-58A/C aircraft (OH-58-94-ASAM-09, 311532Z Mar 94). Summary: Some aircraft have previously experienced landing gear crosstube cracking. TB 55-1520-228-20-40 was issued to resolve the problem. The technical data package (TDP) for spares was revised to incorporate the changes of TB 55-1520-228-20-40. Unmodified OH-58A/C landing gear have been received from stock and installed on aircraft. Since the previous cracking problem was caused by excessive weight on the landing gear, the 7-pound limit as published still applies. The following is provided as information:

- Full-length skid shoes, P/N 206-112-401A-D, NSN 1620-01-346-9967, meet the weight-limit requirements for OH-58A/C aircraft and may be used provided the crosstubes have been modified in accordance with either TB 5-1520-228-20-40 or this TB. The skid shoes, P/N 206-112-401A-D, may also be used on OH-58D aircraft. The full-length skid shoes will be installed using the manufacturer's instructions until the maintenance manuals are revised.
- Full-length skid shoes, P/N 206-112-401, NSN 1630-01-301-0945, may be used only on OH-58D aircraft.

The purpose of this message is to require that all crosstubes prior to installation and all installed crosstubes be inspected to determine that the crosstubes conform to the modified configuration. Contact: Mr. Lyell Myers, DSN 693-2258 (314-263-2258).

■ Aviation safety action maintenance mandatory message concerning inspection of swashplate support on all OH-58A/C aircraft (OH-58-94-ASAM-10, 061437Z Apr 94). Summary: The manufacturer has issued an alert service bulletin notifying commercial users that there have been three reports of cracks in the swashplate support fillet radius area near the base. A cracked swashplate support could result in loss of control. No failures have been reported on OH-58A/C aircraft; however, the inspection is required as a precautionary measure. The purpose of this message is to implement a recurring inspection of swashplate supports that have 1,200 hours or more operating time. Contact: Mr. Jim Wilkins, DSN 693-2258 (314-263-2258).

FOR MORE INFORMATION ON SELECTED ACCIDENT BRIEFS, CALL DSN 558-2119 (205-255-2119).

In this issue:

- *Risk management for maintenance NCOs and mechanics*
- *Another FOD prevention reminder*
- *Safety and the law—some departing thoughts*
- *ATC and Army aviators*
- *There I was . . .*
- *Survival equipment—an ALSE technician's point of view*
- *Info on aviation maintenance doctrinal literature*
- *Attention AN/AVS-6 users and maintainers*

Class A Accidents *through April*

		Class A Flight Accidents		Army Military Fatalities	
		93	94	93	94
1ST QTR	October	6	2	2	0
	November	2	3	6	0
	December	0	2	0	2
2D QTR	January	1	1	0	2
	February	5	2	8	0
	March	1	0	5	0
3D QTR	April	4	6	0	2
	May	1		1	
	June	0		0	
4TH QTR	July	0		0	
	August	1		0	
	September	2		0	
	TOTAL	23	16	22	6

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Commanding General
U.S. Army Safety Center