# Flightfax

ARMY AVIATION RISK-MANAGEMENT INFORMATION

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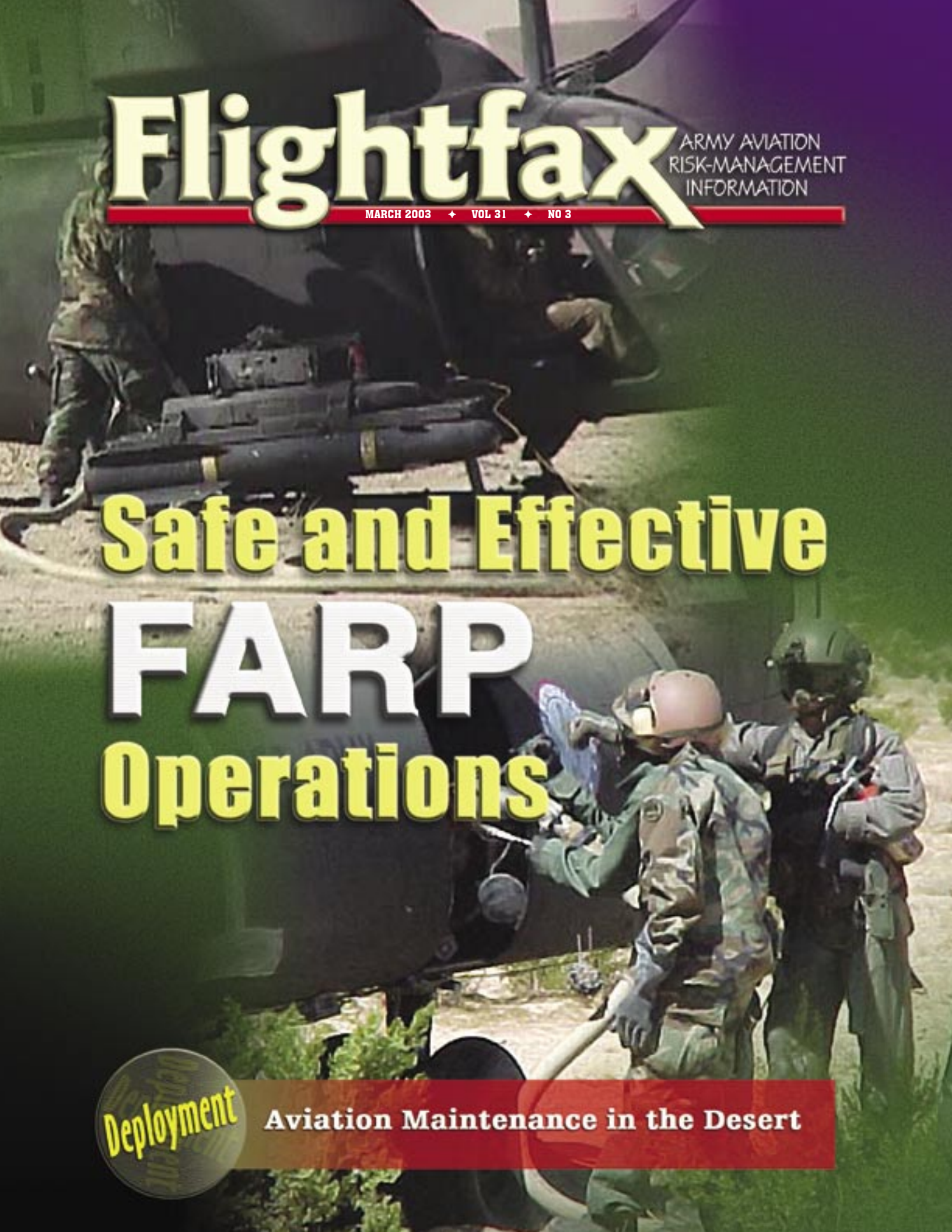

# Safe and Effective FARP Operations

Deployment

## Aviation Maintenance in the Desert

# Flightfax

ARMY AVIATION RISK-MANAGEMENT INFORMATION

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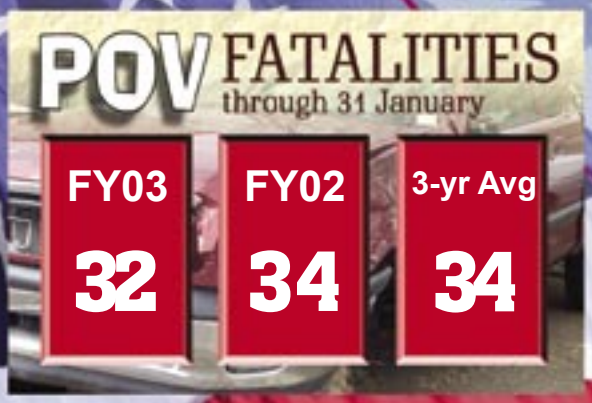


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**James E. Simmons**
**Brigadier General, US Army**
**Commanding**

DASAF's CORNER

*from the Director of Army Safety*

# Keeping the Attack Aggressive on Deadly POV

The most deadly threat that soldiers face in peacetime is traffic accidents. Privately owned vehicle (POV) accidents kill more soldiers than all other on- and off-duty accidents *combined*. Although many of the Army's POV accident prevention programs have resulted in a decrease in fatality rates (from 0.32 per 1,000 soldiers in the early 1980s to the current rate of 0.19 per 1,000 soldiers), POVs still remain the number one killer of our soldiers.

An alarming trend in the analysis of POV accidents from 1998 through 2002 is the fact that failure to use protective equipment such as seatbelts and motorcycle helmets was reported in at least 118 military injury or fatal accidents. Failure to use appropriate protective equipment is a clear indication of indiscipline—failure to follow an established standard. Ours is an Army built on standards and discipline and we, as commanders and leaders at all levels, owe it to our soldiers to strictly enforce standards, including ensuring that they are disciplined enough to wear protective equipment and obey traffic laws whether they are on or off duty.

The Army's senior leadership has made clear their determination to end this needless loss of soldiers to preventable POV accidents and the adverse impact it has on readiness. In August 2002, General Eric Shinseki, the Chief of Staff, Army (CSA), directed major commands to analyze their POV and Army motor vehicle accidents and provide a summary of command initiatives to reduce accidental losses. General Shinseki then directed in September 2002 that commanders increase enforcement of motorcycle safety training course requirements, and that those requirements not be deferred by commanders. In addition, General Shinseki has re-enforced repeatedly his commitment to the Six-Point Model Program as the minimum standard for the Army POV accident prevention program.

Our major Army commands have implemented specific POV accident prevention initiatives. For example, Forces Command implemented the "Combating Aggressive Driving Program" in conjunction with the American Institute for Public Safety, which received Congressional recognition and authorization for FY02. A Fatality Review Board consisting of principal staff, medical doctors, and psychologists was established to identify accident causal factors and trends following each fatal accident. Other units and organizations—Training and Doctrine Command, U.S. Army Europe, National Guard Bureau, etc.—have implemented aggressive programs designed to reduce POV accidents as well.

Armywide and joint service POV accident prevention initiatives also are being developed. The Army Safety Coordinating Panel (a general officer steering committee) chartered a POV process action team to assist the Army Chief of Staff for Installation Management in

developing, resourcing, and implementing an Armywide traffic safety program through the newly created Installation Management Agency. A Joint Service Traffic Safety Task Force also has been activated to promote inter-service cooperation in the development and implementation of effective traffic safety programs, as well as increase cooperation between the services and other interested traffic safety organizations such as the National Highway Traffic Safety Administration.

To provide risk-management tools and assist commanders in building effective POV accident prevention programs, the U.S. Army Safety Center (USASC) has created several groundbreaking, high-definition video and film productions and other accident prevention initiatives. A total of 10 "Drive to Arrive" infomercials starring country music artists deliver short, to-the-point messages on specific driving hazards before feature movies in AAFES theaters worldwide. "Every Drive Counts" is an unconventional safety video set at the Airborne School connecting safe, high-risk training to off-duty activities, specifically POV driving. The USASC Web site (**http://safety.army.mil/**) contains a one-stop shopping POV accident prevention page, which includes the POV Toolbox (**http://safety.army.mil/pov/index.html**) and the Six-Point Model Program.

In addition to videos and Web-based tools, USASC provides enhanced POV accident prevention training to each resident CP-12 safety intern class and to aviation safety officers attending the Aviation Safety Officer Course. USASC's mobile training and assistance visit teams travel worldwide to teach NCO and junior officer risk-management courses and to selected brigade and battalion units to assist commanders, at their request, in assessing their safety programs, including POV accident prevention programs.

Every life is extraordinarily precious. The needless loss of any single one has a tremendous impact on the victim's family, the unit, and the Army's combat readiness. The standards, programs, and tools exist to help us protect soldiers from the hazards associated with operating POVs and motorcycles. From the unit level to the joint service level, we each must be dedicated to continually and aggressively enforcing standards and discipline and to using all of the model programs and tools to attack this killer of our soldiers. If your organization needs further assistance with your POV accident prevention programs, contact our staff at **povspt@safetycenter.army.mil**.

**Train hard and play hard, but be safe!**

**BG James E. Simmons**

COVER STORY

# Safe and Effective FARP Operations

Successful combat operations are often dependent upon effective and efficient forward arming and refueling point (FARP) operations. To ensure safe rearming and refueling of aircraft, soldiers who plan and operate FARPs must be constantly aware of the associated hazards and learn to manage the risks effectively. Field Manual (FM) 1-111, Appendix J, *Forward Arming and Refueling Points*, outlines staff responsibilities for FARP employment. As in other combat operations, safe FARP operations are a command responsibility. Commanders, unit aviation safety officers (ASOs), and other leaders are all ultimately responsible for safety.

## SOP

A good standing operating procedure (SOP) is used to help the FARP operation run smoother each time you deploy. The FARP SOP should be tailored to the missions of the unit.

## FARP certification

In many units, FARP certification means the first PC in the FARP uses the checklist to conduct the inspection. The PC is often untrained and just "checks the block," and then hurries to get back into the fight. The commander must ensure a solid training program is established to educate those pilots authorized to conduct FARP certification. Forces Command (FORSCOM) Regulation 350-1 restricts the FARP platoon leader from conducting the certification.

## Grounding rods

Fuel handlers should always assume that static electricity is present during all phases of operations. Static electricity is impossible to eliminate; however, there are several safety methods for controlling it and its effects. Method one, listed in Chapter 2 of FM 10-67-1, is the only acceptable and safe grounding method at any fixed airfield or refueling point; e.g., an ohms reading of the grounding point. While the FARP may not have a multi-meter, each unit usually has an avionics or armament section that does. In order to achieve the required ohms reading of 10,000 or less, it may be necessary to use multiple rods and prep the soil with a solution of water and salt or other chemicals.

Method two involves specific depth requirements that are based upon soil conditions (see depth chart on page 6). The required depth is a *minimum* standard and is acceptable only when it is absolutely *impossible* to use the first method. It should be noted that the commander must approve of method two if it has to be used.

## Markings

All refueling points need some type of marking for ease of identification (see instructions to build marker panel on page 6). During daylight hours the grounding rod, drip pans, and associated equipment

may be sufficient. At night chem sticks, no-power thermal tape (PN-CAMCAL 210T095, Monterey Bay Corporation, P.O. Box 1538, Columbia, MD 21044), or some other form of marking is required.

Refuel tankers have shutoff valves; however, these valves usually are unmarked. While FARP personnel know their equipment, those who may have to help them in the event of an accident need critical items clearly marked. It's also a good idea for aircrews to familiarize themselves with FARP equipment.

## Fire extinguishers

FARP firefighting equipment is another issue of concern. Often fire extinguishers arrive at the field site uncharged due to a pin falling out and inadvertent discharge while traveling rough roads. Many times, there are not enough serviceable fire extinguishers because of limited space to transport them. Borrowing an extinguisher from a vehicle solves the problem temporarily, but creates another one in turn. A solution to this problem is to build fire extinguisher holding racks with 2' x 6' boards using a jigsaw or scroll saw. This will prevent the fire extinguishers from rolling around and damaging the nozzle and actuator handles. The racks can be stacked, thereby increasing the number that can be transported. It is a simple matter to design and build what works for you.

### Required Depths for Ground Rods

| Type of soil | Depth of ground rod |
|---|---|
| Coarse ground, cohesionless sands and gravels | 6 feet |
| Inorganic clay, claying gravels, grave-sand-clay, claying sands, sandy clay, gravelly clay, and silty clay | 4 feet |
| Silty gravel, gravel-sand-silt, silty sand, sand, silt, peat, muck, and swamp | 3 feet |

Table 2-6—Excerpt from FM 10-67-1

## Site selection and layout

Site selection is critical; you cannot just pick a grid off the map. The FARP platoon leader should recon the route and the actual FARP site during daylight hours. If the platoon leader is not going to lead the convoy into the new FARP location, the convoy commander should accompany the platoon leader on the daylight recon. This is also a great opportunity for a proactive safety officer to identify any hazards with the new site and recommend ways to control risks.

In the desert, the number one environmental problem with FARP site selection is dust. Soil conditions vary from fine powder to large rocks. The powdered areas have to be avoided and are often associated with roads and high traffic areas. Areas with small rocks have proven to be successful


**Items needed:**

- **2 - Pieces of plywood (approximately 20"x 30")**
- **1 - Piece of heavy canvas material (approximately 20"x 30")**
- **1 - Solid hinge 20" long**
- **2 - Metal, plastic, or wood strips (approximately 20"x 2")**

**Screws, bolts, nuts, and washers as needed plus lots of empty sandbags**

### FARP Point Marker Panel

■ Build a marker and check out the size for your aircraft operations. It needs to be large enough to see, yet small enough for the load plan. You may be able to get by with putting only 3 or 4 sandbags inside to hold the marker down, but I recommend filling it with as many as will fit.

■ The hinge joins the two pieces of plywood at the top, from the inside. The other two ends will be joined with the heavy canvas. Overlap about two inches of canvas at one of the 20" ends. Attach this to the bottom outside of the base side without the hinge. Repeat this on the other side of your triangle. You may want to reinforce these areas with oversized washers or strips of sheet metal. You could also secure the panel to the ground with tent pegs. Paint to protect the wood if you like. Then apply Glint tape or reverse polarity tape as needed for the systems in your unit. Numbers or geometric shapes can be used.

in holding down dust; however, these rocks present an increased possibility of foreign object damage (FOD) to blades. Vegetation sites will also help minimize the hazards associated with blowing sand.

The use of water to wet down the FARP has some short-term benefits, but generally water must be reapplied at such frequent intervals that it is difficult, if not impossible, to keep up with the demand of water needed. Commercial products that might be used for more permanent sites are addressed on page 14.

## Winds

Winds are always a factor in helicopter operations, especially in dusty, desert environments. Attached weather personnel should be consulted during the map reconnaissance. A technique that works well in dusty desert conditions is to land directly at the refueling point—not to a Y short of the point. Landing short only raises additional dust. Set up the Y and use it for reference during approach.

Most of the dust clouds are generated in the last 100 to 200 feet just before landing. If your best conditions are in this area, it will significantly reduce the dust cloud during approach. Vehicle traffic in this approach area to restock ammo or other missions can seriously degrade what was an acceptable area.

## Terrain

A holding area in a terrain-masked area should be designated. If air traffic control (ATC) is used, the holding area can be farther from the FARP. The enemy situation will dictate whether the aircraft will hold on the ground or in the air.

Proper use of terrain can increase FARP safety by masking tankers and reducing confusion as aircraft enter for refueling. By placing tankers in the low ground, FARP personnel and equipment are protected from enemy detection and chances of aircraft collision are minimized. The latter can be a real concern as landing aircraft enter the dust cloud, particularly at night. Inadvertent drift can become a problem. Also, by hiding the tankers and other ground vehicles, confusion is reduced for crews as they arrive and begin to visually search for the refueling points.

## Fratricide

One aspect the commander needs to consider is FARP location in relation to other units on the battlefield. Coordination with the operational brigade can significantly increase security. Lack of coordination with adjacent units likely will result in fratricide issues.

## Crew endurance

Fighter management is always an issue with FARP personnel. FARPs are undermanned and often run by a junior sergeant. Crews must be given the opportunity for adequate rest. In many cases, the 3/5 section is probably the hardest-working group of soldiers in an aviation battalion with possibly the greatest impact on mission accomplishment, yet it remains the element with typically the lowest level of manning and the most junior soldiers.

While commanders typically meticulously manage their aircrew endurance policies, they must be vigilant in attending to the work/rest cycles of thier FARP personnel, paying special attention to sleep requirements and heat injury prevention. A FARP team that is moving every 3 to 6 hours and is chronically undermanned is a setup for a fatigue-related accident or heat injury. ■

**—Aviation Systems and Accident Investigation Division, DSN 558-9552 (334-255-9552)**

## *Problem recap and proposed hazard controls*

■ An effective SOP establishes the standard and gives guidance to all soldiers so the platoon leader can work on other, less-common problems.

■ Only personnel authorized by the commander can conduct FARP certification. These personnel need to be trained in what to look for and how to use the checklist.

■ The proper way to check the effectiveness of a grounding rod is to take an ohms reading. If method two must be used, the commander must approve it.

■ Dust is a primary concern in FARP site selection and layout. Units must get out of the airfield mentality of landing to a Y and hovering to the refueling point. This raises too much dust.

■ Fire extinguishers must be protected to help prevent inadvertent discharge during movements. Bring extras and don't plan on using vehicle fire extinguishers.

■ Fighter management is a continual problem requiring intense management until manning levels in FARP units can be increased.

# Investigators' Forum

*Written by accident investigators to provide major lessons learned from recent centralized accident investigations.*

# The Danger of the Assumption

A recent accident investigated by the U.S. Army Safety Center highlights the consequences of making assumptions about airfield operations and about crew coordination. The following example shows how easily things can go wrong and end up in disaster.

## Background

The accident in question involved two MH-47E aircraft at the airfield hot refuel facility. The facility, a four-point forward area refueling equipment system fed by a series of fuel bladders, had been moved to its current location in September 2002 from another location on the airfield. The personnel who initially set up the facility had rotated back to their home stations. The units currently at the airfield assumed that because this was the airfield refuel facility, it had been properly laid out and surveys done to identify the hazards. They also assumed that the personnel running the refuel facility had been properly trained and had procedures for sequencing aircraft through the facility. The reality was quite different.

While the distance between the refueling points was adequate, not having a site survey for the hazards at the location resulted in no one being responsible for the refuel operation. More to the point, no one was aware that there wasn't enough lateral clearance for an H-47 to ground taxi to Points Three or Four if another H-47 was occupying Point Two.

Aircraft receive refueling instructions from ground control personnel who, in turn, receive instructions from refueling personnel over handheld radios. Because there weren't any written procedures on sequencing aircraft into the facility, the soldier on the radio determined which point he wanted the aircraft to occupy. In addition, because there were no ground markings at the refuel points showing where an aircraft should stop, over time the refueling point could migrate several feet from its optimum location.

In the diagram on the next page, the aircraft at Point Two was actively engaged in hot refuel operations when the second aircraft called ground control for refuel instructions. After calling the refuel facility over the radio, ground control cleared the second H-47 to Point Three. The pilot in command (PC) of the aircraft at Point Two then requested that the aircraft be cleared to Point Four so that when finished, he could depart without interfering with the second aircraft. This change was approved and the second aircraft attempted to ground taxi to Point Four.

The PC in the right seat cleared the aircraft on his side, as did crewmembers along the right side of the aircraft. The result was that the aft rotor system of the taxiing aircraft collided with the forward and aft rotor systems of the aircraft at Point Two. Nine rotor blades and three rotor heads were damaged. Both aircraft were shut down without additional damage. Fortunately,

**Mission: Refuel Operations**

**HAZARDS**

- Breakdown in crew coordination
- Inadequate training of refuelers
- No site survey for facility
- Chronic fatigue

there were no injuries.

While the board determined that the pilots and crew are ultimately responsible for obstacle avoidance, the board also determined that support failures existed that directly contributed to this accident.

In addition, the soldiers operating the refuel facility were from three different CONUS installations. While they had a strong background in bulk refuel, there was no SOP and the soldiers had only minimal training on aircraft refueling operations. Also, they were not familiar with the use of the fire extinguishers present.

## Lessons learned

Rotational units deployed to an airfield are essentially tenant organizations, and that includes some inherent responsibilities. When a headquarters establishes or takes over an airfield, people need only look at their home station airfield to see what basic functions and requirements must be accomplished at their deployment airfield.

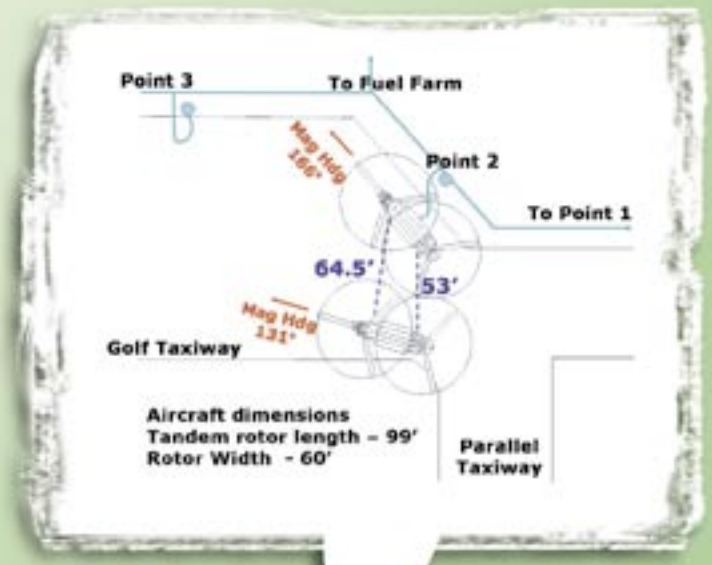
One of these critical functions is airfield operations, and two key positions—the airfield manager and airfield aviation safety officer (ASO)—must be filled. It is critical that personnel in these positions be deployed early in the airflow to ensure the smooth and safe operation of the airfield.

There was no airfield ASO at the time of the accident. During a joint operation, each service must clearly understand the responsibilities of the other services. All aviation organizations must be involved in the airfield operating board and in the monthly safety and standards councils. Procedures covering all aviation-related operations must be established, published, and widely disseminated.

Crew coordination must be done to standard and all crewmembers are responsible for aircraft clearance. If a crewmember sees a dangerous situation developing, that crewmember must speak up immediately and not assume that the pilots are aware of the situation.

Finally, unit ASOs need to periodically get out and "walk the ground" both at their home station and when deployed. Getting out of the aircraft and periodically meeting those personnel who support your operations is the best way to stay abreast of any changes that may be occurring in your AO. It's also a good way to identify hazards that may exist but have been previously missed. Take nothing for granted, assume nothing, and take immediate action to correct deficiencies. ■

—Aviation Systems and Accident Investigation Division, DSN 558-9858 (334-255-9858)




**CONTROLS**

- Recurring crew coordination training
- Implement risk management techniques
- Reevaluate current facility procedures and implement training for refuel personnel

**COSTS**

- ECOD 1.2$M
- 2 aircraft damaged

# WAR Stories

*Risk management lessons learned*

# I Knew Better

**What happened that day changed the way I would do business for the rest of my aviation career...**

It was one of those nice, warm, sunny days in May. Just three days earlier, our unit had deployed down to Myrtle Beach to conduct joint air attack team (JAAT) missions with the Air Force for a week. The weather was beautiful; we hadn't seen a cloud in 2 days. The operation was going smoothly and everyone was getting plenty of flight time. Our aircraft were in good shape with very little maintenance downtime. There was plenty of work for all the pilots, both Army and Air Force. I remember hearing our commander comment about how smooth everything was going. Maybe he shouldn't have said anything.

It was a Thursday, about 11 o'clock in the morning. I was the IP of an OH-58C; my left-seater and I were conducting JAAT missions with jets out of Myrtle Beach. Our refueling site, located about 35 miles west of there, had been established to cut down turnaround time. The forward arming and refueling point (FARP) consisted of two fuel handlers and one 49C refueling truck.

We were the first aircraft to come into the FARP on this day. As I retarded the throttle to the flight-idle position, one of the fuel handlers approached the right side of my aircraft. He asked for and received approval to walk under the rotor system to hook the grounding cables to the aircraft. When he got within 4 feet of the aircraft, I heard someone hollering. As I looked to the front of the aircraft, I saw the other fuel handler. He was patting his head, signaling to the other fuel handler that he needed his Kevlar. As I looked back at the fuel handler next to my aircraft, I saw him take off his Kevlar helmet and bounced it along the ground to the other refuel handler.

No big deal, I thought to myself. They know better than to throw a helmet into the rotor system. I told my left-seater that I should probably get out and tell them not to throw things around the aircraft.

My left-seater advised me not to go and re-enforced my belief that the fuel handlers knew better than to throw their helmets into the rotor system.

Famous last words! We decided to finish what we were doing and move out to let the other ship refuel. We moved our helicopter off the refueling pad to a place where we could observe the refueling procedure.

As we watched the refuelers approach our sister aircraft, I noticed they had switched jobs. The guy who had been in front of us operating the pump was now approaching the side of the aircraft to operate the refueling nozzle.

What happened next changed the way I would do business for the rest of my aviation career. The fuel handler next to the aircraft, which was at flight idle, removed his Kevlar helmet and threw it through the aircraft's rotor system. Well, not actually through it; if that had happened, I wouldn't be writing this article.

His Kevlar hit one of the main rotor blades and went flying about 75 yards into the woods. I couldn't believe my eyes! Then I realized that I had become the weak link in a chain of events that leads to an accident.

Here I had the opportunity to stop an accident before it happened, and what did I do? Nothing! This inaction on my part resulted in a lot of time-consuming actions: mission cancellation, aircraft recovery, and accident-reporting paperwork not to mention the mark against our safe-flying record. Luckily, though, no one was injured.

If only I had gotten out of the aircraft and said something to the refuelers, this accident would have never happened. I mean, I knew better! ■

**—CW5 (Ret) Bill Ramsey,**
**Senior Analyst for Navigator Development Group, Inc.,**
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# Aviation Maintenance in the Desert

So you think you're ready to deploy? As the aviation maintenance manager, how do you ensure the commander has the necessary assets to meet mission needs? This article addresses some of the most common mistakes that maintainers make while here at the National Training Center (NTC) and some techniques for avoiding those problems in other desert environs.

"Aviation maintenance activities are organized to provide commanders with the maximum number of safe, mission-capable aircraft. These activities must be dedicated to fast, continuous, and reliable aviation maintenance support in the highly mobile, integrated battlefield." —FM 3-04.500. This is the goal of every maintainer. At the NTC, we have observed several trends that cause units not to meet this goal. The NTC is the harshest environment in CONUS and is not very different from the sands overseas.

### Trend Number 1: Units deploy with insufficient equipment.

After units arrive in theater is when they discover that tools required for a repair did not get packed. There are several reasons why these tools never made it; the majority of the reasons fall on supervisory responsibility with pre-combat checks and pre-combat inspections (PCC/PCI) as it was overlooked on the packing list.

The key to success is leader involvement prior to deployment. In-progress reviews (IPRs) with key leaders are crucial for a successful deployment. It is important that all sections of the maintenance team understand what equipment is being deployed, to include each type and number of aircraft.

It is important to look at your deployment as if you were deploying to a third world desert country. Do not plan on receiving any maintenance support from external sources until established. Front load as much


maintenance as you can prior to deploying. Units that stop training flights at least a week prior to deploying, using that week to concentrate on maintenance, have the best mission capable rates to support the ground commander.

After arrival in theater, know who is the "rear aviation cell." The rear aviation maintenance officer (AMO) will do the research of the federal logistics log (FEDLOG) or the visual logistics information processing system (VLIPS) to ensure the requisition for the correct item is on request.

If the entire unit is not deploying, the maintenance commander and the production control (PC) officer must have a detailed list of the equipment being deployed, and even more important the equipment left behind.

Ensure that first-line supervisors are completing PCIs. Spot-check their inspections. Review all test, measurement, and diagnostic equipment (TMDE). Just because the torque wrench is packed does not necessarily mean it will not expire and have to get calibrated before receipt or use.

During this planning phase, it is also important to determine the flow of support personnel and equipment. What equipment is handcarried, put on the C5, railed, or put in the back of a 40-foot sea-land van? A maintenance test pilot (MTP) on technical inspector (TI) orders with a couple of crew chiefs should accompany the first aircraft into port and theater. Provide maintenance support to last aircraft deploying as well as the first. Consider the flow of aircraft into theater and how to support the commander with the maximum number of safe, mission-capable aircraft during reception, staging, onward movement, and integration (RSOI), as well as the aerial port of embarkation (APOE).

**Trend Number 2: Maintenance personnel have poor tactical situational awareness.**

"The combat mission of aviation units must remain the foremost consideration in the functions of AVUM and AVIM units. Resources and priorities must be tailorable to changing combat situations." —FM 3-04.500.

Maintenance soldiers all too frequently perform the same duties they do in garrison without any idea of the unit mission or even when aircraft will depart on missions. Maintenance command posts fail to put out orders, battle track, and disseminate tactical information.

Units must fix problems as they arise. Continually deferring maintenance "until we get time" is a recipe for failure. Always make plans for the next 24 hours, but the trick here is to integrate the tactical situation into the task force and brigade plans. Are we attacking or defending? What happens if the defense fails? This can affect your decision to start deferred maintenance tasks. It also affects your priorities of work; such as which aircraft should you work on and which one should you save until you have a larger window of opportunity.

Is it wise to start a complicated lengthy job the same time the brigade is defending? What is the plan to displace rapidly should the brigade's defense fails? Is there a plan to move forward with the success of the brigade's attack? Maintainers must understand the tactical context in order to tailor their resources.

The staff must identify the assets they need for their plan during the military decision making process (MDMP). The maintenance company needs to be included in the tasks so subordinates can prioritize their efforts. An example is: "*D Company provides maintenance support for four flight hours per aircraft with a minimum of six AH-64s and two UH-60s from 192300AUG02 to 200300AUG02*."

Maintenance test flight areas should be integrated into the A2C2 plan. Ideally, MTF

areas are pre-designated by the unit on the battlefield and are activated as required through the aviation control order (ACO). Ensure the ACO is understood by the MTPs for MTF needs and that the order is clear and concise for sister services to understand needs. Identification, friend or foe (IFF) loaded and operational?

### Trend Number 3: Units fail to prepare for and keep up with desert maintenance.

What can you do to help fight off the effects of the desert? Prior to desert operations, ensure the engines are clean (hot and cold sections). Prepare in-flight health indicator test (HIT) check baselines. Ensure pilots know how to do them correctly. This will prevent spending extra time on the ground, which results in dust ingestion.

Main rotor blades and tail rotor blades wear quickly in a sandy environment. Look up "Blade Repairing and Spot Painting" in your aircraft's TM. The two part epoxy-polyamide applied with a small roller lasts longer than flat black spray paint and "Mopp-and-Glow." Paint blades after every mission. Ensure pilots are conducting a thorough post flight to alert maintenance personnel early to blades that need repairs. Assemble kits with all the parts to replace blades and tip caps.

Flushes are one of the most important preventive maintenance tasks. Encourage water flushes every 10-12 hours. TB 55-2840-248-20-17: *Sandy Environment and/or Combat Operations for T700 Engines* (T700, 701 and 701C) recommends "Normal aircraft compressor cleaning in sandy or dusty/dirty environments should be performed every 50 engine hours. Hot section cleaning of engines should be accomplished at 50 hours or sooner depending upon hot section component condition." Keep the aircraft as clean as possible; do not let dust and dirt accumulate. Do you have the necessary items to perform hot end flushes; if not, manufacture while you have the capability.

Best maintenance actions are proactive. Bearings, seals, and rotor blades take abuse in the desert. Use "pressure bug sprayers" to direct water flow on spherical bearings to get the sand out to ease the pitting, erosion, and wear. Keep all surfaces that come into contact with seals as clean as possible (wipe them down after each flight, struts, servos, rod end bearings). Use organic assets—pressure washers from the motor pool, NBC decon sprayers from the NBC section, or FSB work great to keep hydraulic decks and flight controls clean. If there is binding in flight controls, the cause is probably sand and the cure is to clean them regularly. Extend and wipe servos with hydraulic fluid dampened rags or towels to clean and protect seals. Wipe dry to prevent sand from sticking.

**Best maintenance actions are proactive. Bearings, seals, and rotor blades take abuse in the desert. Use "pressure bug sprayers" to direct water flow on spherical bearings to get the sand out to ease the pitting, erosion, and wear.**

### Back to home station

Once the hostilities have ended, the maintenance manager's job is still far from over. The next big hurdle is the plan to get the aircraft back to home station. Do not allow pilots to take shortcuts in a rush to get home. Do not allow current maintenance faults to be deferred until the aircraft is flown back home. Execute echelon maintenance assets to support the redeployment just as you did deploying. What maintenance assets are pushing and who is receiving?

*Editor's note: This article has been adapted from an article published in Army Aviation Magazine regarding aviation maintenance at the NTC. Our purpose is to help units win the maintenance battle in any desert environment. This is by no means an all inclusive checklist for success. The Eagle Team Web page,* ***http://www.irwin.army.mil/eagle/index.htm****, contains a wealth of information.* ■

—CW4 Thomas Jackson is a member of the NTC Eagle Team at Fort Irwin, CA. He can be reached at DSN 470-4463 (760-380-4463) or E-mail eagle26@irwin.army.mil


The "Crew Commo" is a new addition to Flightfax. It's designed to provide professional updates to aviation safety officers (ASOs) in field assignments. Items of special interest are risk management worksheets, SOP management, reviews of new or modified regulations, information derived from recent Aviation Resource Management Survey (ARMS) inspections, current developments in the Army Safety Program or in Army Aviation that affect you daily. E-mail your questions to safetypolicy@safetycenter.army.mil or call DSN 558-2477 (334-255-2477), and we will address your questions as soon as possible. In addition, we will publish selective questions and answers from the U.S. Army Safety Center ASO list server. Let me remind you that this new segment can only be successful with your active involvement to provide practical solutions to the safety problems we are all facing.

## CCR Nozzle Separation

**Q.** Has your unit's closed-circuit refueling (CCR) nozzles leaked or separated from the helicopter while refueling at a FARP in field conditions? Has any of your CCR ports not accepted CCR nozzles which required the helicopter to be 'cold' refueled? My unit has had a few FARP nozzle-aircraft separations in the last 2 years. I am trying to get feedback of other OH-58D units that have had similar problems.

**A.** Fort Rucker has experienced five OH-58A/C and one UH-1H CCR nozzle separation in the last 18 months. In one case, an alignment lug was broken on the nozzle, the others happened for undetermined reasons. We are still monitoring this issue. I can send related message traffic to any interested parties.

—Robert L. Beaman, Assistant Director of Safety, LSI BCS Division, 334-255-4183

## Aluminum Matting

**Q.** What are the installation requirements for the aluminum matting used to make helipads? The stuff is about 2 inches thick and it interlocks together. Along the same line, does anyone know of a liquid spray that is used to harden sand or dirt so that it can be used as a helipad? I understand there is an environmentally-friendly product used at Fort Irwin for that purpose.

**A.** For both questions, see the charts on the next two pages and also check the USAEC/USACERL Technical Report dated September 1996, "Tank Trail and Road Segment Dust Control."

—CW3 William V. Rains, Squadron ASO, 1st Squadron, 1st U.S. Cavalry, Büdingen, Germany, 314-321-4290

# Supa-trac Characteristics & Performance

| | |
|---|---|
| Applications: | Temporary Roadways, Maintenance and Staging Areas, Helicopter Pads, Aircraft Taxiway, Crane Pads, Construction and Beach Access, Heavy Duty Surface Matting |
| Construction: | High impact, Non-slip ABS/Light Gray & Black Edge |
| Weight: | 4.4-lb/2.02 kg per panel<br>1.65 lb/sqft - 8.1 kg/m2 |
| Basic Panel Size: | 38" L X 10" W/ 950cm X 25cm<br>Three panels plus edge ramps give a 3m (9.85') wide road |
| Max. Load Capacity: | 22,000 lb (11 ton)/axle<br>10 metric ton/axle |
| Laying & Recovery Rate: | 4860 sqft/hr, 3 person crew<br>450 sqm/hr, 3 person crew<br>4000 m road @ 3 m Width by 4 persons in under 8 hours |
| Area Coverage & Sizes: | Any size, fully modular, including "T" and "+" segments |
| Length/Width Available: | Assemble to any length & width, continuous/edge ramps included |
| Transport/Storage Size: | Stored as flat "sections"<br>- Std 40 X 48 Pallet/ 42" h = 378 sqft plus<br>- 463L Air Pallet (stacked to 48") = 1,890 sqft plus 748 edge ramps or 187' of (9.85'W) Roadway<br>Roll-up in 5 m length / 3 m Wide – 2 persons can carry |
| Anchoring Method: | Ground pegs through 1" holes in edge ramps |
| Properties:<br>Non-Skid Surface<br>Use Temperature Range<br>Storage Temperature<br>Cleaning<br>Stress/Crack Resistance<br>Corrosion Resistance<br>Petroleum/Solvents<br>UV Resistance<br>Water Resistance<br>Salt Resistance<br>Chemical Resistance<br>Tear Resistance<br>Impact Resistance<br>Flame Resistance | <br>Unidirectional non-skid tread<br>-40 - 100 °+ F<br>-40 - 100°+ F<br>High pressure wash w/ detergent<br>Outstanding<br>Outstanding<br>Excellent<br>Good<br>Impermeable, Self Draining<br>Good<br>Excellent<br>Excellent<br>Excellent<br>Excellent (UL94HB) |
| Operational Life: | 100+ lay/recover cycles or 700+ days of continuous use |
| Storage Life: | 25+ years (covered storage) |

***For More Information Contact:*** Steve Miller at ROLA-North America, Government Sales, C/O INDEF POB 89 Amissville, VA (540) 937-7327; fax 937-7328; e-mail indefsteve@msn.com

# COMPARISON (Pro/Con)

The following areas were used to compare the two products listed in priority of importance to the user (7th Group). A brief remark highlights some areas.

| FACTOR | DURABASE | ROLIMAT | REMARKS |
|---|---|---|---|
| Proven Use | CON | PRO | Some military use of ROLIMAT but no contact to confirm. |
| Deployability | CON 27(Cont) | PRO (8 Cont.) | ROLIMAT can be configured for container, pallet, 463L etc. |
| Terrain Restriction | CON | PRO | DURABASE requires some leveling of surface to ensure connectivity with other pieces. ROLIMAT is flexible and can be configured to meet terrain requirements. Engineer support required. |
| Versatility | CON | PRO | See configure above as well as deployment platform flexibility. |
| Maintainability | CON | PRO | Some soil stabilization may be required for ROLIMAT after heavy use (2-3 days). Contact with POC required to confirm. |
| Weight | CON | PRO | Heavy troop use or MHE required for DURABASE. |
| Construction Time | PRO | CON | Due to ROLIMAT having more sections, it takes longer to assemble. |
| Construction Process | CON | PRO | DURABASE requires connectors and tools while ROLIMAT connects with itself-anchored with stakes. |

"Photo courtesy of CW5 Alfred Rice, 224 MI BN."

# AH-64D Longbow Tool Kit Modification Authorization

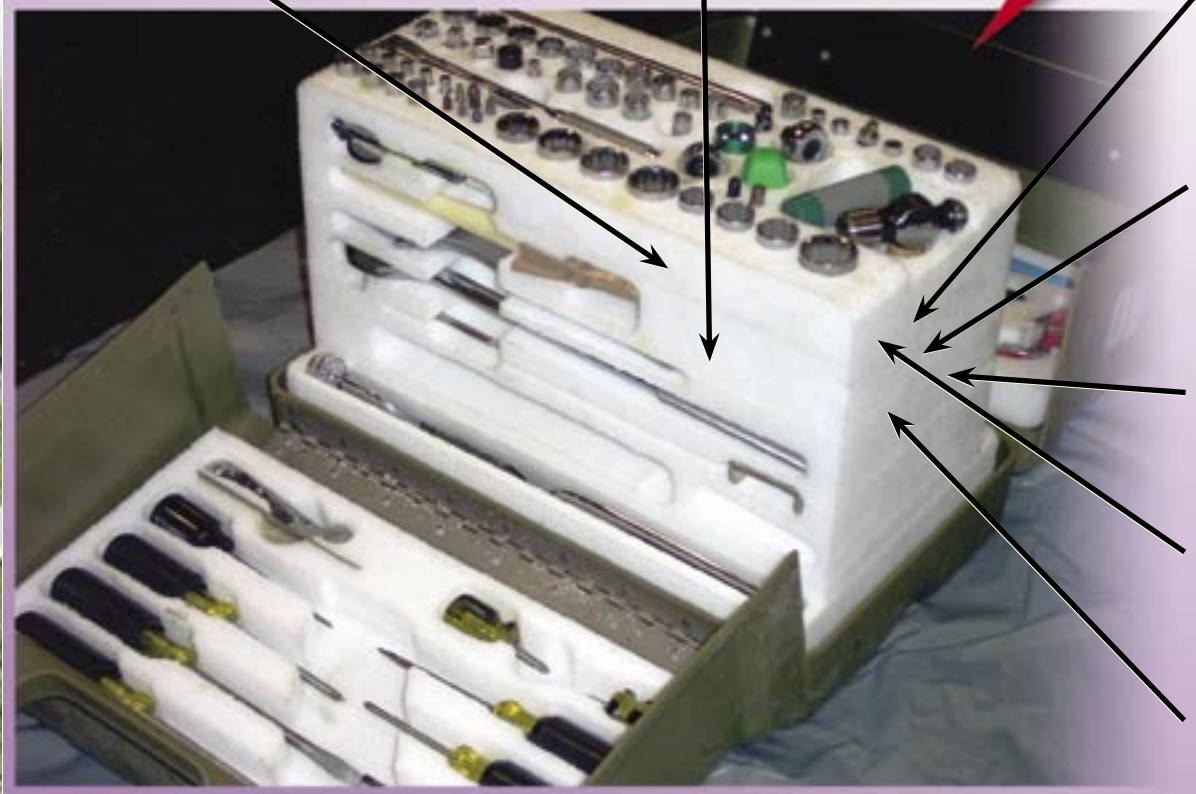
Attention, Longbow mechanics (MOS 67R), you are now authorized to modify your tool kit (NSN 5180-00-323-4692). There are seven additional hand tools required to perform daily maintenance on the AH-64D helicopter; however, there is no approved method to store and secure these additional tools. See below to illustrate how to modify your tool kit.

Contact Mr. Lloyd Hopkins, Apache PM, to request funding to replace foam inserts if a unit is required to return the tool kit to a standard configuration, DSN 897-4072, Lloyd.hopkins@peoavn.redstone.army.mil.

—LTC Earl Myers, Deputy TSM-L, DSN 558-3534 (334-255-3534), myerse@rucker.army.mil

## Tool Kit Modifications

Cut out the Tool Kit, Aircraft Mechanic's, General (Lin W30949) foam in the shape of the screwdriver, ball in the below locations. The screwdriver attachments and extensions are also to be placed in the locations depicted below by drilling holes in the foam end.



# 2002 AAAA Winners!

**The Army Aviation Association of America (AAAA) recently presented the annual LTG Ellis D. Parker Aviation Unit Awards recognizing achievements by individuals and units during 2002. The 2002 award recipients are as follows:**

■ Overall Winner and Combat Category Winner: **2nd Battalion, 101st Aviation Regiment, Fort Campbell, KY**

■ Overall Winner and Best Combat Support Battalion: **7th Battalion, 101st Aviation Regiment, Fort Campbell, KY**

■ Best Combat Service Support Battalion: **56th Medical Evacuation Battalion, Fort Bragg, NC**

■ Best Table of Distribution and Allowances Battalion: **1st Battalion, 223rd Aviation Regiment, Fort Rucker, AL**

■ Air Traffic Control Company of the Year: **C Company, 1st Battalion, 58th Aviation Regiment, Fort Campbell, KY (CPT Anthony Taylor, commander, and 1SG Kenneth E. Russell)**

■ Air Traffic Control Facility of the Year: **1st Battalion, 58th Aviation Regiment, Kandahar Army Airfield (CPT John Knightstep, former commander, and 1SG Kenneth E. Russell)**

■ Air Traffic Control Manager of the Year: **SSG(P) Christopher D. Briggum, C Company, 1st Battalion, 58th Aviation Regiment, Fort Campbell, KY**

■ Air Traffic Controller of the Year: **CPL Michael L. Taylor, 1-58th Aviation Regiment, Fort Campbell, KY**

■ Air Traffic Control Maintenance Technician of the Year: **Mr. Eric Williams, E Company, 12th Aviation Battalion, Fort Belvoir, VA**

■ Outstanding USMA Cadet of the Year: **2LT Cole Spitzack, D Co., 1st Battalion, 145th Aviation Regiment, Fort Rucker, AL**

■ Outstanding ROTC Cadet of the Year: **2LT Michael J. Milas, D Co., 1st Battalion, 145th Aviation Regiment, Fort Rucker, AL**

■ The Army Aviation Air and Sea Rescue Award: **MAJ James Myrick and 1SG Stanley Wojtowicz, 3rd Battalion, 160th Special Operations Regiment, Fort Campbell, KY (Puerto Rico)**

■ Aviation Medicine Award: **CPT (Dr.) Larry McCord, 101st Aviation Regiment, Fort Campbell, KY**

■ The Fixed-Wing Unit of the Year Award: **15th MI Battalion, Fort Hood, TX (MAJ Kirk E. McIntosh, Executive officer, and CSM Dennis M. Rydell)**

■ Trainer of the Year Award: **CW3 Andrew C. Sentiff, Standardization Instructor Pilot and flight leader with B Company, 2nd Battalion, 160th Special Operations Regiment, Fort Campbell, KY**


*Congratulations*
to all recipients for their significant achievements in Army Aviation.

# ACCIDENT BRIEFS

*Information based on preliminary reports of aircraft accidents*

## AH-64

### A Model

■ **Class C:** The crew experienced technical difficulties with the TADS during the second flight of the evening and returned to the Army Air Field. The post-flight inspection revealed that the TADS night-side shroud was missing. Crew had reportedly confirmed the cover was secured during the pre-flight walk-around for the second iteration.

■ **Class C:** During post-flight inspection, the crew noticed damage to all four blades, which indicated some sort of blade strike.

■ **Class C:** Post-flight inspection revealed tail rotor damage from suspected tree strike.

### D Model

■ **Class B:** While the aircraft was in phase maintenance, the mast-mounted sight was dropped approximately 12 feet during hoist operations.

## CH-47

### D Model

■ **Class A:** While conducting a day terrain flight approach to landing at an approved pinnacle site, the ground beneath the aft landing gear collapsed. The aft fuselage fell below the pinnacle surface allowing the main rotor blades to contact the terrain. The aft pylon separated from the fuselage as the aircraft tumbled down the slope. The aircraft came to rest nearly upright at the bottom on the pinnacle, facing approximately 180 degrees from its original heading, and was destroyed in the post-crash fire. Two crewmembers received minor injuries. (This was from a late accident report.)

■ **Class B:** On landing, aircraft experienced a brownout to an unimproved landing zone. The left aft gear separated from the aircraft after striking a berm. The aircraft landed hard, slid 30 feet, and came to a rest.

■ **Class C:** Aircraft landed on uneven terrain resulting in three aft rotor blades striking the ground. The crew landed and shutdown the aircraft without further incident.

■ **Class C:** Aircraft landed on a road and was taxiing forward when the road underneath the aircraft gave way. The left aft landing gear slid into a 3-foot-deep ditch and snapped the swivel housing. The aircraft unloaded its cargo and returned to the airfield.

## HH-60

### L Model

■ **Class C:** The anti-collision light shield separated during flight and contacted the tail rotor blades. The damage was discovered during the post-flight inspection.

## MH-60

### L Model

■ **Class A:** Aircraft impacted the terrain during night aerial gunnery training. All four crew members sustained fatal injuries. Investigation is ongoing.

## UH-60

### L Model

■ **Class C:** Aircraft contacted wires during an ATM training flight. The WSPS functioned as designed and severed all three wires. The aircraft sustained damage to the ALQ-144 and the tail wheel strut area. (The wires were reportedly not depicted on the published hazard map).

## OH-58

### DI Model

■ **Class A:** During snow qualification training to an unimproved landing area, the crew experienced white-out conditions. The aircraft drifted to the right, struck several trees, and came to rest upright between the trees. The main rotor blades were destroyed and the mast-mounted sight was damaged. Investigation is ongoing.

## TH-67

■ **Class C:** While performing a steep approach, the engine (N2) over sped to 111 percent for approximately 10 to 15 seconds. The PC terminated the approach to a hover, which brought the N2 within limits. The PC hovered the aircraft to parking and completed an emergency shutdown.

## C-26

### B Model

■ **Class C:** The aircraft was performing a service mission. After approximately two hours of flight, the left engine failed. The aircrew performed emergency actions and landed the aircraft.

## RC-12

### K Model

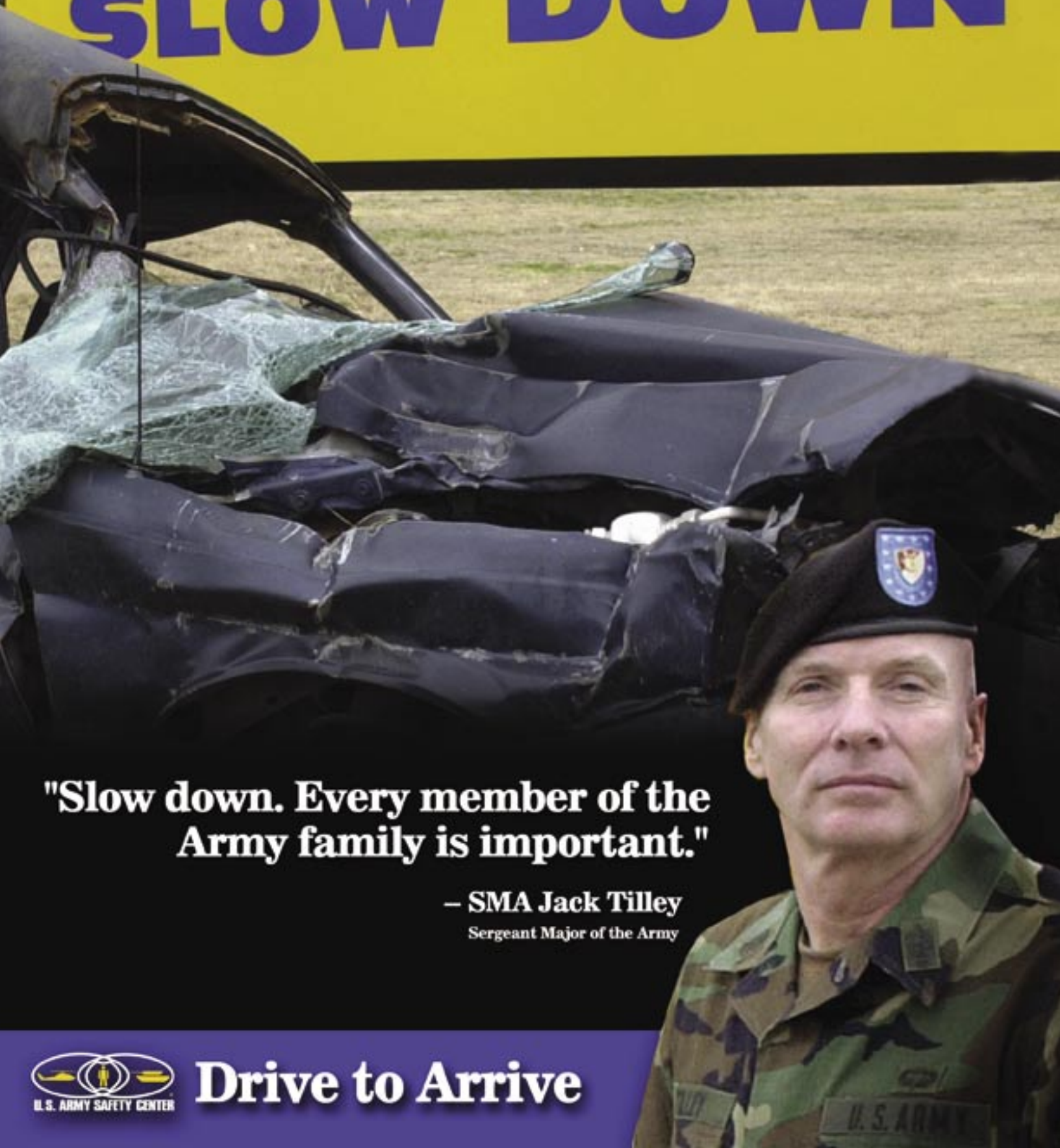
■ **Class E:** During cruise flight at FL290, 70 NMs off the NY coast, the #1 engine oil pressure dropped to zero. PI verified as PC performed #1 engine shutdown IAW checklist. PC declared emergency w/ATC while PI performed unscheduled, single-engine landing. Transient alert tugged aircraft from taxiway to hangar. Maintenance discovered that the oil cooler on the #1 engine was cracked and had blown most of the engine oil (2nd time in 2 days). Maintenance replaced the oil cooler, MOC'ed and released for flight.

### N Model

■ **Class E:** During cruise flight at FL270, the left windshield cracked. Aircraft landed without further incident. Windshield was replaced.

**Note: For more information on selected accident briefs, call DSN 558-9552 (334-255-9552). Information published in this section is based on preliminary mishap reports submitted by units and is subject to change.**

# SPEED KILLS
# SLOW DOWN



"Slow down. Every member of the Army family is important."

– SMA Jack Tilley
Sergeant Major of the Army

U.S. ARMY SAFETY CENTER

**Drive to Arrive**