Flightfax

ARMY AVIATION RISK-MANAGEMENT INFORMATION

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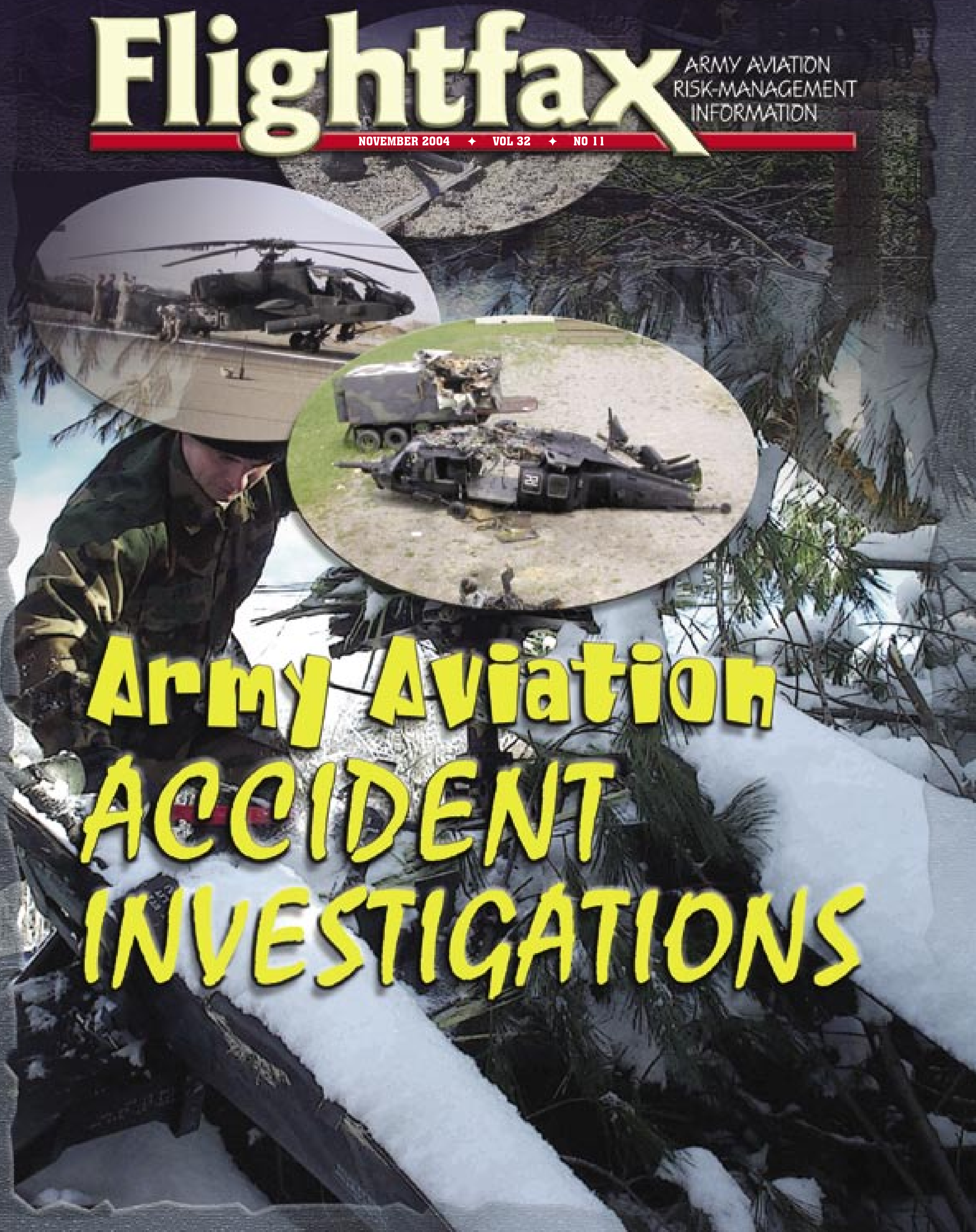

Army Aviation ACCIDENT INVESTIGATIONS

Flightfax
ARMY AVIATION RISK-MANAGEMENT INFORMATION

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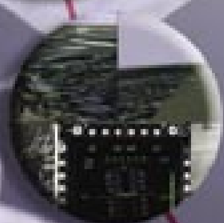

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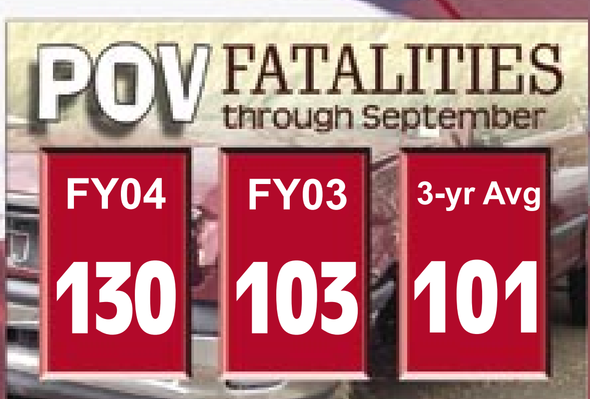

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JOSEPH A. SMITH
Brigadier General, U.S. Army
Commanding

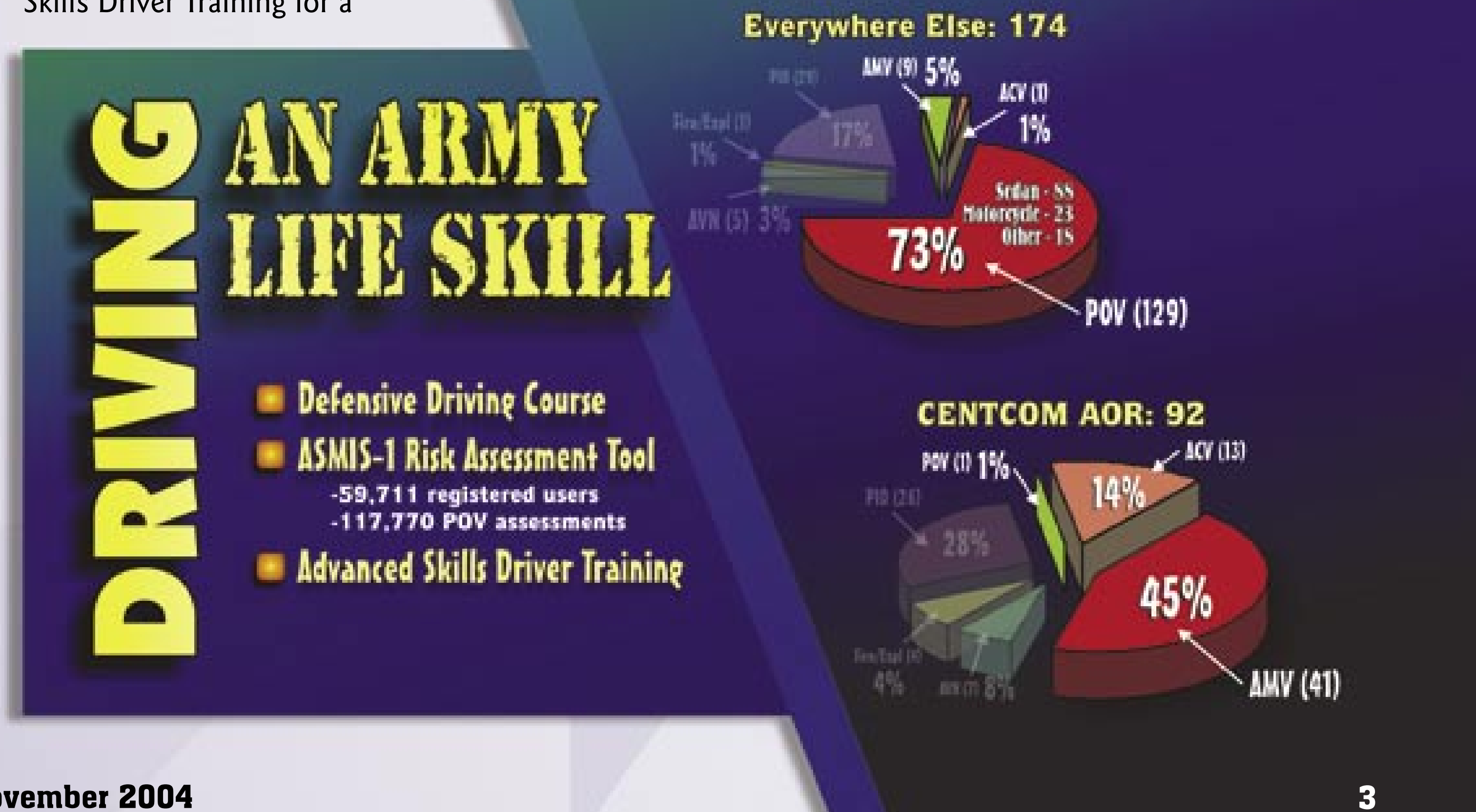
DASAF's *Corner*

FROM THE DIRECTOR OF ARMY SAFETY

So What's the Biggest Risk When You Get Home?

In the August issues of *Countermeasure* and *Flightfax*, we showed a picture that was worth a thousand words. The unnamed faces represented 216 Soldiers who had lost their lives in accidents. This was a powerful message that highlighted the personal impact of each Soldier's death and the cost to families and organizations. At the time, the accident rate was clearly unacceptable because we were losing a Soldier nearly every day. That trend continued through the remainder of FY04 and the charts below show where we lost 266 Soldiers to accidents. For those not deployed, a whopping 79 percent died while behind the wheel of a vehicle, and in-theater driving accounted for 60 percent of our accidental deaths. Clearly, our focus for FY05 must be continued emphasis on driving as an "Army Life Skill."

Our Army is finalizing a three-pronged attack on POV fatalities with distance learning, ASMIS 2.0 for risk mitigation, and Advanced Skills Driver Training for a



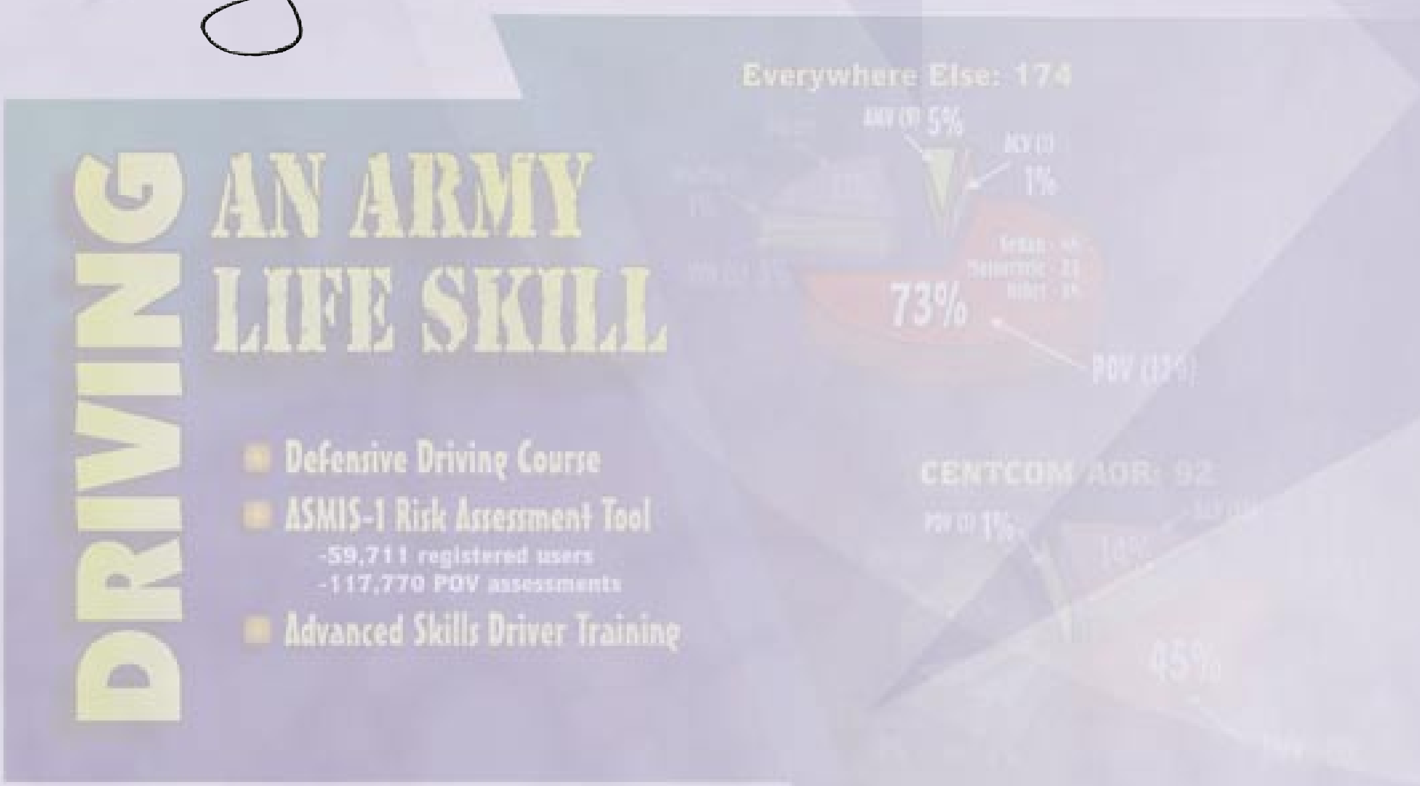
hands-on course of instruction. We've listened carefully to the ASMIS comments and feedback, so pay special attention to the upgrades coming your way. To date, our troops have conducted over 115,000 assessments with only one recorded fatality. Keeping safety in Soldiers' faces works! However, ASMIS works only ***IF*** you use it.

According to our mobile training teams, focus groups, and surveys, only 20 percent of the Army's population is engaged and actively mitigating POV risks. I ask you to take a moment to consider if you and your organization are part of the 80 percent not aggressively attacking our number one accidental killer of Soldiers. Come on … let's "buck up" and get after this. We are still in the mode of "lessons noted" rather than "lessons learned." We are still killing ourselves by not wearing seatbelts, speeding, and driving irresponsibly.

Just before writing this article, I sat down to review the fatalities from 15 to 18 October 2004, when four Soldiers died on their motorcycles over the weekend. Reckless driving, failure to wear helmets, alcohol, and behaving irresponsibly are the suspected culprits. There's no way to classify these deaths other than tragic and needless. Soldiers returning from war are combat-proven heroes and deserve nothing less than involved leadership and battle buddies who will speak up. Our Army is at war and transforming to meet tomorrow's challenges. We need each and every Soldier to support our Nation's fight.

Over the last 4 months we've lost a Soldier every 32 hours to an accident. Most of these deaths have occurred on the road. Our daily missions are tough and inherently dangerous, regardless of location. We are doing better with tactical risk management, so let's take the skill set one step further. Don't allow your subordinates or battle buddies to be our next fatal statistic from behind the wheel. We need a "leadership push" in off-duty activities to stop this trend. Winter driving and holiday travel season are on their way—let's beat the odds and stop POV losses!

Be Safe! Make It Home.



Safety Center Goes After Accidents

Paula Allman
Managing Editor

In the aftermath of a serious accident, safety professionals form an investigation team with one goal: to prevent the next accident.

The Army Safety Center has several "go" teams—both ground and air—one of which is on duty for deployment anywhere on short notice. These teams pull together the answers to many questions to come up with the cause of an accident. The what, where, when, and how of an aviation or ground accident help establish prevention plans.

The Army Safety Center Centralized Accident Investigation (CAI) approach is to examine all possible scenarios to determine the most likely cause of the accident. It's one of the Safety Center's most important jobs because of its role in accident prevention.

Through this process, begun in 1978, the Army Safety Center heads the investigations of most Class A and selected Class B accidents (both aviation and ground) Armywide. This doesn't mean that local installations and supported Army units have no role in the accident investigation; indeed, some accident investigations—including Class As—are turned over to the unit (see stories of several local investigations in this edition of *Flightfax*). The Safety Center team, composed of a field-grade officer and a senior warrant officer, is supplemented at the local level by experts such as a flight surgeon, instructor pilots, maintenance officers, and technical inspectors. When needed, the team can also call in additional experts from outside agencies including AMCOM, CCAD, and even equipment manufacturers.

The CAI process starts with a phone call to the Safety Center, whose investigators are on standby 24 hours a day for immediate deployment anywhere in the world. Arrangements between the Safety Center and the local unit are handled by the unit safety officer. He or she arranges for local board members to supplement the CAI team and also arranges for other support, such as personnel to search for missing parts of the wreckage or to crate exhibits for shipment to maintenance facilities or labs for analysis.

CAI provides many advantages, not only in determining what caused an accident but also in developing controls to help prevent future accidents from the same or similar causes. This information is also used in hazard and trend analysis. Searches of the Safety Center accident database are done on a continuing basis to determine if there is a trend developing concerning the failure of specific parts, components, or systems.

CAI advantages

■ **Professional investigators**. CAI teams represent many years of accident investigation experience.

■ **Continuity and standardization in investigations**. A centralized process used over an extended period of time by full-time investigators establishes continuity and a base of institutional memory on which to draw. In addition, a standardized process of identifying the hazards that led to accidents produces more meaningful controls to prevent future accidents.

The team completes the formal report after returning to the Safety Center. If, at any point during the investigation, a safety-of-flight or safety-of-use issue surfaces, appropriate agencies are immediately notified and steps are taken to alert users Armywide.

■ **Impartiality**. Because CAI investigators are not members of the accident unit, they are not influenced by the command and will not be personally affected by the findings and recommendations. This gives the Board the flexibility to look both objectively and subjectively at records, policies, procedures, and command environment. It also affords the Board freedom from repercussions as a result of identifying deficiencies in the chain of command.

■ **Timeliness and responsiveness**. After 7 to 10 days at the accident site, the Board reviews the evidence and develops tentative findings and recommendations, which they staff via conference call with other subject matter experts at the Safety Center. Before leaving the site, the Board president briefs the local chain of command on the findings and recommendations developed up to that time. The team completes the formal report after returning to the Safety Center. If, at any point during the investigation, a safety-of-flight or safety-of-use issue surfaces, appropriate agencies are immediately notified and steps are taken to alert users Armywide. Subsequent actions may include issuance of a safety-of-flight or safety-of-use message, or even DA-level action to ground an entire fleet of aircraft or restrict use of ground equipment Armywide to prevent other accidents from the same or similar causes. CAIs are just one more way the Army is working to save lives and prevent accidents.

The Safety Center is here to help at *all* times—not only when an accident occurs, but in accident prevention as well. The Army Safety Management Information System-1 (ASMIS-1), found on the Safety Center Web site at **https://safety.army.mil/asmis1**, is an automated risk assessment tool that features three modules: Aviation, Ground, and POV. For those Soldiers in combat theaters or training stateside, the Aviation and Ground modules provide valuable information based on mission parameters. The user defines their mission, and the system searches the USASC database for accident cases that best match the defined parameters. The five most relevant cases, along with identified hazards, recommended controls, and an initial risk level assessment, then are presented to the user. After reading the case summaries, the user can compare those hazards to the hazards identified in their mission planning process. ASMIS-1 does not identify all possible hazards, nor does it offer all viable controls associated with a specific operation; instead, it provides junior leaders with the insights and lessons learned from experience and past accident investigations. Also check out the Safety Center's Accident Reporting Automation System at **http://safety.army.mil/aras_public/intro_aras.html**.

The Safety Center is here for you. Give us a call or e-mail us; let us help you build a better risk management program and further reduce the Army accident rate. Come to us now before we have to go to you later. ♦

Investigators' Forum

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

Fools Rush In

CW4 Dennis "Ed" Hosmer
U.S. Army Safety Center

Some of you may remember the old song "Fools Rush In" by Johnny Mercer and Rube Bloom. Most of you probably wouldn't. A couple of the lyrics from the song are "Fools rush in where angels fear to tread, And so I come to you, my love, my heart above my head; Though I see the danger there, If there's a chance for me, then I don't care; Fools rush in where wise men never go, But wise men never fall in love, So how are they to know?"

For as long as there have been aircraft, there have been power lines. All too often the two come together, usually with damaging and frequently tragic consequences. Here's one of them….

This was a combat mission. The crew was flying a UH-60A during a routine MEDEVAC mission in Operation Iraqi Freedom. Approximately 6 minutes into the flight, the pilot in command (PC) in the left seat said he noticed a flash at 12 o'clock. The PC changed course and flew across a road, where a set of high power lines spanned a large creek running south. The crew didn't have a wire hazards map in the aircraft, nor were they using a map to navigate because they had flown the route numerous times before and were familiar with it.

The PC began to follow a streambed, flying approximately 50 to 75 feet above ground level (AGL), making turns in excess of 40 degrees and airspeeds above 100 knots. Approximately 9 kilometers along the route, the pilot (PI) announced "Wires," and the PC responded, "I have them."

About 10 kilometers along the route the PI looked inside the aircraft to change frequencies; however, he never announced he was doing this. When he looked back outside, he suddenly saw a set of high tension power lines in the windscreen. He screamed "Wires!" and the PC initiated a cyclic climb with a corresponding right turn. But it was too late. The aircraft struck the top wire on the high tension power line and then got stuck on the wire. The aircraft flew along the power line with the wire embedded in the left strut area.

The scars and physical evidence on the aircraft indicate it flew along the wire for 5 to 10 seconds before the wire broke. The wire hit the chin bubble, shattering the Plexiglas®. The aircraft finally freed itself and flew up and away from the wires.

When the PI came on the controls, he never announced to the PC that he was on the controls. The PI relinquished the controls to the PC, who flew another 2 kilometers and then started an approach to an open field. The crew thought there could be some damage to the flight controls, so they decided to make a roll-on landing. The PC landed the aircraft with a 30-foot roll without further incident. Luckily, neither the crew nor the passengers were seriously injured, but the aircraft suffered extensive damage along its left side.

"I've flown this mission a hundred times before; I know it like the back of my hand." This type attitude can lead an aviator to become overconfident in his ability, which can result in an accident.

Lessons learned

■ **Lack of situational awareness**. The crew failed to conduct pre-mission planning IAW current regulatory guidance. The PC and the PI were not using a wire hazards map and were flying below the minimum altitude prescribed in Training Circular (TC) 1-212, Task 1014, "Maintain Space Surveillance"; Task 2083, "Negotiate Wire Obstacle"; Task 2018, "Perform Terrain Flight"; and the brigade SOP. The crew never received an updated weather brief, nor did they update the flight log IAW the brigade SOP. Consequently, the PC flew the aircraft into wires that were depicted on the wire hazards map (which they didn't have in hand).

■ **Failure to comply with established procedures**. The crew failed to properly scan and maintain proper altitude in relation to terrain and existing obstacles in the area. They allowed the aircraft to descend below the minimum altitude required by the Helicopter Procedures Guide, which would have kept them clear of the wires. The crew's actions were a result of overconfidence and complacency in their ability to fly the aircraft outside published standards. Confidence in self and the aircraft is a must for aviators, but overconfidence can lead to failure to comply with established procedures.

■ **Crew coordination**. Crew coordination is, as always, a key ingredient in accident prevention. However, as this accident proves again, the pilot on the controls must maintain awareness regarding the position of the aircraft and the location of all obstacles. The PC's actions were the result of overconfidence and complacency. He was overconfident because he had flown the mission numerous times before and complacent because he didn't use the checklist to perform the required tasks before flight (Task 1007: no crew briefing and no HIT check).

Some closing thoughts

The Army's mission is to fight and win our Nation's wars. Some might argue that OPTEMPO is the reason behind the aforementioned breakdowns. I say, having been in both the OIF and OEF theaters of operation, I have personally witnessed

the real but hidden danger—*ATTITUDE*. Over and over I hear the words, "We're in a combat zone." Yes, a combat zone requires units and individuals to use creative thinking on occasion, but that means to use your training, the regulations, and the very well-established risk management process to guide and filter that creative thinking. Nowhere in the books will you find that we do things differently in combat than we do in training. We don't throw the books out the window just because we're in a combat zone. Why is that? The regulations, the training, and the risk management process are all tried and true, well-tested, and put there for just that reason—to help you fight and win in a combat zone.

Wire hazards are exactly the same in CONUS as they are OCONUS. Mission planning, crew and passenger briefs, and crew coordination are all exactly the same at home station as they are in a forward deployed theater. If you're deploying soon, make the choice to let the system work as designed and DO NOT allow that "combat zone" attitude to lead your unit down the wrong path. If you're currently deployed, give yourself and your unit an ATTITUDE check to see if this applies to you. If you have recently returned to home station, pat yourself on the back, take a well-deserved break, and most of all make sure that "combat zone" attitude didn't follow you home. Many good people rushed into fatal consequences and they are no longer here to share their story. ♦

—CW4 Hosmer is a USASC accident investigator and may be contacted at DSN 558-3553 (334-255-3553) or via e-mail at dennis.hosmer@safetycenter.army.mil.

Investigators' Forum

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

"You're Coming in Hot!"

CW4 Michael E. Turner
C Co, 2-25th AVN

The accident aircraft, a CH-47, was Chalk 2 in a flight of two. The crew was completing the second leg of an air assault to a potentially hostile landing zone (LZ) in support of combat operations in Afghanistan. The aircraft was loaded with 28 troops and a "kicker pallet" full of water and MREs on the ramp. The ramp was positioned slightly above level for the flight and landings.

The pilot in command (PC), who was a standardization instructor pilot (SP), was flying with a readiness level one aviator with 2,000 hours' experience, but only 160 in the CH-47. This was not a training flight or an evaluation flight. The PC took the controls about 6 minutes before landing at the accident LZ. At the rally point (RP), he attempted to close the flight interval from an eight-disk separation to three disks upon landing. The PC in the left seat browned out at about 20 feet above ground level and continued to land. The PC decelerated the aircraft by placing it in a nose-up attitude greater than 15 degrees, but less than 20 degrees nose up. In the nose-up attitude, the cargo ramp struck the ground.

The crew offloaded the passengers and the pallet and departed the LZ. Approximately 5 minutes into the flight, the flight engineer (FE) noted damage to the ramp area and a severe vibration on the ramp. The crew supported the ramp with cargo straps and returned to home station. The ramp suffered major damage to the right strut mounting area. The left strut mount at station 502 broke the former and separated it from the airframe, and also damaged the external skin of the aircraft.

Why did it happen?

Several factors contributed to this accident: human error, crew coordination, standards failure, and support failure.

Human error. The PC was overconfident in his abilities to land the aircraft in its configuration in brownout conditions. The PC did not ask if the rest of the crew was browned out, but felt that he could safely land the aircraft from 20 feet in a total brownout. The PC's attempt to close the interval from the RP inbound did not support the tactical plan. The LZ was a large desert area big enough to fit six CH-47s comfortably. The attempt to close the separation led to excessive speed on the approach and a closure rate with Chalk 1 that required a large deceleration. The PC was aware of the aircraft's configuration, but was not used to landing with the ramp level. The crew positioned the pallet over the ramp hinge and was unable to raise the ramp for landing.

Crew coordination. The PC never announced

"Brownout" on the approach. The pilot (PI) didn't brownout during the approach, but had he known the PC was brownout, he would have taken the controls and leveled the aircraft for landing.

Four of the five crewmembers thought the approach was fast; however, only one of them mentioned, "You're coming in hot!" This call was never confirmed by the cockpit crew. The FE did not repeat this call nor ensure it was heard because he was making the calls for landing in an exceedingly rapid manner. The lack of standard terminology could have led to confusion in a combat environment. The lack of communicating concerns about the speed on approach could have been attributed to the professional courtesy the rest of the crew extended to the PC, who was a visiting SP and "an ex-Task Force pilot."

Standards failure. There are no written standards for go-arounds in Training Circular (TC) 1-216, *CH-47 Aircrew Training Manual*, as well as no sand, dust, or snow considerations. However, these considerations are in the draft TC 1-240, *CH-47 Aircrew Training Manual*. During interviews with several CH-47 crewmembers, there were considerable differences in opinion regarding how long aircraft would stay in a total brownout condition. The times ranged from 2 to 12 seconds.

Additionally, there is no mention of a pitch angle limit or caution associated with ramp level operations. Measurements and calculations determined that with the ramp in the level position, there is a 15-degree angle from the rear tires to the end of the ramp. In effect, with the ramp level and the nose pitched up 15 degrees to decelerate, the ramp will strike the ground.

Support failure. The environment played a minor part in this accident as the wind conditions in the area of the LZ were inaccurately forecasted. The winds were 170 degrees from the forecasted heading and contributed to the dust from Chalk 1 being blown into Chalk 2. Had the crew known of the wind direction, they might have changed the landing formation, separation, or heading to blow the dust away from the rest of the formation.

Lessons learned

Speed on the approach must be managed early in the approach to make a controlled and safe landing. Pilots should use all the terrain available to make a safe landing. Even if the goal is to amass combat power on an objective, safe separation and a safe closure rate are the keys to survival.

The draft TC 1-240 will address the concerns for sand, dust, and snow considerations for visual meteorological conditions approaches; however, units must address training and evaluation programs for these considerations until this document is official and the maneuver is taught from aircraft qualification courses (AQCs) to annual proficiency and readiness tests (APARTs). An Army standard for go-arounds should be implemented and taught from AQC to APARTs as well. Crews must understand the need for go-arounds, power required, and rotor clearance required to perform this maneuver. They also should be comfortable doing this maneuver in dusty environments.

A caution should be posted in the CH-47 Operator's Manual about landing with the ramp level with pitch attitudes in excess of 15 degrees. Currently the cautions listed are for 20 degrees pitch up during roll-on landings to avoid striking the aft rotor system on the ground. Crews must be educated to the further limitations of striking the ramp during landings with the ramp level and a pitch attitude in excess of 15 degrees.

Crew coordination should be reinforced through continuation training. All aircrews must be refreshed on the crew concept that they all have a voice in the flight. Each crewmember must be reliant upon the others to ask and offer assistance when needed and not to rely upon only one person to do the entire job.

We are recommending that higher headquarters obtain more weather observing systems to build a larger database of information to accurately model local weather phenomena. Currently there are only four weather observers in theater that report weather conditions. Giving the forecasters the ability to obtain data from each forward operating base will increase the accuracy of weather reporting for the entire country. ♦

—For more information, contact CW4 Turner at C Co., 2-25th Aviation, APO AE 09354, call DSN (318) 231-2463, or e-mail turnerme@baf.afgn.army.mil.

Investigators' Forum

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

IIMC Recovery Training

The best way to avoid inadvertent instrument meteorological conditions (IIMC) is not to fly in less than visual flight rules (VFR) weather. As Army Aviators, we all know this isn't going to happen anytime soon, and even forecast VFR weather isn't always VFR. The point is that once you have flown into IIMC, you must commit to instrument flight rules (IFR)—transition to instruments, maintain aircraft control, and fly to an airfield while executing a published instrument approach.

The mission was to conduct a night training formation flight while using night vision goggles (NVGs). Two UH-60 aircraft were to depart home station, join up at a staging airfield, and begin formation flight. The crews of both aircraft received the following weather forecast: a minimum ceiling, few at 700, scattered at 7,000, 7 miles visibility with heavy rain showers, temperature 15°C, dew point 14°C, winds 260 at 9 knots, with a weather warning for thunderstorms in the local flying area.

After hot refueling at the staging airfield, the flight departed on the planned route. Chalk 2 received a weather update for the flight of two. There weren't any major changes to the forecast. The weather began to deteriorate as the flight proceeded en route, so flight lead changed course and continued the mission. The copilot in the lead aircraft was a new aviator to the unit and was working on readiness level progression. In addition, Chalk 2 had two senior aviators who were getting night minimums.

The flight had been in the air approximately 20 minutes when trail lost sight of lead. Trail called lead and told them they would back off lead until they could regain sight of them. Trail changed course 90 degrees to the direction the flight had been flying and told lead they could see them again. Lead acknowledged and said they would come around and take up trail position behind Chalk 2. Lead called back and said they had entered a fog bank and would be out shortly. Ten seconds later, Chalk 2 called lead and asked how they were doing. Lead never responded. The lead aircraft had crashed in a heavily wooded area, and all three crewmembers were fatally injured.

Lessons learned

The preliminary investigation revealed the environment, as well as training and leader failures, contributed to this accident. Although all three factors contributed, one would have prevented this accident—IIMC recovery training.

Environmental planning

The formation flight had not been planned before the evening of the flight.

The two crews got together and decided they would fly formation later in the evening. The crews talked about formation flying, IIMC break-up, and lead changes, but no formal briefing occurred. The commander approved the risk assessment worksheet, but did not select an air mission commander as prescribed by Army Regulation 95-1. When trail lost sight of lead, neither aircraft performed IIMC break-up as they had discussed.

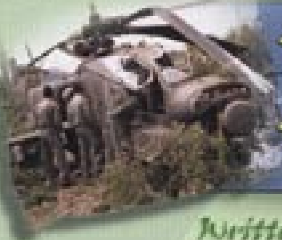
Training

Any type of realistic instrument training is critical in building aviator confidence when it comes to flying in the clouds. Simulator training is good for increasing your knowledge on instrument flying and emergency procedures, but something is lost in realism when you know you can't get hurt flying the simulator. The immediate fear factor just isn't the same in the simulator as it is in the aircraft. There is too much of a negative attitude in Army Aviation today when it comes to flying in the clouds. I have actually heard young aviators say they will never fly in the clouds. With this kind of attitude, it's going to be next to impossible to keep our pilots proficient in instrument flying. You will always hear aviators say, "Don't go IIMC and you won't have a problem!" However, sometimes we don't get what we want.

Leaders

Leaders at all levels should stress the need to increase training to keep our aviators proficient in instrument flying. As leaders, we know we can't predict the weather or how a certain individual will react when faced with an IIMC situation, but we should make every effort to keep our pilots proficient in instrument flying. Unit safety officers should coordinate with the unit standardization pilot and review individual flight records to help the commander identify weak instrument pilots. The commander must take the lead on instrument flying—if he is a weak instrument pilot, I guarantee you that other pilots in the unit will follow his lead. We don't need, nor can we afford, to lose another aviator because he is afraid to fly in the clouds. ♦

—Comments regarding this article may be directed to the Aviation Systems and Accident Investigation Division at DSN 558-9552/3410 (334-255-9552/3410).



Investigators' Forum

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

Wrong Place at the Wrong Time

CW3 David A. Anderson
NV RAID SP/IE

The crew had just finished a stationary surveillance for a follow-on warrant to be served for a "bust-out" on multiple felonies, and was landing at the Henderson Airport. The approach was made initially to the active runway, with a circle to land over a sod area to terminate at a helicopter parking area and taxiway. The pilot landed and initiated the normal shutdown procedures.

During rotor coast-down the co-pilot, who was left at the airport during the surveillance due to weight and balance issues, noticed insect activity about the tail rotor. Upon a somewhat closer, yet still distant look, the co-pilot identified the insects as a swarm of bees. The co-pilot then motioned to the crew to come directly towards him with some haste. The pilot informed the law enforcement agents (LEAs) that there was some kind of problem and to exit immediately in the direction of the co-pilot.

The rotor system had nearly stopped, and the pilot completed the final steps of the shutdown and exited the aircraft. By this time a small swarm of bees had landed on one of the tail rotor blades, even more swarmed around the aft section of the tail boom, and still more seemed to be flying in and circling around the aircraft.

The decision was made to remove the aircraft key and leave the aircraft at the parking pad. The crew was to attend the SWAT brief, so it was hoped that the bees would be gone by the time the crew had arrived back from the brief. Almost 2 hours later, the bees for the most part had calmed down and created a small swarm ball on one of the tail rotor blades, which covered approximately 12 inches of one side of one blade.

Calls were made to the briefing officer, fire department, and entomology departments, and the consensus was to use the Henderson Airport fire extinguishers. Authorization was given, and both crewmembers and one LEA fired the dry chemical agent at the bees. The main body of the swarm immediately dispersed; however, several residual individual bees still swarmed the aircraft. After three fire extinguisher blasts, the pilot elected to start the aircraft

despite the presence of many bees.

The pilot started the aircraft and quickly ran it up to full operating RPM. Pitch was applied to the main rotor system to allow the downwash to blow any remaining bees away. To avoid a reinfestation, the pilot air-taxied a short distance to a pre-determined point to pick up the co-pilot and LEA. The mission was then continued without further incident. Upon mission completion, the aircraft was thoroughly washed because a very light coating of fire extinguisher dust was still present.

We surmise the aircraft was inadvertently parked next to an in-ground hive located in the sod area or that the aircraft was flown though a migrating swarm of bees. In any case, the tail rotor must have killed several bees and their scent was still present on the blades well after shutdown. Late spring and early summer are possible migratory times for bees and, when provoked, killer bees sting items that are black, as opposed to items that are white. For these reasons, the aircraft and crew just happened to be in the wrong place at the wrong time.

Although it's impossible to plan for such an occurrence, prudence is recommended when dealing with killer bees. It's also recommended to wash the aircraft thoroughly if a fire extinguisher agent is used on or near an aircraft, as it is corrosive. ♦

Editor's note: Many thanks to CW3 Russ Schuler, NV RAID OIC/ASO, who worked to get this article for me.

—CW3 Anderson was the PIC for this mission. His co-pilot was CW2 Kevin Keeler. Both are in the Nevada Reconnaissance Air Interdiction Detachment (RAID). CW3 Anderson may be reached by calling 702-643-4215 or e-mail dave.anderson@nv.ngb.army.mil.

Correction

In the September 2004 *Flightfax*, we mentioned an Aviation and Standardization Conference being held in Little Rock, AR, from 30 November to 2 December. The conference is actually the Aviation Safety and Standardization Conference. We apologize for this mistake.

—POC is CW5 Gilbert Wright, NGB Aviation Safety, 703-607-7735, e-mail gilbert.wright@ngb.army.mil.

Wire Strikes ar

CW4 Paul Clark, CW3 David Blelloch,
CW3 Scott Hauge,
and CW3 Randy Steffens

Collision with wires has long been recognized as one of the greatest hazards facing the aviator. Other than legislating for the removal or non-construction of above ground wires and cables—a most unlikely enactment—it seems there is no possibility of eliminating entirely this manmade threat to aviation safety. In consequence, our wire-infested flight paths must continue to be regarded by pilots as a hostile environment in which to operate aircraft at low level.

Wire strikes are bad! Wow, that's an understatement. As pilots we realize that we take risks every day. Since history proves to repeat itself, we must learn from past mistakes.

Army Aviation accidents between 1999 and 2004 involving wires resulted in 34 accidents, five fatalities, $50 million in damages and losses, and numerous crew and other personnel injuries. Of those 34 accidents, we've had 7 Class As, 1 Class B, 13 Class Cs, 9 Class Ds, and 4 Class Es. However, those are only the reported cases. Modern causation theories conclude that for every catastrophic accident, approximately 600 near-misses occur. These close calls are typically not reported other than as a "There I Was" war story.

Wires are obviously the enemy. They have been called "helicopter killers." Given that, our missions routinely take us deep into enemy territory as we fly at terrain levels. To compound our struggles, our foe has formed some formidable alliances. They include obscurations, aircraft structural limitations, mission demands, night vision device limitations, shadows, obscure terrain, and the list goes on. Our experience during the last 5 years is that 38 percent of our wire strikes occurred at night, with 51 percent during training missions, 37 percent during imminent danger missions (OIF, etc.), and 11 percent during service missions.

It is seemingly obvious that our enemy demands our focused attention and resistance to overcome. Unfortunately, we occasionally become complacent and overconfident, thus aiding the enemy and becoming our own worst enemy. This is painfully clear upon reviewing several accident cases. They are filled with

re BAD!

statements such as “crew failed to scan,” “crew failed to detect hazards/obstacles,” or “crew failed to perform adequate crew coordination.” In fact, 61 percent of the investigations found human error to be the definite cause of the accident.

■ An OH-58D(I) was flying a search and rescue operation at night, over a river, and below published minimum altitudes when the pilots failed to detect wires that were known and depicted on the hazards map. The aircraft struck the wires and was totally destroyed. Both pilots were fatally injured.

■ An OH-58D(I) was flying a search and rescue operation at night, and again they were flying over a river. The crew failed to detect a suspended ferry cable and struck it, fatally injuring everyone on board. The investigation could find no evidence that the “known” hazard was passed to the incoming unit upon change of rotation.

■ A UH-60A struck wires while flying a day passenger drop-off mission. Flying below minimum published altitudes, the crew failed to use proper scanning techniques and was not using a wire hazards map. The aircraft was damaged extensively.

■ An AH-64A was flying a night reconnaissance mission below minimum published altitudes when the pilots failed to detect known wires. The aircraft was totally destroyed, and the crew suffered fatal injuries. The pilot was RL-3 and had not performed a local area orientation. The air mission commander in Chalk 2 did not attempt to correct the altitude of the accident pilot in command.

To support our human intervention to the fight, we have a proven ally with the Wire Strike Protection System (WSPS) on helicopters. Although the WSPS has proven very successful, its design is limited to frontal strikes on horizontal wires. The WSPS is designed to cut through 3/8-inch diameter wires with a minimum breaking strength of 11,500 pounds per inch at angles of 30 degrees. The system has demonstrated a significant reduction in wire strike damage and has saved many lives. Unfortunately, we sometimes encounter cable wires that exceed the limits of WSPS due to being grouped as clusters or those that are larger than 3/8 inch.

There are many published standards that control wire hazards. Each aircraft aircrew training manual (ATM), as either a 1000- or 2000-series task, prescribes standards for negotiating wire obstacles. Common to each ATM is the requirement to locate and estimate wire height, determine the best method to negotiate the obstacle, and then obstacle negotiation. Army Regulation 385-95 and Field Manual (FM) 3.04-300 mandate that the flight operations officer will ensure that a detailed hazards map is maintained as current with updated hazards. FM 3.04-300 also requires that this map be updated by the airfield operations officer every 30 days. Each organization must ensure that these duties and responsibilities are detailed in their standing operating procedure (SOP). Upon deployment, the SOP should be reviewed for validity. Also, it is incumbent upon the unit commander to establish procedures that ensure each aviator flies with current hazard information.

Wires are inanimate objects that indiscriminately await our inattention, neglect, and overconfidence. Wires don’t care about our experience level, or if we are deployed or in our backyard training areas. And they certainly don’t consider the human costs of an accident. They are just there and we need to stay focused on avoiding them. Yes, wire strikes are bad! The responsibility resides with each of us to remain vigilant, learn lessons from the past, and live to fight another day. ♦

—This article was written by CW4 Clark, CW3 Blelloch, CW3 Hauge, and CW3 Steffens as a class project while attending the Warrant Officer Advanced Course 04-505 at Fort Rucker, AL.

Trust Me, There's Fuel There

CW5 (Ret) Bill Ramsey
U.S. Army Safety Center

Stories, I am told, are to be shared so someone will learn from others' mistakes. I am not proud of what I did and I guess I could blame it on the weather, my copilot, or just bad timing. When I think about what almost happened to me, my thoughts always go back to what I did and didn't do.

It was 1990, and my unit had just deployed from Fort Bragg, NC, to Dhahran, Saudi Arabia. We'd trained our pilots in desert operations—day, night, and NVGs—in and around Dhahran and were settling in for a long wait. However, with more and more units arriving daily, space was at a premium. One day my commander said we were going to fly out to a town called Al Hasa to look at a brand-new commercial airfield that might be our new home.

I was the unit's standardization pilot and also combat-crewed with the commander, so I was tasked to plan the flight. We were to fly two OH-58D aircraft to Al Hasa, check out the airfield and surrounding area, and come back to Dhahran. Since the duration of the flight wouldn't allow us to fly out and back on one tank of fuel, I called Corps G3 Air to check if there was any fuel at Al Hasa. I had *heard* there was fuel there, but I wanted to make sure. I was ensured that, indeed, the airfield had fuel available. As I hung up the phone the last thing I heard was, "Trust me, there's fuel there!" My first big mistake was trusting that statement.

As we hovered out for takeoff, we received a radio call from operations. As any aviator knows, there is no such thing as a "routine mission." Now, instead of just checking out the airfield, we had to fly southwest of Dhahran to look for two drop tanks from a French Mirage jet. The jet had experienced an in-flight emergency and punched them off. The commander approved the mission change, and we took off for the reported drop area. Although we looked for almost an hour, we couldn't find the tanks. (We found out later they'd been painted a sand color. No wonder we couldn't find them!)

We then headed for Al Hasa and found the airfield with no problems. We landed and, as I was shutting down, I asked tower to send out the fuel truck. What I heard next gave me goose bumps. Tower reported they didn't have any fuel. How could a brand-new facility—in Saudi Arabia, of all places—have everything but fuel? There I was, in the middle of the desert with two combat killer aircraft and no fuel.

A check of the fuel gauge revealed I had 140 pounds of fuel remaining. The other aircraft had less than 90 pounds. Then matters got worse. The sheik who resided in that province—a cousin to the prince of Saudi Arabia—owned and ran the airport. He met us at the terminal door with a firm handshake and smiling face. He asked us where we came from and who told us we could land at the airfield. Why didn't someone—namely, G3 Air—let him know about us? Pictures of me looking out across the desert through prison bars flashed through my mind.

We finally convinced him we had permission to land there, and he even invited us into his office for tea. All I wanted to do was find some fuel and get out of there. Since our aircraft had 140 pounds of gas, I talked with the commander about launching it, climbing to altitude, and calling our tactical operations center (TOC) to have fuel brought out to us. This was my second big mistake. During the search for the drop tanks we were flying at 50 feet, talking with our TOC 120 kilometers away with the FM radio. We were a lot further than that now.

The commander didn't see a problem with my plan, so we preflighted and cranked the aircraft. To save time and fuel, I elected not to nav align our navigation system. This was my third big mistake.

We departed north over Al Hasa and turned east toward Dhahran. As we climbed through 1,000 feet, I called the TOC every 30 seconds until we reached 3,000 feet. We'd been airborne about 10 minutes—still unable to contact our TOC—when I noticed our ground speed had almost doubled. I'd planned that when the aircraft reached 100 pounds of fuel, we'd return to Al Hasa whether we'd made contact with the TOC or not. Well, there it was: 100 pounds. I turned back toward Al Hasa but, as we completed our 180-degree turn, I saw that a wall of dust had moved over the city and was now coming fast toward us. Those goose bumps I had earlier were back in full force!

I figured we were fighting a 40-knot headwind, and all I had to navigate with was the map on my lap. If you remember, I hadn't waited to align the aircraft's navigation system, so I had no waypoints to follow back to the airfield. I didn't think this was a problem, however.

We continued to fly slowly toward the city, with the fuel needle dropping steadily. An eternity later, we finally were over Al Hasa with 80 pounds of fuel. We were cutting it close, but we were almost there. On the map I found a highway that went around the city, which I spotted fairly quickly. The airport was south of the city, so if I just followed the highway, I'd be sure to find the airfield. By this time the fuel gage had passed 70 pounds.

"Just look for the next big intersection, take a left, and you're 5 minutes from the airfield," I told myself. Wishful thinking! As the dust storm was getting worse, I came upon a three-way intersection with two highways turning left and one going straight. The extra highway to the left was not on the map—which one was I supposed to take? By now we were down to 60 pounds of fuel.

I could've tried to land next to the highway, but how could I let the other aircraft know where I was? I could've contacted the tower, but I wouldn't be any help to them either. I figured my only option was to pray: "Lord, if you can get me to the airfield before the fuel runs out, I will never pull a stunt like this again." My hopes dashed, I happened to notice a small sign next to one of the highways—a sign with an airplane on it, pointing the way to the airfield!

We had 50 pounds of fuel. Tower gave us our runway and reported winds of 360 at 35 knots entering downwind. If I entered downwind and then turned right base, the fuel pump would cavitate and the engine would stop running…no, we needed a different runway. Tower agreed. We landed smoothly, but I used almost all 6,000 feet of runway to stop the aircraft. I didn't want to make any abrupt turns and slosh the fuel.

We landed with less than 40 pounds of fuel. I looked over at the commander, and he returned my look. We'd barely escaped death to fly another day.

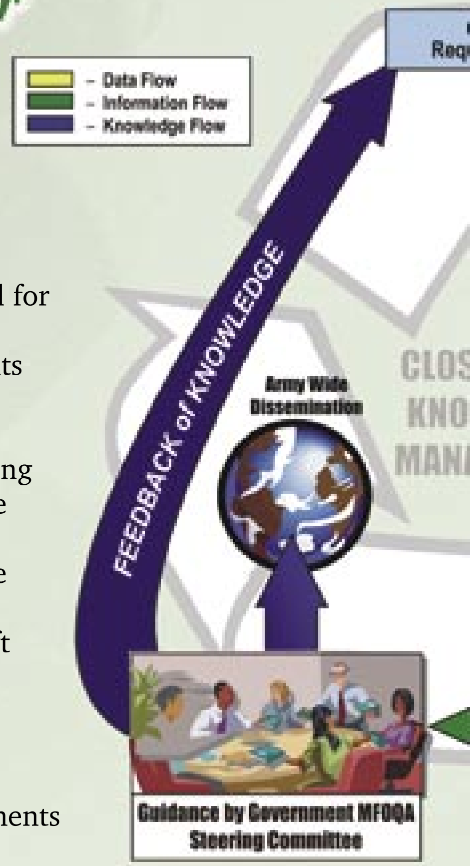
About an hour later we heard the sound of rotor blades to our southeast. There on short final were two Black Hawks carrying a fuel blivit and a FARP crew. We'd gotten through on the radio after all! The TOC had heard our first call requesting fuel and launched the Black Hawks to our location. For some reason we never received a radio reply. I didn't care—I was going back to Dhahran alive!

Situations can change very quickly. I thought there was nothing wrong with taking off for a 10-minute flight to make radio contact with the TOC. I also was frustrated that we were told there would be fuel at the airport when, in fact, there wasn't. Did this cloud our sense of *knowing* what was right and actually *doing* what was right? Changing situations affect how we process information and make decisions. If you could fly the same mission, what would you have done? Hindsight is always 20/20—trust me! ♦

—CW5 (Ret) Ramsey is an Aviation Systems Manager with the U.S. Army Safety Center, Fort Rucker, AL. He may be contacted at DSN 558-2932 (334-255-2932) or by e-mail at william.ramsey@safetycenter.army.mil.

Military Flight Operatio

Army Aviation Demonstration at Fort Rucker



The first question in your mind has to be, what is Military Flight Operations Quality Assurance (MFOQA)? Here's the short answer: MFOQA is the systematic collection and automated analysis of operational data from aircraft leading to continuous improvement in flight operations, training, maintenance, and safety (OTMS). It is a process that gives leaders and staff at all levels the knowledge necessary to anticipate problems, avoid costly surprises, and seize opportunities using the data recording capabilities that currently are embedded or may be installed in Army aircraft. Under the concept of MFOQA, data recorders may include flight data recorders, digital source collectors, health usage monitoring systems, and so forth.

In 2002, Fort Rucker's then-Commanding General, MG John Curran, recognized the potential of MFOQA to improve aviation readiness and reduce aviation accidents. He directed that a demonstration be conducted with the following objectives:

- Use recorded flight data to improve operations, training, maintenance, and safety.
- Identify resources and systems required to implement MFOQA across Army Aviation.
- Develop information flow from aircraft to all user levels.
- Define impacts on readiness.

Full support to the demonstration is being provided by the commanding generals of the U.S. Army Aviation and Missile Command (AMCOM); the Director of Army Safety; the U.S. Army Research Development and Engineering Command, Aviation Engineering Directorate; and Program Executive Office–Aviation. The MFOQA demonstration is conducted by an integrated team consisting of Army OTMS subject matter experts from throughout these organizations, with technical support and integration provided through contract with Westar. A steering committee, chaired by the Aviation Branch Safety Office and consisting of representatives of the above Army Aviation commanders, guides the program.

The benefits envisioned for Army MFOQA include:

- Prevention of accidents
- Improved cockpit discipline
- Improved flight training
- Reduced maintenance downtime
- Reduced maintenance test flight requirements
- Automation of aircraft records
- Improved aircraft operational readiness
- Identification of defective parts and components before failure
- Availability of timely after action reports, mission planning, and effective crew briefings

The MFOQA demonstration will use flight data recording devices existing in some school aircraft and will install "black boxes" in aircraft without current recorders, allowing for authentication of benefits derived from these devices to collect data that will be analyzed to influence OTMS. The initial demonstration will involve the following aviation school aircraft:

- AH-64D—10 each
- OH-58D—10 each
- CH-47D—5 each
- UH-60A—5 each

Army Aviation is not alone is developing MFOQA. In fact, evolution to the current MFOQA vision for Army Aviation began in the early 1960s with the installation of flight data recorders on British Airways aircraft to validate airworthiness criteria. Over the years, technological advances in data collection processes increased data availability

ons Quality Assurance

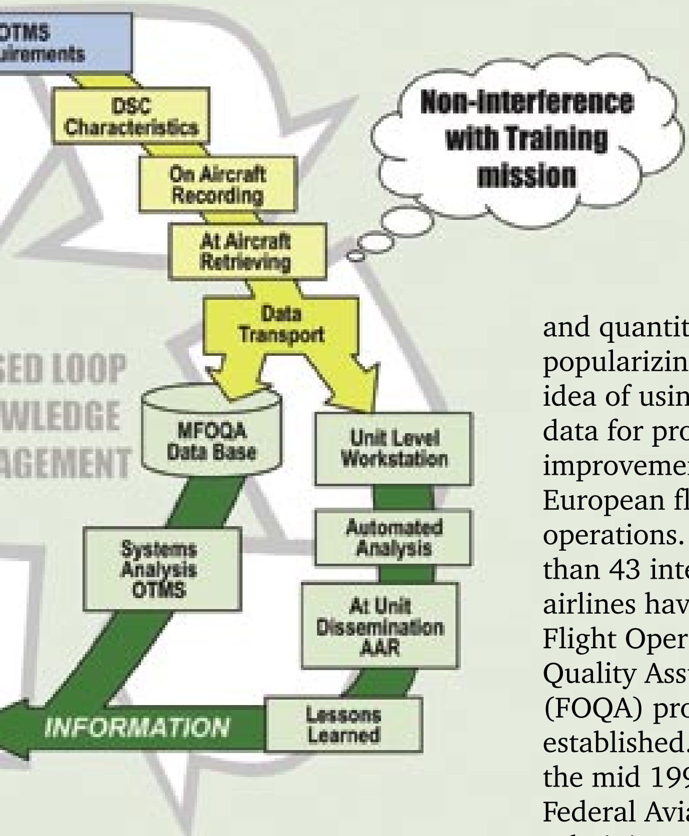


Figure 1. Overall MFOQA Process for Demonstration

and quantity, thus popularizing the idea of using the data for proactive improvements in European flight operations. More than 43 international airlines have Flight Operational Quality Assurance (FOQA) programs established. Since the mid 1990s, the Federal Aviation Administration (FAA) has encouraged U.S. airlines to establish similar programs. As a result, one regional and 12 major U.S. carriers have FAA-approved FOQA programs. In 2000 a Memorandum of Agreement between Army, Navy, Marine, Air Force, and Coast Guard safety chiefs endorsed pursuing military applications of FOQA to reap the proactive safety benefits being achieved in commercial aviation.

How will this demonstration be implemented? The overall process for conducting the demonstration is summarized in figure 1. The initial and most important point is to document and prioritize user information requirements. Using the digital source collectors available in the demonstration aircraft, data will be downloaded after each flight, run through a flight replay and analysis software program, and results fed back to instructor pilots, maintenance shops, and other Army end-users. Sample information screens from commercial off-the-shelf analysis programs are shown in figures 2 and 3. OTMS users will determine how well the results fulfill their requirements for information and prioritize additional capabilities needed. This provides a closed-loop "knowledge management" process that leverages technology to provide objective assessments to augment the aviation OTMS decisions that may be based today only upon subjective judgment and opinion.

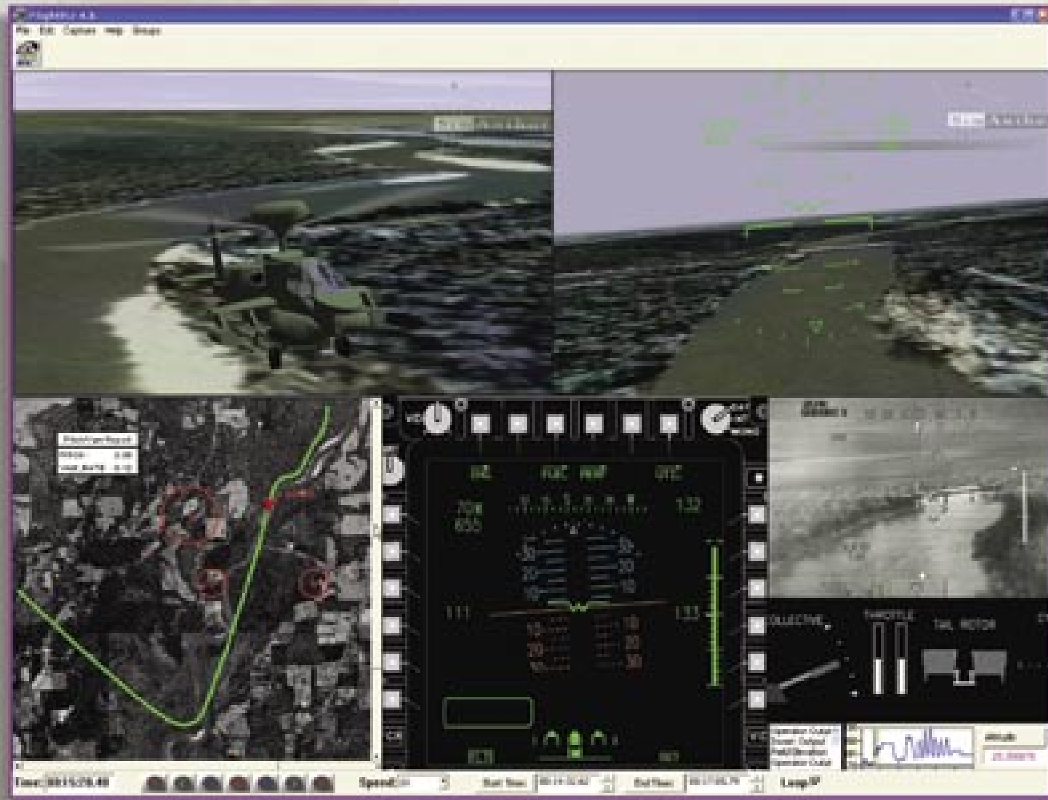
A support center will be established at Fort Rucker to complete the entire behind-the-scenes operations so users only have to concern themselves with what is happening at their MFOQA workstation. As users define changes in information requirements from the flight line, the support center will document information requirements, as well as make rapid configuration changes to meet those requirements. Changes that prove beneficial are kept; those that do not will be modified or removed as necessary to support users at the flight line.

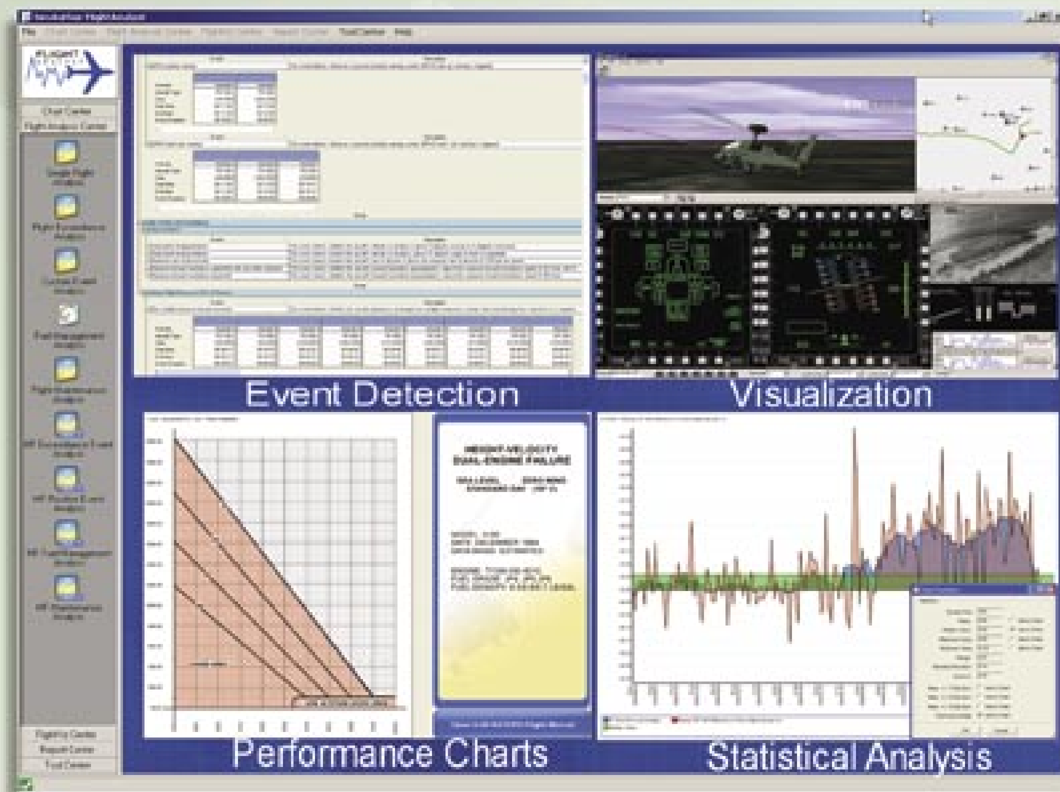
An after action review analyst will be on the flight line to assist instructors and operations personnel. Additionally, a maintenance analyst will interact with the Aviation Center Logistics Command representatives. The MFOQA Team will demonstrate long-range benefits of an Army Aviation MFOQA Program throughout all OTMS disciplines. Users will accomplish this in operations and training by using information downloaded from actual training flights to conduct debriefings, as well as pre-mission briefings, for individual and multi-aircraft flights. Users also can use collected information for crew coordination training and assess the degree to which pilots are actually conducting operations to the standards published in Army Aviation training manuals. In the area of maintenance, users in this discipline can review and check collected information for exceedances after each flight, thus eliminating those occurrences where pilots are not sure exactly how much a limit was exceeded or for how long.

Lastly, as we know for every Class A accident, there are hundreds of instances where pilots are seconds or inches away from yet another Class A. The information captured during this demonstration will be used in the safety discipline to evaluate trends for close calls to see if there are maneuvers that need to be conducted differently, and also will look at how close to the "edge of the envelope" we are flying. As the demonstration flights kick off, policies and procedures will be implemented that establish the intended access to and use of the resulting information, and protect against potential misuse.

In short, MFOQA will help bridge the experience gap by enabling junior leaders to make wiser, more informed decisions because of the ability to store, retrieve, and analyze data into understandable information that will give them the knowledge derived from virtually thousands of aircraft flight hours and experience.

The Fort Rucker MFOQA demonstration is the stepping stone that will bring an objective, analytical process to Army Aviation OTMS. In short, MFOQA will help bridge the experience gap by enabling junior leaders to make wiser, more informed decisions because of the ability to store, retrieve, and analyze data into understandable information that will give them the knowledge derived from virtually thousands of aircraft flight hours and experience.





Figures 2 and 3. Sample infomation screens

The MFOQA Team plans to provide periodic updates as the demonstration progresses. We welcome questions and comments from the field. Please contact Walt Garner, Chairperson, MFOQA Steering Committee, at DSN 558-1866 (334-255-1866) or via e-mail at garnerw@rucker.army.mil. ♦

Accident Briefs

Information based on preliminary reports of aircraft accidents

CH-47

D Model

■ **Class B:** A crewmember was struck by lightning while in the prone position on the aircraft cabin floor while observing a sling load through the aircraft's hook hole. No other details were provided.

MH-6

M Model

■ **Class C:** The crew detected noises coming from the aircraft's rear following a standard autorotation. The aircraft was landed off the runway and shut down. All six main rotor blades were damaged and the tail boom was dented, indicative of main rotor blade contact.

MH-60

K Model

■ **Class C:** Aircraft struck another aircraft on final approach for landing. The parked aircraft suffered damage to its tail rotor blades and main rotor head.

OH-58

D(R) Model

■ **Class B:** Aircraft's main rotor blades and mast assembly were damaged during a demonstrated autorotation with a 180-degree turn. Initial collective was applied at about 35 feet above ground level, and the instructor pilot (IP) aborted the autorotation. He then applied all remaining rotor RPM to arrest the descent. Upon touchdown, the IP perceived difficulty with lowering the collective and executed a precautionary landing.

■ **Class D:** Aircraft experienced a hard landing during termination of a manual throttle approach. The crew reduced the throttle with collective application at about 30 feet, causing a reduction of main rotor RPM. The aircraft's cross-tubes spread during the landing and were replaced.

UH-60

A Model

■ **Class A:** Aircraft crashed during air taxi from the passenger drop-off point to the refuel point. The tail section impacted initially, and the aircraft overturned and came to rest on its left side. All four crewmembers suffered injuries for which they were medically evacuated.

■ **Class A:** Aircraft crashed after experiencing low rotor RPM conditions as the crew was executing a turn. No other details were provided.

■ **Class B:** Aircraft struck a fence while taxiing. The tail rotor and gear box separated from the aircraft as a result of the impact.

■ **Class C:** Aircraft's main landing gear entered a 4-inch hole on a roll-out landing in dust conditions. No other details were provided.

L Model

■ Class A: Aircraft encountered brownout conditions and experienced a hard landing in an unimproved landing zone. No other details were provided.

■ Class C: The cockpit airbags deployed as the aircraft's right wheel touched the ground during landing. No other details were provided.

RQ-7

Shadow Model

■ **Class B:** Air vehicle crashed into a cement telephone pole while conducting a reconnaissance mission. The vehicle's engine rose to 8,020 RPM, causing the ground control station to malfunction. The ground crew deployed the vehicle's chute, but the vehicle struck the pole and disintegrated upon impact.

■ **Class B:** Air vehicle crashed on short final about 300 yards short of the approach end of the runway on private property. No other details were provided.

■ **Class B:** Air vehicle crashed after its engine failed during flight. No other details were provided.

■ **Class C:** Air vehicle's arresting gear strap failed during a normal landing with the Tactical Automated Landing System. The vehicle's mission payload was damaged.

■ **Class C:** Air vehicle crashed into trees after its engine failed during flight. No other details were provided.

■ **Class C:** Air vehicle crashed after experiencing a loss of engine RPM shortly after launch. Recovery attempts to maintain altitude and descent failed.

Editor's note: Information published in this section is based on preliminary mishap reports submitted by units and is subject to change. For more information on selected accident briefs, call DSN 558-9552 (334-255-9552) or DSN 558-3410 (334-255-3410).


Wire strikes are UNFORGIVING!
Are YOUR hazard maps current?
- Pre-mission planning of AO
- Speed control
- Adhere to established minimum en route altitude
- Ensure hazard maps are current