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AVIATION DIGEST

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SPECIAL ISSUE

A field perspective of safety at work

PROFESSIONAL BULLETIN

1-89-2 • February 1989

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COVER: This month the *Aviation Digest* presents a field perspective of safety at work. The cover photo shows a modified UH-1 belonging to the opposing force (OPFOR) made up of American soldiers trained to fight as a Soviet motorized rifle regiment at the National Training Center, Fort Irwin, CA.

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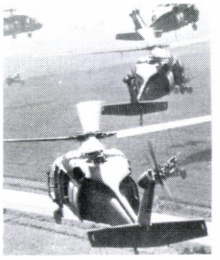

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Major General Ellis D. Parker
Commander
U.S. Army Aviation Center

Patricia S. Kitchell
Editor

By order of the Secretary of the Army:
Carl E. Vuono
General, U.S. Army
Chief of Staff

Official:
William J. Meehan II
Brigadier General, U.S. Army
The Adjutant General

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U.S. ARMY SAFETY CENTER

Acknowledgment

We would like to acknowledge the people who directly assisted in setting up visits to aviation units and interviews with people who contributed to this special issue.

Fort Campbell, KY. CPT Russell James, Public Affairs Office, 101st Airborne Division; CW3 Danny Moore, Assistant Aviation Safety Officer, 101st Airborne Division; and CW2 Francisco Cristobal, Aviation Safety Officer, 6-101st Aviation Regiment.

Fort Stewart, GA. Mr. James Hardbeck, Aviation Safety Office, Hunter Army Airfield.

Fort Riley, KS. CW4 Bill King, Aviation Safety Officer, 1st Infantry Division (Mech).

Fort Bragg, NC. Mr. Ralph Stone, Chief, Aviation Safety, XVIII Airborne Corps and Fort Bragg; CW4 Donnie Ditty, Standardization Officer and CW3 Tommie Conary, Aviation Safety Officer, 82d Airborne Division.

National Training Center, Fort Irwin, CA. CW3 Doyle Wootten, Aviation Safety Officer, NTC.

We would also like to express appreciation to all the people—commanders, staff officers, pilots, noncommissioned officers, enlisted personnel, and safety and standardization people, military and civilian—in the headquarters, in aviation units, in the hangars, on the flight line, and in the field, who took time to talk to us about how they plan their operations and fly their missions, how they maintain their aircraft, and above all, how they make safety a part of everything they do.

MAJOR GENERAL ELLIS D. PARKER

Chief, Army Aviation Branch

We've learned our lessons well

AFTER MORE THAN 30 years in Army aviation, I know that our job has become tougher. I know that your everyday training takes place in high-risk environments that are made even more hazardous by the dark of night. But recognizing that we can't afford to give the night to our enemy, that's a fact of life for Army aviation.

It's a fact of life that requires us, more than ever before, to perform to standard—to standards that have been developed in many cases from lessons learned the hard way.

We've learned our lessons well, and we're flying safer than ever, even in the face of increasing mission demands that have placed tougher requirements on top of already tough requirements.

Many of you share your experiences in this special issue. And although you have different missions, different aircraft, and different operating environments, the common thread tying you together is that you operate by the book. You know the standards. You follow the standards. You enforce the standards.

Our job at the aviation school is to produce Army aviators who are technically and tactically well grounded. We look to units to make them proficient. This special issue makes it abundantly clear that you are doing exactly that. And our record for fiscal 88 shows that you're doing it with a high priority on safety.

I acknowledge and applaud your accomplishments and contributions. But even with the safety gains we have made, we cannot afford to rest on our laurels. The challenges facing us will grow as our mission demands continue to increase while we train for peak readiness in new aircraft systems. I ask that you keep up your good work so that we may continue to increase our warfighting capability as we build on our past safety successes. ■

BRIGADIER GENERAL MARVIN E. MITCHINER, JR.

Director of Army Safety and
Commander, U.S. Army Safety Center

Sharing some of the good things

IN THE SAFETY BUSINESS, we spend a lot of time and use a lot of ink talking about things done wrong. When General Parker asked us to do this special safety issue of the *Aviation Digest,* we decided to turn that around and look at some of the many things folks in the field are doing right.

To do this, we visited field units. The units you'll read about in these pages were not necessarily selected because they have the best safety records in the Army, or the most hazardous missions, or the highest-caliber maintenance personnel. The major reason they were selected is that, together, they represent a cross section of Forces Command (FORSCOM) units.

We chose to visit FORSCOM units for basically one reason. They own most of our aircraft, so they go a long way toward determining not only the Army's aviation safety record but its aviation readiness.

Fiscal 88 was the safest year in the history of Army aviation. The record-setting rate of 1.84 Class A accidents per 100,000 flying hours is the lowest rate ever recorded. And our Class A through C rate of 4.82 was also a record low.

We achieved this record while flying increasingly more demanding missions and high-risk night tactical operations. Credit must go to leaders who managed the increased risks that go along with our more demanding missions, to aviation personnel who performed to standard both in the cockpit and on the flight line, and to aviation safety officers who supported their commanders with strong safety programs.

You'll read about some of those programs in this special issue. These are by no means all the good units and all the good programs in the army. But they are some of the best. And it is our hope that sharing their programs, their experiences, and their ideas will make other good units and other good programs even better. ■

Soldiers equipped for combat training at the NTC. If a soldier is "killed," the multiple integrated laser system (MILES) he is wearing sounds an alarm, and he's out of the battle. But on this high-tech battlefield, he learns from his mistakes and lives to fight again.

Nothing is simulated. If you run out of fuel, you park your vehicles. If you run out of food, you go hungry . . .

The only thing missing in this war is the bullets

UNITS ROTATING to the National Training Center (NTC) find the closest thing to real war they have ever faced. There is a real enemy. The soldiers of the opposing force look like, think like, and fight like the best motorized rifle regiment in the Soviet army. These Americans in Soviet uniforms use tactics right out of captured manuals, and their tanks, vehicles, and aircraft have been modified to replicate those used by Soviet army units. They also have another advantage—they're the home team; they fight in this terrain more than 200 days out of the year, and they mean to win.

The only thing missing in this war is the bullets. Everything else is the real thing—all the stresses of battle are there.

The front line

"Observer-controllers assist rotational units in determining how well they're training," says CW3 Doyle Wootten, NTC aviation safety officer. These observer-controllers (OCs) have no aircraft of their own. They fly with the rotational unit, in its aircraft, and by its SOPs. "They try to remain in the background and let people make their own mistakes as much as possible; you might say they're very heavy on the observing and light on the controlling," Wootten adds.

AH-1 belonging to Task Force Falcon on approach to Area Bravo at the NTC.

Because the OCs are with the rotational units every day, they are able to spot things nobody else could. By helping to identify a potential problem early, they can assist the unit in resolving the problem almost before it begins. Large problems, such as those involving airspace, are taken to the NTC aviation safety officer.

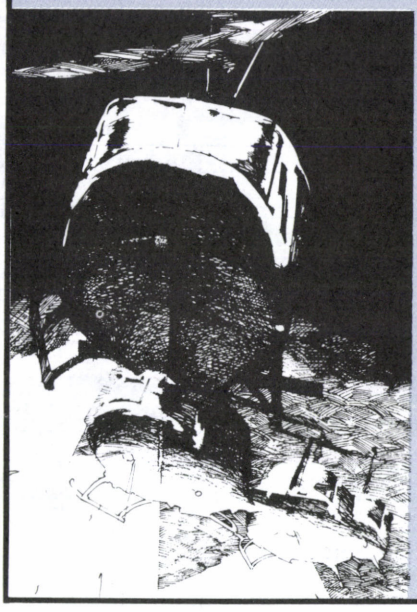
Getting ready

As much as 6 months before an aviation unit is scheduled to rotate to the NTC, they receive a rotational safety officer packet, which includes NTC Regulation 95-1, the base document for flying at the NTC, as well as illumination data, NTC procedures, and other safety information.

Before the unit arrives, the NTC aviation safety officer has analyzed the unit's mishap history to identify possible problems or weak spots. As soon as the unit arrives, aviators receive a comprehensive safety briefing covering such things as airspace, accident history, weather data, and basic procedures within the NTC. The briefing also covers environmental factors: winds, dust, lack of visual cues—all with special emphasis on night flying in the desert.

NTC and rotational units flew nearly 25,000 hours last year under some of the most challenging conditions anywhere. And they did it without a single Class A or B accident—and only one Class C.

NTC train-up



Before rotating to the NTC, elements of Fort Stewart's 24th Infantry Division undergo an intense 2- to 3-week train-up period. During the final 10 days of this period, the aviation units train even closer than normal with the infantry brigade, providing support and developing close working relationships with the ground units. This provides the aviation units an opportunity to be in on the planning stages for operations as well as giving pilots practice in flying the different types of missions they will fly at the NTC.

While it is impossible to simulate the environmental conditions that exist at the NTC—rugged desert and mountainous terrain—sharing of experience by aviators who have been on previous rotations or who have experience in mountain flying in Korea and Honduras is an important part of this train-up period.

This period is also an education process and provides aviation units an opportunity to let ground commanders know during the planning stages of the operations some of the effects the environment can have on the capabilities and limitations of their aircraft. This can help avoid placing a pilot in a position later of having to say that a mission can't be flown safely.

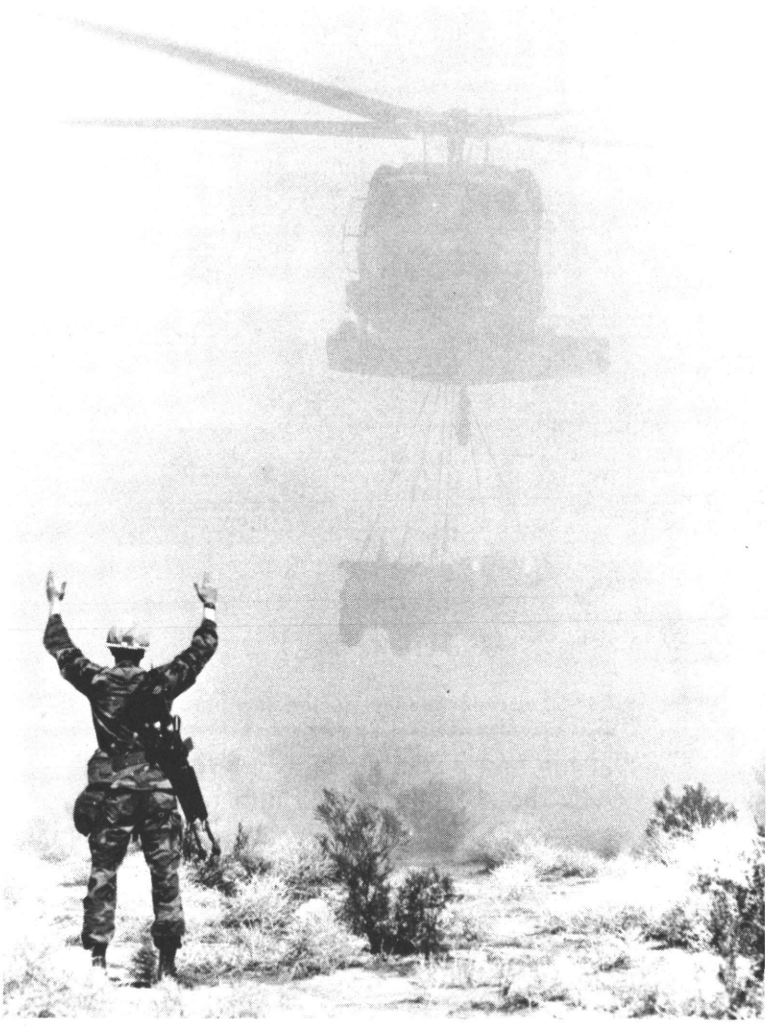
There is no way to adequately prepare an aviator for what he will encounter the first time he flies in the desert at night. The total absence of light from towns; lack of visual references such as trees, automobiles, houses, roads or anything else to provide a clue about relative size; and lack of contrast make it extremely difficult to fly goggles.

When aviators try to fly with pink light filters, the goggles are ineffective outside the narrow beams they get with this filter, and their field of vision is narrowed to a few degrees. Aviators who come to the NTC must be proficient in NVGs, not just qualified.

Not only does safety begin long before a unit comes to the NTC and continue throughout the rotation, it is a large part of what happens after the guns are silenced and the dust has settled.

OCs are constantly on the lookout in player units for ways to make the operations safer. For example: What did you notice about flying at night or operating in the FARP (forward area refueling point)? This is part of every briefing, and it almost always brings out safety tips that other units can use.

A commander on a first rotation with his unit at the NTC faces a real challenge. If he fights his unit better than the enemy, he wins; if he doesn't, he loses. And there's a real psychological impact that goes with losing. However, there are no real losers at the NTC because of the opportunity to learn from mistakes and live to fight again.



A UH-60 is almost invisible in the dust from its own rotorwash as it follows signals from a ground guide during slingload operations.

Lessons learned

Within as little as 4 hours after a battle is fought, a specially equipped van can deliver to commanders in the field a review of the battle. Through the use of audio, video, and computer graphics, participants are able to see the whole picture of what they were doing and what the enemy was doing. Leaders can analyze the results of their actions—both good and bad—and develop approaches to improvements before the next battle.

In addition, a take-home package is provided that will allow a commander to review what his unit did and integrate the NTC training feedback into the training plan

OH-58 approaches tactical landing site at the NTC.

at his home station. Not only can he see what he did that caused him to win or lose the battle, he can see what he did that might have gotten his people killed.

Not only are rotational units provided with a lessons-learned packet from their training at the NTC, people at the NTC are constantly learning how to do their jobs better and make the training they provide safer.

The outbriefing held after every one of the 14 annual rotations is a lessons-learned, no-holds-barred type of meeting chaired by the commanding general of the NTC. Everybody from the NTC who had anything to do with the rotation is there, including the aviation safety officers. They roll up their sleeves and call a spade a spade as they look at any trends that have been identified and figure out what needs to be changed and how.

For example, in spite of the vast size of the NTC and its excellent aviation safety record, airspace is an issue constantly being worked, particularly NVG airspace. Is everything covered? Is there enough control? Is there too much control? The program is constantly being upgraded.

A few words to the wise

CW3 Doyle Wootten, NTC aviation safety officer, offers these safety tips to units planning rotations to the NTC:

- Aviators who come to the NTC must be proficient in NVGs, not just qualified.
- Virtually every approach at the NTC is a brownout. Therefore, concentrate on dust-landing type training to prepare for brownout situations.
- Pair experienced pilots who have operated in a desert environment with inexperienced pilots who have not.
- Aircrews must understand turbulence and the Venturi effect.
- Stress the importance of performance planning and how quickly information can change during the course of a mission.
- Don't bring sick aircraft to the NTC; they'll for sure get sicker.
- Compressor stalls, high oil temps, and low pressures are commonplace at the NTC. Fix everything in your fleet.
- Keep windscreens clean to help reduce glare.
- Aircrews should review the March 1987 *PS Magazine* article "How to Fight Back at the NTC" for valuable lessons learned in the areas of preventive maintenance.
- Units should train up in accordance with FORSCOM/TRADOC Supplement 1 to AR 385-95 to prepare for desert/mountain flying.

The first 10 missions

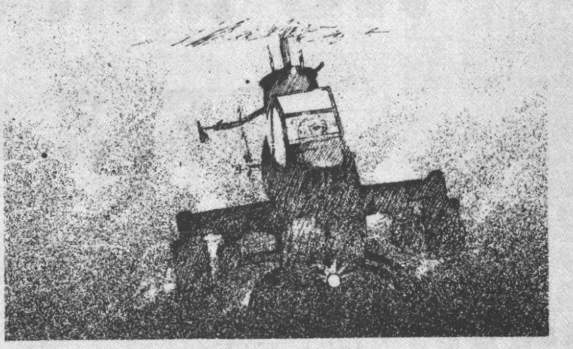
Years ago, the U.S. Air Force determined that if a combat pilot could survive his first 10 missions, he probably could survive the war, so they said, "Let's get rid of his first 10 missions in peacetime, under the most realistic conditions possible by creating all the same stresses that cause him to get killed in a real war in the first 10 missions." It worked. And that's what the U.S. Army's National Training Center is all about.

"There was an accident in my unit in March of 87, but since then we've flown over 6,000 accident-free hours in some of the harshest conditions you can find anywhere. We did it by flying by the standards, and everybody had a part in enforcing those standards."

If a soldier gets "killed" 14 times while he's at the NTC, that learning process can help keep him alive in the next war. But to make that succeed, safety has to be integrated into everything he does from the time he arrives, throughout the training cycle, and until he departs back to his home unit.

That is the other part of what the NTC is all about. ■

A cockpit view of the NTC



The pilots of C Company, 1-4th Aviation Regiment, Fort Carson, know the NTC well; they go there regularly. In fact, as much as 70 percent of their flying is done there, and they know how tough it is. According to them, the NTC presents some unique challenges:

- "The sand and dust cause a lot of problems. The sand literally eats up the blades, especially the ones made of fiberglass. You can just about shave with the trailing edge of a Cobra's tail rotor by the end of a rotation."
- "Another thing is the winds. They come up suddenly over this rough terrain, and that causes a lot of turbulence. We can't fly in some kinds of turbulence."
- "It's really dark in this place at night, even with goggles. And there's no vegetation or anything to show contrast. So you can't tell, especially under goggles, how high you are. You're out there flying around at night, and the mountains come up out of nowhere. There's no sloping up and then sloping down; you're in a valley, and then there's a mountain. It's unpredictable terrain."
- "The training here at the NTC is as realistic as we hope most of us will ever see. Somebody can shoot you down, and you're out of the battle—but you don't die. It teaches you there's an enemy out there, and that plays on your mind. It's tough at the NTC, but it's good training."

"We don't use safety as a crutch"

"WE USE SAFETY to force us to have tough training. You have to be safe if you want to train that way." So says LTC Thomas Hayes, commander of the 1-4th Aviation Regiment at Fort Carson. His aviation units spend more time flying at the National Training Center (NTC) at Fort Irwin than they do at Fort Carson. Every time units from the 4th Infantry Division go to the NTC, these aviators go with them.

They were there with Task Force Falcon in November 1988; for some of them, it was the third rotation in less than 6 months.

Measuring the risks

When a mission comes down for aviation support, the first thing they do is a risk assessment. The result may be, "Yes, we can accomplish that mission," but LTC Hayes makes the final decision, and he may say, "No, it's not worth the risk."

At Carson, CW4 Bob Coder is the aviation safety officer for the 1-4th Aviation Regiment, but at the NTC he was the safety officer for the entire task force. "We don't look at safety as a hindrance to accomplishing the mission. Everybody in the Army, especially in aviation, is mission oriented. If you go out and try to accomplish the mission regardless of what it takes, regardless of safety considerations, you'll probably complete the mission for a while. But if you keep doing it, you're going to break your equipment and kill your people. If you look at safety as a means to accomplish the mission, you're going to be able to continue fighting the war day after day because you'll have the people and assets to do it.

"In the heat of battle, with the opposing force screaming across the desert at you, you want to get in there and kill the bad guys. Everybody gets caught up in the mission and wants to do as well as they possibly can, and sometimes somebody has to say 'Whoa, wait a minute.' It may be the line pilots, or it may be yourself; it's up to each individual to be a safety officer. You have to look around and see what's happening with the people you're responsible for, and responsible to, and if somebody gets to the point where they're heading toward being unsafe, it's the responsibility of every individual to say, 'Wait a minute. Let's look at a better way of doing this.' You're not saying that the mission can't be

done; you're offering alternatives—ways it can be done without getting anybody hurt.

Building in safety

"Safety starts months before the unit comes to the NTC. It's part of the planning. For instance, crew endurance. As we go through the milestones, checking all the things we need to do—When do we pack the tents? When do we load the trains? When do the aircraft depart?—we're also looking at crew endurance. Days before we depart, everybody is really working hard to get all the last-minute things done, and no matter how good you are or how often you do it, something happens—maybe an aircraft breaks and you've got to get 10 people in to work on it because it's got to launch the next day. So those people have been working for 5 or 6 days solid by the time you get to the NTC, and they need a day off.

Brownout is a possibility during every takeoff and landing at the NTC.

"So you start out with one-seventh of your people off on Day 1 and another one-seventh on Day 2. You can have 100-percent of your assets in the battle all the time. You'll never have to say, 'We've got this big battle right now and we can't launch the aircraft because I didn't give anybody a day off this week.' You plan ahead so that doesn't happen.

Crew rest

"You've got to remember your nonflying crewmembers too. If I had to choose, I'd much rather have a rested crew chief than a rested copilot. The reason is, the crew chief is out there by himself repairing the aircraft. Sure the TI (technical inspector) checks it, but he may be just as tired as the crew chief, and if something is missed, people are going to die. So, when there's a day that you don't have a battle—it may be only the fifth day in the work cycle for the crew chief—you may want to give him the day off so you can start his cycle all over again. You don't go into a battle with your armament systems unprepared; for the same reason, you don't want to go into battle without a plan for crew rest.

"Everything we do in the Army is simple if you think a little bit before you do it, and that's true of safety too. Take crew selection. If you've got a guy who's got 3,000 hours as an Army pilot, but he's never been to the NTC, you don't put him with a copilot who has only one rotation here. Instead, you put him with someone who has had three rotations at the NTC so he can learn everything that's different about desert flying. So you think ahead and plan what you need to do."■

Good aviators know what they and their aircraft can do. If the mission briefed is beyond their capability, they say so.

Go or no-go

Somebody's got to make a decision

ARMY AVIATION is mission-oriented, and Army aviators want to fly missions. The difference between success and failure is often simply a matter of making smart decisions about mission risks. Smart commanders don't commit their aviators to fly missions where the risks are too great, and smart aviators don't attempt to fly missions that exceed their abilities or their aircraft's capabilities.

"Our commanders ensure that we stay within our own personal operational envelope, not just the envelope of the aircraft."

"Safety starts long before an aircraft ever leaves the ground. If you try to put safety into it after you've taken off, it won't work," says COL Dennis Kerr, commander of the Aviation Brigade of the 82d Airborne Division at Fort Bragg. He makes the final go/no-go decision after all the mission risks have been assessed. And if the decision is no-go, he takes the heat—not the pilots in the cockpit.

All the risks have to be considered before AH-64s take off on missions such as escorting UH-60s loaded with troops under blackout conditions.

"Safety also starts with the premission briefing. Our commanders ensure that we stay within our own personal operational envelope, not just the envelope of the aircraft. And people aren't afraid to make a decision on whether they or the aircraft have the capability to do what we want them to do. If they can't do it, for whatever the reason, they'll say so."

Key players

In COL Kerr's brigade, it isn't just the captains, the majors, and the colonels that

Slingloading is a high-risk operation, particularly at night, and no two missions are exactly alike. This UH-60 is slingloading a HMMWV.

are involved in decision making. The senior warrant officers and safety officers are key players when a mission is analyzed. Everybody gets a chance to speak his piece, knowing that what he says will be considered before a decision is made. They look at the pros and cons of the mission—what it will accomplish as opposed to the risks. The mission gets a high priority, but not to the extent that they will attempt to complete it no matter what the cost.

"Everybody gets a chance to speak his piece, knowing that what he says will be considered before a decision is made."

The same is true in Fort Campbell's 101st Airborne Division (Air Assault). "There is nothing we do in peacetime, no mission that is critical enough that we should put a commander, a pilot, a crew chief, or a soldier in a position where he has to make a judgment about whether it's safe to do it. If he has a doubt that it's safe, then he shouldn't do it—period," says LTC John Harris, assistant aviation officer.

"I think in this division if you had a commander that somebody went to and said, 'Sir, this is too high-risk for me. I don't feel comfortable doing it, I think it's unsafe,' and the commander told him to do it anyway, he wouldn't be a commander in the 101st much longer."

Nonrated personnel also have input into the decision making process. "We've

got some nonrated people here at Fort Campbell with a lot of savvy about aviation. It's not uncommon to hear them say, 'Hey, we can't do that; we don't have enough illumination' or 'That LZ's not big enough.' When you have that kind of understanding, you're not going to have somebody telling an aviator he *will* do something he thinks is unsafe."

A tool for doing the mission

COL Robert E. Oakley, Jr., who commands the Aviation Brigade at Hunter Army Airfield, GA, believes that safety can enhance the way we fly our missions.

"Safety becomes just another tool you use when you analyze the mission to figure out what the risks are and determine whether the mission is worthwhile in the face of those risks. If you do a risk assessment right, it can help you accomplish the mission better and more efficiently."

He also believes that recognizing our limitations is key to smart decision making. "I believe that if we ever get so we think we know how to do it perfectly we'll have more problems. When you're not so sure of yourself, you don't become complacent, and you end up just being better. When you recognize there's a lot you don't know and that there are some problems with the experience level of some of your aviators and mechanics, and you recognize these as potential safety hazards, then you can deal with them effectively. It's when we start taking things for granted that we start getting into trouble."

Supporting a division involves moving a lot of equipment. To crews who fly these CH-47s, it's all in a day's work.

These Army leaders have at least two things in common: they listen to their people and they make smart risk decisions. ■

Quotable quote

"Every night when other people are in bed, there's an aviator flying with NVGs with a maximum gross slingload or 12 infantry soldiers on board, flying at treetop level at 80 or 100 knots, in a very high-risk environment. And he's doing it safely. Nobody's supervising him after the briefing; it's him doing it. That's absolute professionalism."

"We never compromise the cockpit"

CPT MICHELLE SKOMAS is a platoon leader and line pilot in Delta Company, Aviation Brigade, Hunter Army Airfield, GA. This unit has deployed to Honduras three times, and CPT Skomas was with them on two of those deployments. She takes pride in her platoon's crew integration. Some of the older pilots are good at training new pilots even though they may not be IPs; others aren't, so she keeps that in mind when she assigns missions.

"Once you're in the cockpit, rank isn't important. What matters is who has the most experience. For example, when a pilot gets into weather, he can get pretty rattled in the first few minutes. When you're transitioning, your whole frame of reference has suddenly gone topsy-turvy, and it takes another pair of eyes and another mind to help you out. That's one reason good crew coordination is so important, and that's what we have in this platoon."

People make it happen

When asked why D Company has a good safety record, CPT Skomas replied, "It's the people. The commander can influence it, but it's individuals who make it happen. It's the same in my platoon. It wouldn't matter how good I was if I didn't have good people. I'm at a low level, right down where it gets done or doesn't get done. When I look a guy in the eye and say, 'Can you fly this?' and he says 'No,' I'll turn to the guy above me and say 'No.' I'm not afraid to say no and I know my pilots aren't afraid to tell me the truth.

"That's what I expect from my pilots. When you're flying an aircraft, every living soul on board is your responsibility. If a pilot thinks he can't do it—maybe he's tired—I expect him to speak up and I'll get somebody else.

"Once you're in the cockpit, rank isn't important. What matters is who has the most experience."

"That's my personal philosophy, and I think it goes for everyone in this company. Quite a few of us are right at the 1,000-hour mark now, and at some time during those 1,000 hours we've been in situations where we thought we weren't going to make it. This changes your attitude. You stop being so gung-ho and you think, 'Now, I really don't need to do that.' I think we have a lot of people with that kind of common sense who'll say, 'How can we make sure we do this safely?' And they'll do it that way."

Everybody listens

CPT Skomas believes in listening to her people. "If anybody in this platoon feels uncomfortable about something we're doing, they'll say so. And I'll listen. If I'm out of the net, the next guy steps in. And while he doesn't have the most flight time in the world, if someone says, 'Sir, I think we ought to do it this way,' he'll listen. A lot of listening goes on in this platoon."

MG H. G. Taylor, commanding general of the 24th Infantry Division, also believes in the importance of listening. He makes it clear that he wants an honest dialogue with the aircrews that support his division. If the pilots feel uncomfortable about flying a mission, he expects them to say so. This open approach permeates the aviation units.

There are inescapable risks in flying a gunship like these Cobras during combat. If we accept unnecessary risks during training, these aircraft and their crews might not make it to the battlefield.

Commanders listen to their safety officers and pilots, and pilots listen to their copilots and crew chiefs. They all have a stake in flying the mission safely, and they aren't afraid to speak up.

Compromise is out of the question

CPT(P) Fred Edwards, commander of C Company, 3/159th Assault Helicopter Battalion, NTC, says, "In the crew selection business, we're always correcting ourselves and trying to raise our standards.

"When we get a mission, we look at the type of mission it is, then we match the more experienced with the less experienced pilots. We'll have the guys who are very experienced do the difficult missions, and the less experienced people we'll put on the easier missions. And we generally give the new PICs the better copilots until their proficiency and confidence are up.

"We never compromise the cockpit. We'll make sure we've got the best mix." ■

Black Hawks moving M105 howitzers and gun crews during REFORGER 88. This REFORGER involved nearly three times the number of American soldiers as the previous year and was the largest and, from an exposure standpoint, the safest REFORGER ever conducted.

REFORGER op order

"Bring everybody home!"

THAT WAS THE op order from the very first planning meeting for Fort Riley troops going to REFORGER 88. "Bring everybody home" was the order as they went from the plains of Kansas to Texas to Belgium to Germany and back again on a grueling mission that tested both men and materiel to the limit. And they carried out the op order; they returned with all their people and all their aircraft without a single fatality and without seriously damaging any of their equipment.

COL Lon E. Maggart, Fort Riley's Chief of Staff, attributes this success to three factors: a good plan, good leadership, and good execution.

The plan

Planning for REFORGER 88 began at least 18 months before deployment. A special REFORGER Planning Group focused attention and emphasis on the dangerous environment, not just for aviators but for all the participants. According to COL Maggart, "The plan focused on safety and those things you have to do to be safe."

The leadership

"Obviously, no number of safety officers or slogans or coffee cups or all of those things take the place of a concerned chain of command. Individual commanders were the guys in charge of making things safe over there. They were the safety officers for the outfit. They took responsibility for making sure their units operated safely, and they made sure their subordinates did the same."

They carried out the op order; they returned with all their people and all their aircraft without a single fatality and without seriously damaging any of their aircraft.

The execution

"We executed our plan in a very focused, precise way. We took little pieces of the pie—we looked at the deployment over as one little piece; the equipment draw was another little piece; deployment to the tactical area was another little piece; and so on."

Doing that made a very long exercise manageable. "Command focus and breaking that long period into little pieces allow you to be safe on a day-to-day basis. And then before you know it, you have safety through the whole period. And I think that's what happened. We took each piece at a time, and we talked about how we were going to execute that piece. And included in that were some very specific things about safety. Then we finished that, did a little wrap-up, a little after action review, and then we went on to the next one."

When soldiers are asking who's in command, mishaps will probably occur.

Command and control

COL Billy G. Murphy, commander of the Aviation Brigade, 1st Infantry Division, believes in the importance of command and control. "When someone is in absolute command and control, it is extremely seldom that we have mishaps," said COL Murphy. "It's when nobody's in command or nobody's in control that accidents happen."

When the unit, which supports the 1st ID, is at home, command and control is very high. The commander is where he needs to be and all the soldiers are where they belong. The organization is totally together. In an exercise as large as REFORGER, soldiers and equipment are deployed in many different areas at once. Cohesion decreases. Absolute command and control begins to waver; commanders are spread thin.

According to COL Murphy, when command appears fuzzy and soldiers are

With a UH-60 in the foreground, tracked vehicles move across the German countryside during REFORGER 88.

asking who's in command, mishaps will probably occur. That applies right down the ranks.

"I say, 'First sergeants, there's a place for you to be that is righter than all other places. You evaluate. You make the risk assessment.' We talk about it a great deal. We make leaders go through the thought process of determining where they should be at a given time. There's a logic associated with that.

"Hope is not an alternative to safe operations. You do not 'hope' soldiers are in position. You don't 'hope' 60 aircraft get safely to Belgium and Germany and back. You cause that to happen. If you're in command and control of every situation, you don't have to 'hope' anything's in place."■

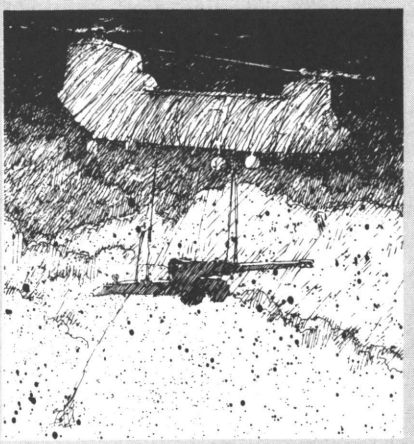
Building a better mousetrap

Aviation people in the field frequently come up with a way to build a better mousetrap. Here are some examples that have proved to be better than "the way we've always done it."

Slingloading operations

Artillery pieces were designed to be towed on the ground. Rigging an artillery piece to be moved by a CH-47 is challenging at any time. Trying to rig one at night under NVGs is like "taking a course in advanced basket weaving with a blindfold on," says CW4 Earle Irwin, assistant aviation safety officer for the 101st Airborne Division. "In the first place, there is a lot of apprehension when a gun crew hears a 50,000-pound helicopter hovering over their heads in the dark."

In the 101st, they have come up with a 5-foot-long pendant made of Kevlar that has a plastic sleeve on it. Now, instead of a rigger trying to hold a 40- to 50-pound chain rig to do a hookup, he has a lightweight plastic pintle that he puts right over the hook. Because of the plastic, the danger from static electricity has also been eliminated. Not only are the riggers safer, the aircrew is safer because of the lessened exposure time that the aircraft has to hover in an LZ at night with the possibility of blowing dust and the hover becoming unstable.



Better command and control

COL Dennis Kerr, commander of the Aviation Brigade, 82d Airborne Division, Fort Bragg, made an important organizational change in the 2-82d Brigade that impacts on the safety of every soldier in the Division. This assault battalion, which is responsible for transporting troops in its UH-60s, was formerly organized as two companies, leaving a gaping hole in command and control between the captain company commanders and the brigade.

COL Kerr restructured these units into a provisional battalion with a lieutenant colonel in command, providing the experience of a battalion-level staff for planning and conducting operations.

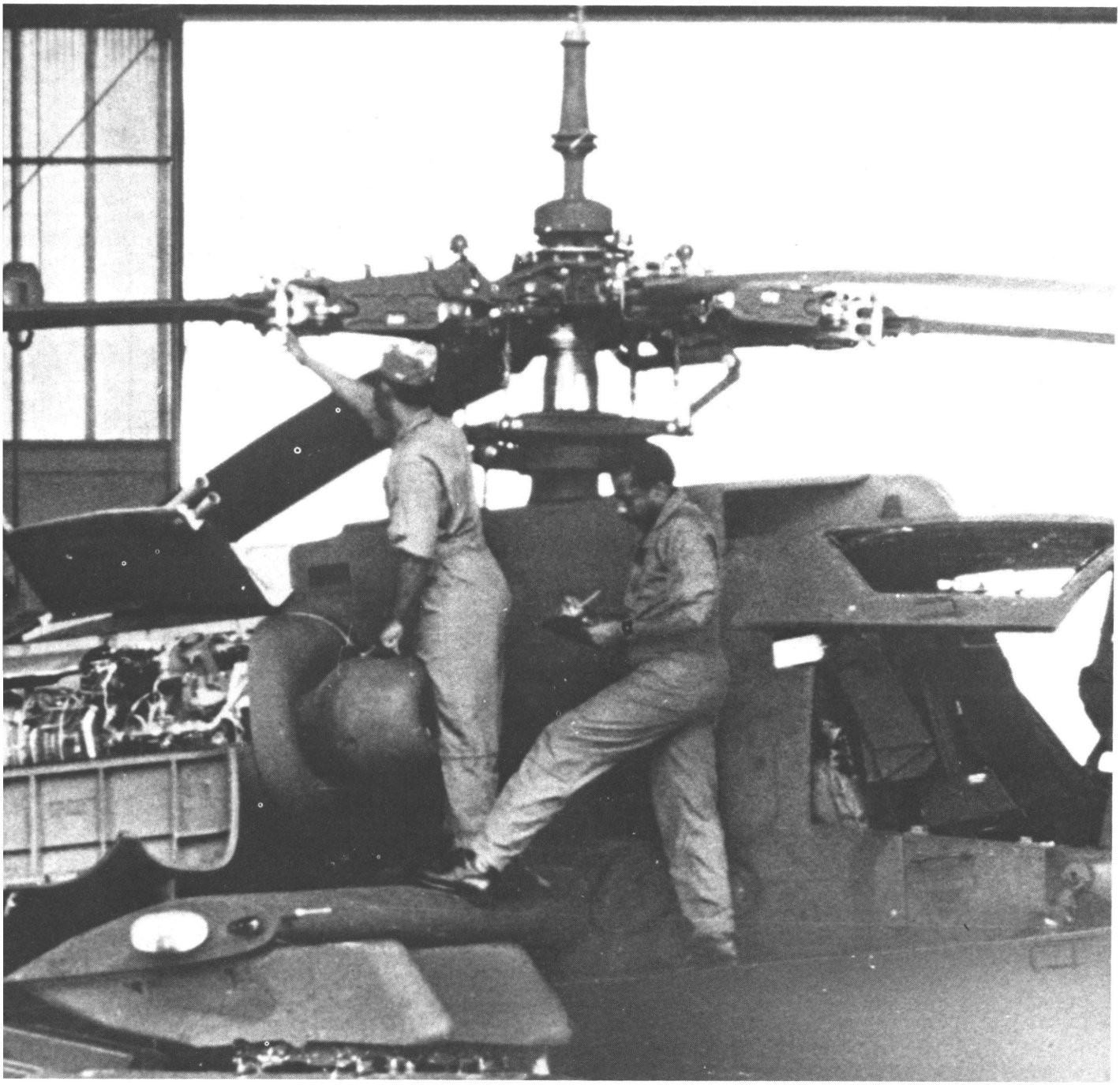
UH-60 crew requirements

All the UH-60s in the Aviation Brigade at Fort Bragg carry a fourth crewmember. And all the crewmembers, including the enlisted personnel, are trained in and equipped with night vision goggles.

Individual skills training

At Fort Riley, the Aviation Brigade devotes Wednesday mornings to focusing on the individual skills of crewmembers—mechanics and pilots. According to LTC Albert Patterson, XO of the Aviation Brigade, "It's taking it out of our hide to provide that period of time, but it's well worth it."

MAINTENANCE



Today's sophisticated aircraft and demanding missions make maintenance more critical than ever before. By-the-book maintenance performed by disciplined, professional mechanics and a system of checks and balances that involves mechanics, inspectors, crew chiefs and aviators help ensure safety and mission completion.

If it isn't safe, it doesn't fly

COL DENNIS KERR, commander of the aviation brigade of the 82d Airborne Division at Fort Bragg, believes safety starts with the crew chiefs and technical inspectors. "If the aircraft isn't mechanically safe to fly, we don't fly."

In 2-82d Aviation Brigade, SFC Ken Gregory, a technical inspector in the D Company quality control office, is often the guy who makes that decision. "In aviation you must work as a team. You can't work as individuals. The only exception is me, quality control. I can make the commander mad, I can make the PIC mad, and I can make the crew chief mad. Why? Because I have to make sure the aircraft is safe. If I don't feel it's safe, it ain't going anywhere.

"People have to understand that if an airplane's going to take 5 hours to fix, it's going to take 5 hours to fix. We can't cut it to 3 1/2 hours because doing that may mean it will make it only half way through the mission."

Another thing SFC Gregory stresses is the importance of quality rest for maintenance people. "Rest is just as important for the guys on the flightline as it is for the guys in the cockpit. But mechanics may work until 10 o'clock at night and then have to be back in there at 6 o'clock the next morning. After 4 or 5 days, the mechanic gets in a forgetful mode. Instead of putting the O-ring in, he just slaps the piece together and tightens it down and forgets to tell so-and-so that he needs to come check it."

Maintenance crews and crewchiefs work long hours under tough conditions, but from all indications, they do it willingly. Why? Because they are respected members of the team . . . and they know it.

LTC Albert Brocious is commander of the 6-101st Aviation Regiment, 101st Airborne Division at Fort Campbell. His emphasis on individual and collective self-discipline and safety extends to the quality control program

Boresighting weapons system on an AH-64.

and the maintenance people in the hangars. It includes how they take care of aircraft by monitoring time change of aircraft components, how they do phase maintenance, and how they account for their tools. It so permeates what they do that when soldiers in Delta Company, the maintenance company, were asked how the battalion could better accomplish their mission, maintain aircraft, and other ways to ensure safety, they decided one way was to extend their workday. They felt they could be more productive during nonduty hours when there would be fewer interruptions.

"Interruptions will kill you, because that's when a tool gets lost somewhere in the aircraft," LTC Brocious said. "Soldiers have good ideas, and if you can just let them know they're important and their ideas are going to be listened to, they'll come up with some good suggestions.

"It's the soldiers and NCOs who are doing it. It was their idea to work until 2100 at night. It's not me, and it's not their company commander telling them to do it. If an aircraft part comes in on a Friday, they may work on the weekend, but it's their idea to do that. They know we'll take care of them with time off, but they're taking care of their company, their aircraft. They're demonstrating their pride by trying to make it a better unit by being available when the parts are available."

CPT Douglas Noble, who commands Delta Company, is proud of the fact that his mechanics have shortened the time it takes to do a 150-hour phase inspection on an aircraft from the 14 days required by the brigade to 4 days. These are the soldiers who decided on their own that by extending their workday into the evening hours when there are fewer distractions they could

produce safer aircraft. The fact that they are safety oriented is apparent in the way their work areas look. The ramp and hangar floor are clean, and there are no tools lying around or overflowing FOD cans. Fire points are well marked, and safety posters call attention to possible hazards.

In Delta Company, quality control is separated from production, which makes it easier for technical inspectors to make unbiased determinations on whether an aircraft is safe and flyable. The operational readiness rate in the company averages more than 85 percent over a 12-month period, 10 percent above the Army standard.

SSG Robert Wall, safety NCO for B Company, 6-101st Aviation Regiment, says, "Safety is something we have to deal with every day. One way we've done it is by having crew chiefs help each other. Another thing is the checks and rechecks we do before an aircraft takes off. A mechanic works on the aircraft, the quality control people check it and sign it off, then the crew chief does the daily, and the pilot preflights the aircraft. These checks and balances are what makes sure the aircraft is all right when it takes off."

You never know where the safety officer for B Company is going to turn up with his camera. CW2 Steven Murphy carries his camera with him. If he sees people doing

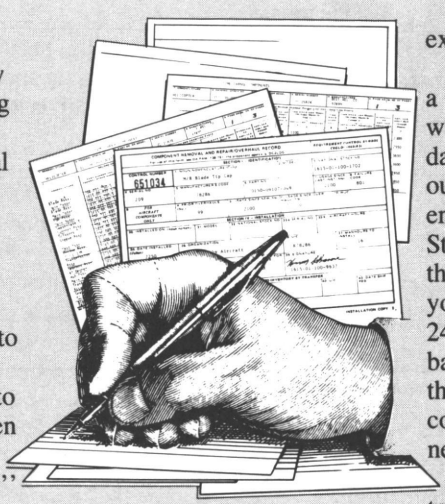
The aviation version of the CPA

Records.

Paperwork.

You wouldn't believe just how much of it is involved in keeping Army aircraft in the sky. Listen to SFC Ken Gregory, a technical inspector in the quality control office of D Company, 2-82d Aviation Brigade at Fort Bragg.

"When you change a component, you've got to make out a whole new set of records to reinstall that component. Once you've taken it off, you've got to fill out all those forms, and when you put it back in you've got to figure out the replacement time."



Sound easy enough? Read on.

"Now, if that component has already had time put on it from another aircraft, and they've pulled it off and fixed it—not repaired it, just fixed it so they could use it on another aircraft—or overhauled it, you've got to know how many hours since it was new, how many hours since it was overhauled, and figure out when that item has to be pulled off that aircraft again.

"And that's for each internal item and the component."

Confused yet? Here's an example.

"Say you pull an engine; that's a 2410. The components that go with it will be listed on a dash-16, so you take that dash-16 out and make out a 2410 for that engine. A copy of that is sent to St. Louis and a copy goes with the engine—the new engine—then you also have to log it on your 2410 log. Then you have to go back through and refigure all these times for the internal components in this engine for the new one.

"You're looking at about 2½ to 3 hours of paperwork—just paperwork—for changing out an engine."

Records.

Paperwork.

Attention to detail.

All in a day's work for the guys that keep 'em flying.

something wrong or tools scattered around, he snaps a picture. That picture will appear on the wall. It points a finger straight at the person who did it.

At Fort Campbell, when an aircraft comes in from a mission, the pilots stay with the crew chief while he takes care of the aircraft. This is a big safety factor. For instance, if a crew chief slipped and fell while working on an aircraft on the flight line in the winter, he could die of exposure before anybody found him.

In the Aviation Brigade at Hunter Army Airfield, GA, a great deal of the credit for

UH-60 undergoes 100-hour phase maintenance.

accomplishing their missions safely is given to the maintenance crews and crew chiefs. It isn't a them-us relationship, particularly when the units are deployed or out in the field. They become close-knit into almost a family relationship, and some of the formalities go out the window. Aircrewmembers know their safety—in fact, their very lives—depend on each other. That puts everything into perspective. ■

Maintenance and ground support safety

The following safety areas are singled out for emphasis in the aviation brigade of the 82d Airborne Division:

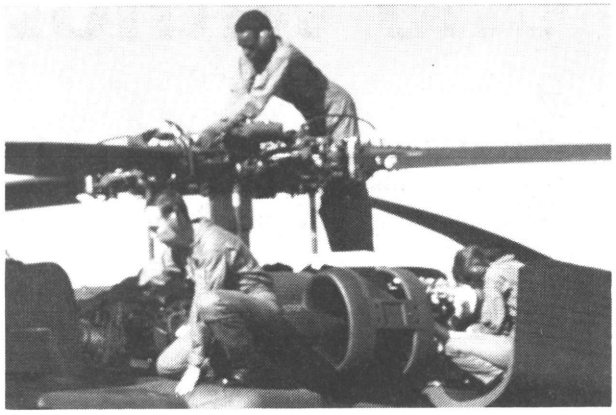
- Simplified procedures. Because of the complexities of using different manuals for a job such as cleaning the inside of an engine, one of the unit maintenance officers and a battalion safety officer came up with a checklist for mechanics to follow. A recommended change to the manual has been submitted through official channels.
- Quality control. Because of the importance of quality control, the unit has begun providing classes for new maintenance personnel on the purpose of the QDR (quality deficiency report) and how it should be filled out and submitted.
- Refueling. Refuelers are reminded of the importance of venting fuel tanks on the Apache to avoid the danger of being sprayed by fuel from the pressurized tank when the flapper valve is opened for open-port refueling. They are also cautioned that hangups in the stop valves and failure of switches to close can result in overpressurization of the AH-64's fuel tanks.

"One quality required in aviation is honesty"

"YOU HAVE TO BE willing to admit there is human error, that we all make mistakes," says SFC Ken Gregory, technical inspector at Fort Bragg. "The command environment has to be such that we don't burn a kid for doing that. If he made an honest mistake and he was trying his best and he had a human shortcoming, we have to account for that. We have to repair whatever he damages and go on.

"If a guy makes a mistake and he's honest enough to say, 'Hey, Sarge, I broke this. I didn't mean to, but it happened,' we shouldn't give him an Article 15 or make him pay for it. In the first place the kid doesn't have enough money to pay for it, so why take his paycheck. If you do, he's going to say, 'I'm not going to tell nobody nothing no more.'

"Maybe he just bent a tail stinger, which is no biggy. He was moving the aircraft back and bent it to the side a little bit. The next thing you know he hides where a nut fell down inside the engine. He doesn't tell me. I do my FOD engine inspection, but it's hidden up underneath the blade. I can't see it. We go out, punch the trigger, the nut is wedged in there, and everything goes good on the ground. We take it to 1,000 feet and that nut comes loose and goes through the engine. The engine just lost all its performance. It still runs, but it's not giving you any power.



Maintenance crew checks out main rotor and flight controls on a Black Hawk.

"Here you are. The kid has now caused a major accident because he didn't tell anyone he dropped a nut. The bottom line is, he has to be honest.

"Instead of burning the guy, make him the safety guy that day. After you teach him, have him sit there and overwatch the other guys. He sits out there and he makes a list of how many things go wrong. That builds safety-mindedness. It will build integrity and honesty, and I'd say honesty and safety work hand in hand.

"The kids need to be taught when they first come that it's okay to let somebody know when they screw up, that nobody's out to burn them because they make a mistake. That's human error, but as long as it's caught on the ground before we get in the air, we're okay. We can fix that. We can't fix an accident." ■

Safety and standardization

You can't have one without the other

"SOMETIMES we talk about safety and standardization like they're two separate entities," says CW4 Joel Warhurst, an SIP in 6th Battalion, 101st Airborne Division. "Actually, if I'm doing something safely, I'm doing it in a standardized manner. If I do it to our standards, then we have already determined that is the safe way to do it. I don't think you can ever separate the two.

"This battalion's mission is probably more diverse than some of the other units in the 101st. We might be flying an IFR mission in FAA airspace one day and a tactical mission the next. We might be doing a paradrop or a rappelling mission for the air assault school. So you get a wide range of ATM tasks, but you don't get them every week. That means you have to be selective to train and maintain your aviators' qualifications.

"I don't think a day goes by that our IPs, IFEs, and UTs are not just talking safety but applying safe practices to everything we do. And we do that by teaching standardization. That goes back to the fact that the two are inseparable.

"Flying a mission is complex. If you looked at every regulation, manual, or book that tells you how to do a certain mission, you might find as many as 400 of them have something to say about how to do it. It takes special people—the safety officer, the standardization officer, and IPs—getting together to pull all that information together into an SOP so that an aviator has one document instead of 400 to tell him what he needs to know about flying the mission. And 99.99 percent of the time, he does the mission safely and in a standardized manner.

"Another important aspect of standardization is teaching. No matter how detailed an SOP is, there is always the little bit that isn't there and the 'reasonable man' concept takes effect. Because of a pilot's knowledge, what he does in such cases is almost always the right thing to do. That is

why we continually teach aviators to be independent thinkers and to never stop reading and studying.

IPs are teachers first

"In some units an IP is only an evaluator. That isn't true in this unit, and it should not be in any unit. The IP is a teacher first—somewhere down the line he becomes an evaluator. If we can make this the way a unit thinks, it will spill over more and more and PICs will be teachers. They won't go out and try to do it all themselves. They will teach new aviators because they know more. It goes back to being standardized. I have the knowledge, and if I know it, I can apply it. If I don't know it, I'm certainly not going to apply it very well. If you take away the apprehension about 'How do I do this mission?' by giving the pilot knowledge, he can concentrate on actually manipulating the controls and executing the mission, and he will do it safely.

"There's probably not an aviator in the Army who has not done one dumb thing. If he's honest with himself, every aviator knows he has done at least one dumb thing. An aviator wants to know his aircraft and what its limitations are. What I try to tell them is that it's a lot more difficult to, for example, do a VMC approach properly, by ATM standards, which might say plus or minus 10 degrees on heading, and not change the heading even 1 degree—to not just meet the standard but to exceed the standard—than it is to go out and fly under a bridge. So if you want to try something really difficult, something unusual, try to not just meet the standard, but maximize the standard. So we challenge them to use their energy trying to do something that is 100 percent by the standard."

Soldiers with combat equipment perform static line parachute drop from UH-60.

Enforcing standards

CW3 Doyle Wootten, aviation safety officer at the National Training Center, also believes that safety and standardization are synonymous. "If you get out of the habit of thinking of safety as an add-on thing, if you perform to the standard, safety's there."

CPT(P) Fred Edwards, commander of C Company, 3/159th Assault Helicopter Battalion, NTC, modifies standards to meet his mission. Then he enforces the standards. "I ensure the standards are enforced by those people involved. If the standards aren't enforced, then that's where you get involved. And I very rarely have to get involved in that respect.

"Standards and safety have got to work together. And that comes down to discipline, crew discipline. We have to practice that. Enforce it. If you have the standards but don't enforce them, then there's going to be no safety.

"If you perform any task in the Army to standard, safety is inherently built into that task. When we do our missions to standard, safety falls into place. I can't see anything easier or simpler than that. If you don't do something to standard, then you've increased your risk of having an accident."■

Check your unit

DES checks reveal safety weaknesses

AN ARMY POST on a growing spree began having airspace accidents during night vision goggle (NVG) missions. Pilots weren't seeing each other, but the airspace hadn't changed in years. Inspectors from the Directorate of Evaluation and Standardization (DES) at Fort Rucker found what had changed was the ground space; specifically, what was on the ground.

Army housing had sprung up, lighting previously dark areas. Somehow, during the growth spurt, limitations regarding the use of NVGs in lighted areas had been overlooked. The lights from the housing area were degrading the goggles' effectiveness or causing them to malfunction. Aircraft met in midair collisions because their pilots couldn't see each other.

Since the new quarters couldn't be moved easily, the fix DES recommended was rerouting the flight corridors.

Any aviator in the Army should be able to wear any goggles at any post or installation.

Recent Armywide standardization inspections have revealed deficiencies in several safety-critical areas.

• **NVGs are being modified improperly.** For a period of time there was no strict standardization of modifications for pilots and maintenance personnel to follow. Modifications were different from post to post and even from aviator to aviator. In one midair collision, four NVGs were in use, and they were modified three different ways. Although the modifications did not cause that particular accident, it was an indication of a problem in standardization. Modifications had gotten so diverse that an aviator might not be able to wear goggles on his helmet even though they had been modified in his own unit. The actual modification kits are very specific on the approved modification. Once night vision goggles are modified appropriately, any aviator in the Army should be able to wear any goggles at any post or installation.

• **Airframe modifications** are also being made inappropriately. Some units have no

written standards, so their aviators end up taping over lights and removing modifications that are already in place. It takes a lot of hours to modify an aircraft properly. The Black Hawk, for instance, requires more than a thousand man-hours if it has not been modified for NVGs at the factory. But there is a standard for modifying the airframes for flying NVG missions. If this standard cannot be met because of time versus mission requirements, commanders are authorized to allow interim modifications. However, these measures must be in writing. This provides every pilot in the unit with a written standard for flying night vision missions.

• **Unwritten standards** affect training as well. DES inspectors found an exceptional program where the entire training doctrine was a product of institutional knowledge shared by three aviators. A move, serious illness or death of one of the participants would have seriously handicapped a very good program. With the help of a DES team member, they were able to create a written standing operating procedure (SOP) immediately, and flying hours were never affected.

• **Another problem** inspectors find is in command knowledge and management and implementation of the aircrew training program (ATP), to include enlisted ATP. Each unit must have a Flight Crew Qualification and Selection Program. This program must include qualification, selection and evaluation methods for all crewmember positions for which an aircrew training manual (ATM) exists. If a crewmember position, such as a crew chief or medic, does not have an ATM, development of a crew qualification and selection program is highly encouraged. ■

"We include safety where it belongs"

CW4 Donnie Ditty, standardization officer for the Aviation Brigade, 82d Airborne Division, sums up the necessity for safety and standards:

"We've taken the vertical dimension away. We're all down about 5 to 20 feet off the ground doing what we have to do. There's always the chance that somebody might nail you, or that you might cut right through the middle of a UH-60 that's flying around with its lights off. The chance always exists that it can happen."

It is because of the reality that what they do is inherently dangerous that members of the 82d Airborne Division have integrated safety into every operation and every mission, before an aircraft ever leaves the ground.

"We integrate safety into everything we do," says safety officer CW4 Jim Crow of the 1-82d, the attack battalion. "We include safety where it belongs—in our SOPs, not hidden away somewhere in a safety annex. Safety and standards get involved up front, in the planning stages of our op plan, before it goes out to the companies and some line pilot says, 'Wait a minute. What about VHIRP, or what about the conversion routes?' If you let things get too far down the road toward execution and then try to make changes, you create confusion, and that affects the safety of the whole operation."

Army aviation has come a long way since the days of the H-23. The Army is training tougher and safer than ever before while operating sophisticated aircraft in a high-risk environment.

During the early days of Army aviation, everyone knew there were accidents, but no one really knew how many, what kind, or what to do about them.

My, how time flies when you're making progress

IN A LITTLE MORE than 3 years, we will celebrate the 50th birthday of Army aviation. While the Army owned and flew aircraft from 1909 through the early days of World War II, it was not until June 6, 1942, that Army aviation was born at Fort Sill, Oklahoma. This was the date the War Department approved organic aviation for the Field Artillery—the date now officially recognized as the birthday of Army aviation.

Army aviation has come a long way in this almost half-century—from flying L-2s, -3s, and -4s to flying UH-60s and AH-64s today.

The flight safety program has also come a long way since those early days of Army aviation. In 1955, when the Army Aviation Center was established and Camp Rucker was designated Fort Rucker, the Department of the Army learned of Army aircraft accidents through the newspapers. Everyone knew there were accidents, but no one really knew how many, what kind, or what to do about them.

During those early days of Army aviation, accident reports were usually only brief descriptions of what happened, with little or no thought given to why pilots erred. Arbitrary punitive measures applied in many cases failed to correct accident causes, but they *were* successful in restricting operations.

In 1958, the Army's aircraft accident rate was 54.3 major accidents per 100,000 flying hours. In FY 1988, that rate was 1.84—the lowest rate in the history of Army aviation.

In 1956, the University of Southern California began its first Army course in aviation safety for key staff officers, aviation unit commanders, and installation safety

Before installation of the crash resistant fuel system, fire was the biggest killer in Army helicopter accidents.

directors. As graduates of the course took their places in the field, a constant improvement in aircraft accident investigation and reporting was noted, as well as a magnified interest in aircraft accident prevention.

A three-man accident review board that had been at Fort Sill was moved to Fort Rucker with the Aviation School in 1954. The Review Board was renamed the U.S. Army Board for Aviation Accident Research (USABAAR) in 1957. That first year, the Board produced nine design criteria for application to future aircraft and initiated actions on several engineering changes in aircraft. Board studies also evolved many changes in operating techniques and practices.

Over the years, USABAAR (redesignated the U.S. Army Safety Center in 1978) initiated and sponsored numerous projects, including fire retardant flight clothing and protective helmets, survival kits, chip detector warning lights, spectrometric oil analysis, crashworthy fuel cells, crashworthy seats for gunners, wire strike protection systems, and flight data recorders.

Before installation of the crash resistant fuel system and the conscientious wearing of Nomex flight suits and gloves, leather boots, and helmets, fire was the biggest killer in Army helicopter accidents. Studies covering the period July 1957 through June 1963 showed that fire accounted for nearly two-thirds of all aircraft accident fatalities. Another study reported 123 fatalities due to burns in FYs 1967 through 1969. By FYs 1973 and 1974—after installation of the crash resistant fuel systems—thermal injuries had declined to zero.

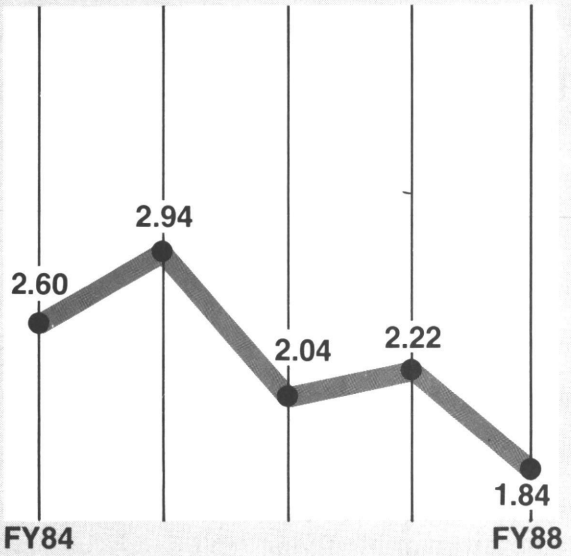
In 1958, the Army's aircraft accident rate was 54.3 major accidents per 100,000 flying hours. Thirty years later, the Class A accident rate was 1.84—the lowest rate in the history of Army aviation—quite an improvement. And nobody has to tell you there are a lot more risks involved in flying today than there were in 1958—more demanding missions and high-risk night tactical operations, where a single performance error greatly increases the probability of a major accident.

Today, safety does not restrict mission accomplishment but, rather, enhances it. Accident research continues to determine cause factors and recommend actions that will increase the reliability and warfighting capability of Army aviation. Commanders are training tougher than ever before and doing it safer than ever before. ■

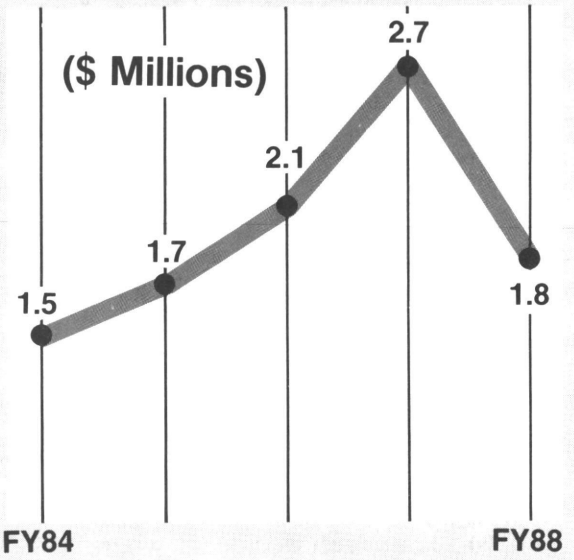
Aviation snapshot

A look at statistics that tell a story

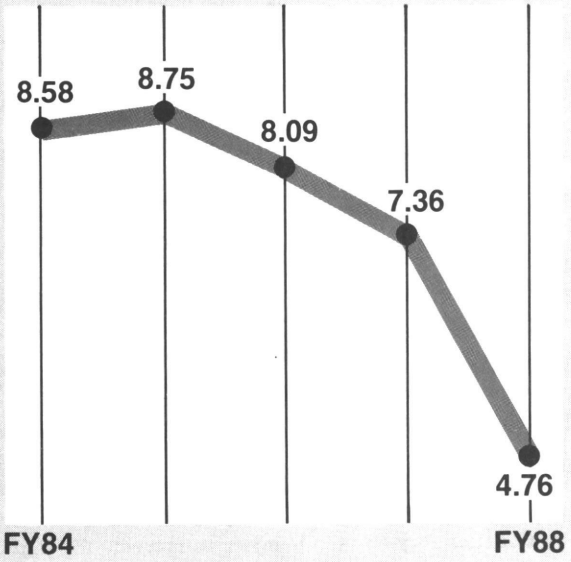
Class A Accident Rate



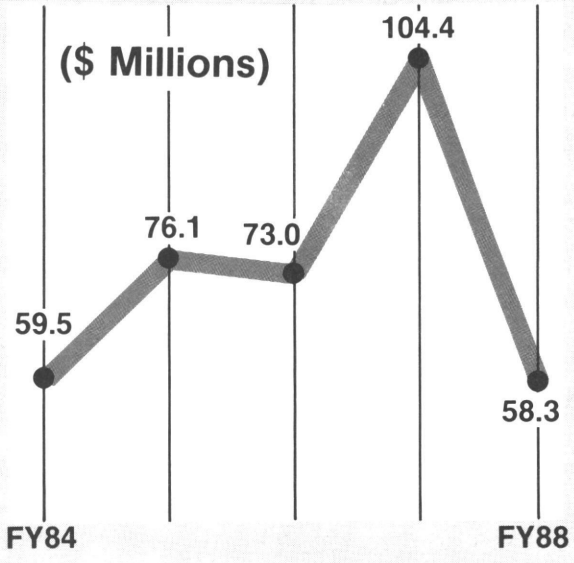
Average Cost of Class A



Class A-C Accident Rate



Aircraft Accident Cost



Data as of 20 Dec 88

Flight data recorders are paying off

LIKE R2D2 AND 3CPO, the friendly Star Wars robots, flight data recorders (FDRs) provide electronic assistance to their human cohorts. FDRs, however, go one step further. They have unmeasured potential for making the skies safer.

It's a fact that, in the last 15 years, unsolved mysteries cost the Army nearly $208 million for aircraft accidents where a cause could not be determined. The advent of sophisticated, high-tech equipment—helicopters with hybrid flight controls and flight control computers—brought with it the need for more than traditional investigative techniques.

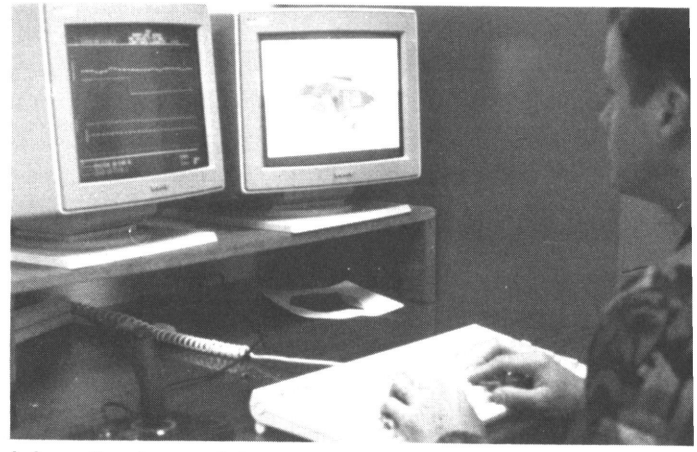
Chief of Staff directed

Several unsolved Class A Black Hawk accidents were cause for concern and, in March 1986, the Army Chief of Staff directed the immediate installation of FDRs in UH-60s flying high-risk missions. The program has seen about 200 FDRs installed in high-risk-mission UH-60s at Fort Rucker, Fort Bragg, and Fort Campbell.

Development and procurement of an improved solid state FDR for the AH-64 and UH-60 was also directed. This program is ongoing, with installation to begin in mid 1989.

In the beginning, the FDR was seen only as a tool for improved accident investigation. But while it has proved to be just that, the FDR can also be a valuable diagnostic tool for pilots as well. If a pilot perceives a problem such as stabilator failure, the data in the FDR can be unloaded and analyzed to tell the pilot whether the problem was in the aircraft or in his flying technique.

To date, information has been received and analyzed from three accidents and one incident involving aircraft equipped with



Information from a fight data recorder is being converted into computer-generated imagery to recreate the flight profile of an accident aircraft.

FDRs. The data has been invaluable.

A good example is the case of the UH-60 involved in a midair collision with another Army aircraft. There were no survivors to provide clues to the cause. However, the Black Hawk's FDR had withstood the impact forces of the crash and the 1100-degree heat of the postcrash fire. Information from the recorder was converted into computer-generated imagery that recreated in real time the flight profile of the accident aircraft. The data showed that no maneuver had been made to avoid the collision, indicating that the UH-60 pilot never saw the other aircraft. After plotting the flight paths of the two aircraft and studying the relative angles of each aircraft, investigators determined that the crews could not have seen each other.

In another recent accident involving an aircraft equipped with an FDR, data was analyzed and converted to computer-generated imagery within 15 minutes of the time it was received. The FDR functioned during the entire accident sequence, and it clearly depicted the cockpit instrument displays.

More than an investigation tool

Future use of FDRs involves fully exploiting the potential of the FDR in areas other than investigation. For example, in the area of maintenance, the FDR can provide information on system malfunctions. The FDR can give duration, speeds, temperatures and other information needed to improve aircraft maintenance.

The future FDR will also capture aircraft system "exceedances" and provide a warning flag that a malfunction has occurred. The aircraft would then be grounded until corrective action is taken. FDRs will also provide "predictive" maintenance capabilities by warning when major components need to be replaced.

Improved pilot training

The FDR will also be valuable in improving pilot training. With factual emergency profiles provided by the FDR, the effectiveness of training and emergency procedures can be evaluated. The FDR can drive a motion simulator, making it possible to "fly" through the accident sequence in order to refine emergency procedures and provide countermeasures against future similar accidents.

The payoff from FDRs is not only more accurate accident investigations, but better training and procedures, improved maintenance, and greater safety.

When fully developed, FDRs can also provide the information needed to improve individual aviator skills and unit training. Using information provided by the FDR, postflight evaluation and desk-side debriefs will be possible immediately. A system being developed is personal-computer-based and fully transportable down to the unit level. A pilot will be able to plan the mission, fly the mission, then return to a desk and re-fly the mission and do a personal evaluation. The postflight analysis can be used in future preflight briefings as well.

The payoff from FDRs will not only be more accurate accident investigations, but better training and procedures, improved maintenance, and greater safety. And greater safety means more warfighting capability. ■

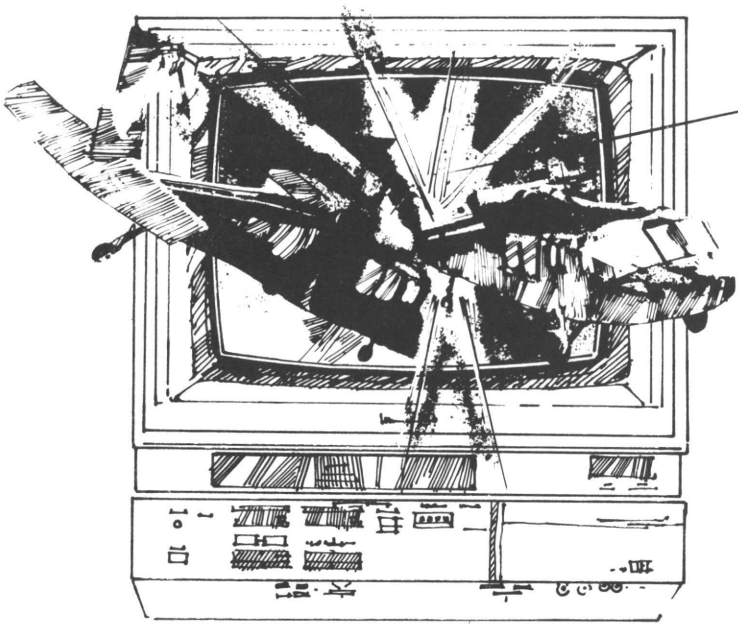
Crashfax Videos re-create real accidents

ATTENTION commanders and ASOs! Need something new for your unit safety meetings? Something to stimulate discussion? Have we got a tool for you!

Videos. "Crashfax Videos." Two available now at your local audiovisual library and more in the works.

Crashfax Videos are not your typical safety films. They're short. To the point. They don't just tell what happened, they show what happened. And seeing is believing.

Crashfax Videos re-create real accidents. Recent accidents. Accidents that killed Army people and destroyed Army aircraft. Accidents that resulted from human errors, errors that could kill again if not avoided.



The visual accounts of Army aviation accidents in Crashfax Videos complement the written accounts in *Flightfax*. They show the circumstances that led up to the errors that caused the accident. They open the door to self-examination, not only by individual aviators but by the unit as a whole. They prompt folks—commanders, ASOs, and aviators alike—to ask, "Could that happen in my unit? Do those conditions exist here? Could that be me?"

Following are synopses of the two Crashfax Videos that are available now. Availability of future videos will be announced in *Flightfax*.

- **"UH-60 Midair"** (CFV 46-1, PIN 707996). This video re-creates the midair collision of two Black Hawks during a night vision goggle training mission. All seven crewmembers and ten soldiers on board the aircraft were killed. The absence of evasive action by either crew indicates they never saw each other.
- **"High-Risk Aviator"** (CFV 46-2, PIN 707997). This video re-creates the events leading up to the crash of an OH-58 into a lake. The warning signs were there that the pilot was a high-risk aviator, but he was allowed to continue to fly until the inevitable happened. He was killed in the crash. ■

MONTHLY WRITING AWARD

ATC FOCUS

U.S. Army Air Traffic Control Activity

Management of Special Use Airspace

Lieutenant Colonel (P) James E. Dooley III
U.S. Army Representative, Federal Aviation Administration
Department of Defense National Airspace System Plan Office
Washington, DC

THE SCENARIO: A 1st Cavalry Division tank battalion is engaged heavily with opposing forces (OPFOR) somewhere north of Ft. Irwin, CA, during rotational training at the National Training Center. Army Aviation assets have been employed to support the operation with tank-killing helicopters occupying the lower airspace. Air Force fast movers are inbound from high altitude to help neutralize the OPFOR so the friendly advancement can continue when a "real time" telephone call comes from the local air route traffic control center of the Federal Aviation Administration (FAA). The special use airspace (SUA) over Ft. Irwin has just been taken back from the military to allow four commercial jumbo jets to fly directly through the restricted area, R-2508. This will save them thousands of pounds of fuel by not having to fly around the area. The military mission is scrubbed because the Air Force jets can no longer get in the SUA. The Army helicopters return to their staging areas. Military commanders never do find out whether or not the tactics used are any good, to say nothing of the time, money and training lost in this futile effort.

Could the scenario really happen? As of today, probably not. The SUA, controlled by the local military commander, is essentially set aside for priority use for military purposes. Although this scenario is centered in Southern California, the busiest and most crowded airspace in the United States, the situation might happen at any of the many SUA areas throughout the continental United States, Alaska and Hawaii. More than 90 percent of the 20,000 Department of Defense (DOD) aircraft that fly in the national airspace system, logging about 6 million training hours a year, fly in these SUAs. The areas are under the control of, or made available to, DOD because of the diverse type of flying the Army does in support of military training: air drops, air refueling, live fire, unusual speed and altitude changes and large-scale, joint exercises, to name a few. While a relatively small amount of the nation's airspace is reserved exclusively for military use, as both military and civil aviation requirements increase, we have an absolute obligation to ensure appropriate civil access.

In short, we, the military, need to do better at managing our SUAs. Pressure to limit the allocation of airspace to support military training and operations is substantial and will continue to mount. The civil aviation community, commercial carriers, private pilots and certainly Congress wants SUAs to be readily accessible for civil use. Therefore, an innovative airspace management system is being initiated and tested today in Southern California to coordinate more closely the efficient use of that airspace.

The military airspace management system, or MAMS, is designed to support the military needs of air traffic control, range safety, access approval and coordination, target coordination, electronic warfare and a host of other considerations. MAMS "deconflicts" the airspace used by the military so that everyone's missions can be accommodated. Also, MAMS provides a way to release the airspace to the civil system *when we aren't using it.* Because of the many military posts located within, restricted area R-2508 was chosen as the testbed and demonstration site for MAMS. Add the Army's Ft. Irwin to the Air Force bases of Edwards, George, Norton, March and Castle. Then add the Naval air stations of North Island, Miramar, Fallon and Lemoore. Combine them with the Marine Corps bases of Twentynine Palms, El Toro and Yuma, and you begin to see the picture of congestion within the restricted area. All are autonomous, but efforts to link one airspace scheduling system among them have not been successful to date. That, then, became the genesis of MAMS—to link all of the airspace users at a certain, general, geographic location together to form a smoothly working management system.

Readers are encouraged to address matters concerning air traffic control to: Commander, USAAVNC, ATTN: ATZQ-ATC-MO, Fort Rucker, AL 36362-5265.

AVIATION PERSONNEL NOTES

Aviation Warrant Officer (AWO) Survey

Coming next month, the *Aviation Digest* will publish a survey on, "Should the AWO Wear the Aviation Branch Insignia?"

Personnel Reclassification of Air Traffic Control (ATC) Military Occupational Specialties (MOSs)

As of 9 December 1988, the personnel reclassification of MOS 93H, ATC tower operator, and MOS 93J, ATC radar controller, into MOS 93C, ATC operator, was about 63 percent complete. Time remaining to complete required cross-training and be awarded the 93C MOS is running out.

The original letter of notification (LON), dated 17 February 1987, stated that cross-training must be completed by 1 April 1989. The following is an excerpt from the LON:

"All personnel cross-trained in both MOS 93H and 93J, dual-rated controllers (tower and radar); participants in a cross-training program, which will result in a rating in an ATC MOS other than the soldier's primary ATC MOS; soldiers who completed advanced individual training for former ATC MOS 93K or 93B; and soldiers grade sergeant first class (SFC) promotable (P) or above holding MOS 93H or 93J will be reclassified to MOS 93C.

"All other 93H and 93J personnel will be required to complete transition training before reclassification. Transition training packets are available through Commander, U.S. Training Support Center, ATTN: ATIC-IPC, Ft. Eustis, VA, 23604-5166, AUTOVON 927-5410."

Commanders still have time to screen their 93H and 93J personnel and identify those soldiers who have not completed the required cross-training. Those soldiers can then be entered into their local training program and have the appropriate reclassification paperwork submitted before 1 April 1989. This date is the target deadline for 100 percent completion of 93C transition (Active Army).

Reserve and National Guard soldiers have until 1 April 1990 to complete the required training.

For further information, call SFC Shorter at the U.S. Army Aviation Center, Ft. Rucker, AL, AUTOVON 558-4313/5706.

Linguist Training for MOS 93C

If you are an ATC operator, MOS 93C (H or J), and desire language skill training, now is the time to apply. A shortage of ATC operators skilled in the Spanish language exists. The Army needs to fill this shortage to prevent degradation of Army Aviation readiness.

Army air traffic controllers who have a desire for language training are encouraged to take the Defense Language Aptitude Battery (DLAB), administered by local test control officers. Those who score 89 or higher have a good possibility of being selected for training. Soldiers slotted for language training will receive permanent change of station orders to Presidio of Monterey, CA, for up to 52 weeks of schooling. Upon completion of training, soldiers will be awarded a language identification code (LIC) and given a utilization assignment appropriate to their grade and MOS.

Soldiers who possess an LIC are frequently assigned to more rewarding and challenging jobs in a variety of assignment locations.

Also, ATC soldiers who already speak Spanish may qualify for such assignments. Those Spanish-speaking soldiers should take the Defense Language Proficiency Test to determine their precise degree of proficiency. If test results are favorable and an acceptable skill level is demonstrated, they should then request a Spanish-speaking assignment by communicating with their branch representative at the U.S. Total Army Personnel Command (PERSCOM).

Point of contact for 93C (H and J) at PERSCOM is SFC Cunningham, AUTOVON 221-8322.

Military Intelligence (MI) Corps Association for Aviation Personnel

MI Corps association certificates are used to recognize not only 15C35 (tactical intelligence) commissioned aviators but warrant officers who possess MOS 156A (OV-1/RV-1 pilot), 155E2V (RC-12 pilot), 155DC (RU-21 pilot), 153D1V (EH-60 pilot) and enlisted soldiers who possess MOS 66H (technical inspector) or 67H (airplane observation repairer) and who have served in aerial exploitation battalions.

The certificates of association are to recognize the aviation personnel who support and contribute to the vital role of the MI mission. They do not, however, authorize individuals to wear the MI regimental crest on their uniforms nor does it imply regimental affiliation with the MI Corps. This would violate Army Regulation 600-82, *The United States Army Regimental System.*

For more information write or call the Office of the Chief, Military Intelligence (Captain Kitson), Ft. Huachuca, AZ 85635-7000, AUTOVON 821-1182/1183.

Enlistment Contract and Bonus Changes

Changes to initial enlistment contracts have been in effect since 11 June 1988. Since 15 November 1988, the following MOS-incentive bonus program changes have been in effect:

MOS INCENTIVE BONUS PROGRAM CHANGES

MOS	PREVIOUS BONUS	NEW BONUS	PREVIOUS ENLISTMENT	NEW ENLISTMENT
35K (68N)		*EB $1,500/6 years	4 years	5 years
35L (68L)		EB $1,500/6 years	4 years	5 years
35M (68Q)		EB $1,500/6 years	4 years	5 years
35R (68R)	**SRB 2A-E3/5	EB $1,500/6 years SRB 1A-E4/6	4 years	5 years
67H		EB $1,500/6 years	all CMF 67 MOSs require a 5-year enlistment	
66R	SRB 3A/2B-E5/6			
67R	SRB 3A-E3/4 SRB 3A/2B-E5/7	EB $1,500/6 years SRB 3A-E3/7 SRB 2B-E5/7		
67S		EB $1,500/6 years		
67T		EB $1,500/6 years		
66Y		EB None SRB 1A/1B-E5/6		
67Y	SRB 1A-E3/8	EB $1,500/6 years SRB 1A-E3/7 SRB 1B-E5/7		
93B	SRB 3A-E3/4 SRB 3A/3B-E5/8	EB $2,500/4 years EB $1,500/each additional year SRB 3A-E3/4 SRB 3A/3B-E5/6	CMF 93 contracts require a 4-year enlistment	
93C	SRB 3A-E3/4 SRB 3A/2B-E5/8	EB $2,500/4 years EB $1,500/each additional year SRB 3A-E3/4 SRB 3A/2B-E5/7		

*EB—enlistment bonus, paid after graduating from advanced individual training.

**The Selective Reenlistment Bonus (SRB) is denoted by zones as follows:

A = initial-term soldiers less than 10 years of total active service.

B = midterm soldiers with a minimum of 10 but less than 15 years of service.

C = all soldiers with 15 or more years of service.

The numbers positioned next to the letters (denoting zones) indicate the multiplier used to determine bonus payment. For example: 2A equals two times the monthly base pay, which is then multiplied by the number of years the reenlistment is for. 2A = 2 x base pay x years reenlisting = total bonus.

Note: Those enlisted aviation MOSs not shown have no change to incentives.

AVIATION STANDARDIZATION AND TRAINING SEMINAR/BRANCH LIAISON TEAM PROGRAM

Captain Carl Terry
Evaluation Division
Directorate of Evaluation and Standardization
Fort Rucker, AL

THE DIRECTORATE of Evaluation and Standardization (DES), U.S. Army Aviation Center, Ft. Rucker, AL, has realigned the scope of its Aviation Standardization and Training Seminar (ASTS)/Branch Liaison Team (BLT) Program. For the past 6 years, the ASTS/BLT has played a major role in the Aviation Center's efforts to provide Aviation Branch information and assistance in standardization matters to all aviation units throughout the world. Concurrently, the ASTS/BLT Program is the primary vehicle by which the Aviation Center evaluates the proficiency of its products.

In recent years, budget constraints have severely limited ASTS/BLT visits to requesting units. Occasionally, units have funded ASTS/BLT visits; but, for most units, the expense involved was often prohibited. With a forecast of continued budget constraints, DES was faced with a difficult challenge—How do we maximize our assistance and evaluate ASTS/BLT visits with available resources?

The DES plans to realign the ASTS/BLT by sending smaller teams, limiting the onstation period to 2 days, and concentrating on brigade-sized, continental United States-based aviation units.

The DES will select and visit five installations a year in concert with the U.S. Army Forces Command Umbrella Week and special visitation programs as described in U.S. Army Training and Doctrine (TRADOC) Regulation (Reg) 350-15, *TRADOC Training Evaluation and Quality Assurance Program.* Units may still request an ASTS/BLT visit if they are not scheduled for the upcoming year. The ASTS/BLT visits may be requested by calling DES, Evaluation Division at AUTOVON 558-6571. As outlined in TRADOC Reg 350-15, the ASTS/BLT visits will focus on the following key areas:

- Assess/evaluate the adequacy of the school product (competency of graduates, doctrine and training support materials) through surveys, interviews, record checks, performance evaluations and other means. This is an assessment of the school product only and not of the visited unit.
- Provide information to unit on school products, processes and concepts.
- Provide instructor pilot/standardization instructor pilot (SP) seminars, classes, assistance and training as requested by the unit.

The DES will provide assistance as funding allows and may include the following areas:

- Aircrew training manual (ATM) and flight records.
- Air traffic control.
- Avionics.
- Petroleum, oils and lubricants (POL).
- Aviation maintenance.
- Aviation and career management and professional development.

The ASTS/BLT Program provides for a core team built to meet the needs of the visited unit and DES requirements. This core team consists of a team chief to conduct interviews, conduct discussions with unit commanders and to supervise the overall ASTS/BLT visit. Three SPs cover the attack, observation and utility aviation missions. These SPs conduct mission-related classes, aircraft specific seminars, and ATM and unit flight program courtesy inspections. Other subject matter experts (SMEs) on the core team are military occupational specialties (MOSs) 93P, 93C, 67T and 35P. These experts conduct MOS-specific classes and seminars, courtesy inspections and interviews. All of these assess Aviation Center graduates and training materials. In addition, the following installations and agencies can provide SMEs not on the core team:

Ft. Rucker, AL

- U.S. Army School of Aviation Medicine (flight surgeon SME).
- Directorate of Combat Developments (combat development issues).
- Directorate of Aviation Proponency (career management/professional development).
- U.S. Army Safety Center (safety seminars, courtesy inspections).
- Department of Combined Arms Tactics (doctrinal issues and classes).

Ft. Eustis, VA

- DES (maintenance test flight evaluator, aviation life support equipment and armament SMEs).

New Cumberland Gap Army Depot, PA

- General material and petroleum activity (POL SMEs).

The sending agency or the visited unit provides funding for noncore team members.

The ASTS/BLT Program provides for an effective exchange of information between field units and the Aviation Center. It is one of the primary tools used to assess the effectiveness of our graduates and other Aviation Center school products in the field. It is also an excellent tool for the aviation unit commander. It offers valuable assistance found no where else. Since the ASTS/BLT Program was initiated in 1983, DES has improved the program many times. Through these improvements, one fundamental objective remains constant—to improve Army Aviation's training, safety and standardization through assistance.

DES welcomes your inquiries and requests to focus attention on an area of major importance. Write to us at: Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Ft. Rucker, AL 36362-5208; or call us at AUTOVON 558-3504 or Commercial 205-255-3504. After duty hours call Ft. Rucker Hotline, AUTOVON 558-6487 or Commercial 205-255-6487 and leave a message.

U.S. Army Class A Aviation Flight Mishaps

	Number	Flying Hours	Rate	Army Fatalities	Total Cost (in millions)
FY88 (through 31 December)	5	443,034	1.13	0	$ 7.0
FY89 (through 31 December)	10	403,235	2.48	9	$26.9

AVIATION MEDICINE REPORT
Office of the Aviation Medicine Consultant

Gastroesophageal Reflux

Cause, Effect and Aeromedical Significance

Captain Gilbert R. Teague, M.D.
2d Battalion Flight Surgeon
1st Special Forces Group (Airborne)
Fort Lewis, WA

GASTROESOPHAGEAL reflux (hereafter called "reflux") refers to the condition in which stomach contents are regurgitated into the esophagus. This occurs normally to some extent in most humans, especially after a large meal, and results in belching, reflux of liquid and solid materials into the throat and occasionally into the mouth. Reflux can become problematic if increased in frequency or severity and produces a variety of symptoms. Several aspects of the military aviation environment may predispose aviators to develop symptoms, but these symptoms usually can be managed conservatively with good results. The cause, management and prevention of symptomatic reflux will be discussed as well as its aeromedical significance.

Most people with symptomatic reflux complain of heartburn; i.e., discomfort in the upper abdomen and lower substernal area occasionally radiating to the upper chest and neck. Reflux is usually associated with an anatomic defect known as hiatal hernia. However, most people with hiatal hernias do not have symptomatic reflux, and some people with severe reflux do not have hernias. Abnormal (symptomatic) reflux can be caused by decreased stomach motility, decreased emptying time of the stomach or failure of the anatomic pressure mechanism that serves as a valve between the esophagus and stomach. The effect of reflux is to expose the unprotected esophagus to the acidic contents of the stomach that results in—

- Pain.
- Swelling leading to pain upon swallowing.
- Scar formation leading to difficulty in swallowing.
- Bleeding that leads to anemia and weight loss.
- Recurrent respiratory problems.

Most of these symptoms are found only with severe, chronic, untreated reflux and are highly variable. Weight gain, for instance, may be noted initially because of increased eating to alleviate pain. Even "normal" amounts of reflux can be associated with symptoms if the stomach acid content is unusually high. Although most people studied are found to have normal acid levels, symptoms are decreased with the use of antacids.

Reflux occurs when the intra-abdominal pressure exceeds the resting pressure of the "valve" between the

esophagus and stomach. This occurs most often with straining, stooping, lying down after a large meal and sleeping. Nocturnal acid contact with the esophagus appears to be especially important in the development of symptoms.

Medical treatment for symptomatic reflux includes methods that use gravity to reduce the amount of regurgitation, make the regurgitated material less damaging to the esophagus (less acidic) and reduce intra-abdominal pressure. Some simple measures that can be instituted by those individuals affected include:

- Elevate head of bed on 6-inch blocks.
- Avoid lying down after meals.
- Avoid eating within 3 hours of bedtime.
- Use antacids 1 hour after meals and before bedtime.
- Eat frequent, small meals.
- Lose weight if obese.
- Avoid prolonged stooping.
- Avoid tight fitting garments.

In addition, since highly acidic reflux can cause symptoms even in "normal" amounts, it would seem prudent to avoid those things that are known to increase stomach acid production such as caffeine, nicotine, stress, etc. For severe symptoms resistant to these conservative measures there are prescription medications that can be used to decrease stomach acid production and are recommended for short-term use.

Symptomatic reflux is estimated to occur in about 7 percent of the general population. It is the principle reason that people self-prescribe antacids. Several aspects of the aviation environment may predispose the aviator to this affliction. Some examples of what cause symptomatic reflux are stress, prolonged use of lap belt restraints, and irregular working hours requiring infrequent, large meals, sleeping and eating away from home, closer proximity of consuming evening meal to bedtime and increased caffeine use.

There are other medical conditions with symptoms similar to those of reflux. If symptoms are not relieved by those conservative measures listed above, see your flight surgeon to confirm the diagnosis. If additional measures are warranted, Cimetidine and Ranitidine, effective prescription medications that reduce the acidity of stomach secretions, are recommended for short-term therapy of gastroesophageal reflux. These medications are currently being studied by the U.S. Army Aeromedical Center, Ft. Rucker, AL, and are recommended for waiver on a case-by-case basis.

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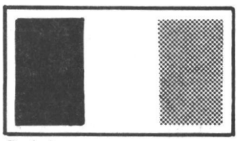
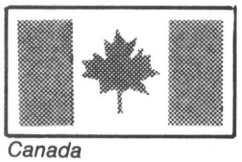
The Aviation Medicine Report is a monthly report from the Aviation Medicine Consultant of TSG. Please forward subject matter of current aeromedical importance for editorial consideration to U.S. Army Aeromedical Center, ATTN: HSXY-ADJ, Ft. Rucker, AL 36362-5333.

RSI Report

Mr. Rush Wicker


Belgium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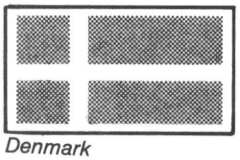
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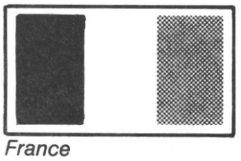
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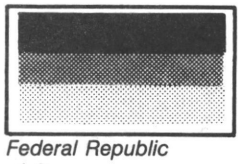
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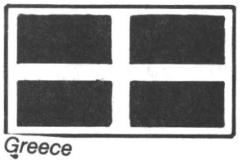
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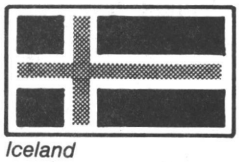
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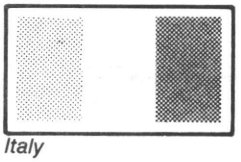

Italy

COMBINED OPERATIONS involving the aviation assets of two or more nations are not a mythical concept. During future conflicts, combined operations will become routine. To attain a high degree of interoperability between allied forces, we must train in accordance with (IAW) the procedures agreed upon between nations. These agreements are known as standardization agreements (STANAGs). Normally, aircrews will never see these documents. Doctrinal literature writers are responsible for incorporating the terms of these agreements into Army publications. Aviation units that train IAW the procedures presented in these publications are, in fact, training to the North Atlantic Treaty Organization and American, British, Canadian and Australian standards.

In order that aviation units become familiar with STANAGs, selected Quadripartite Standardization Agreements (QSTAGs) and STANAGs will be printed in future editions of the *U.S. Army Aviation Digest*. Aviation personnel are encouraged to review unit standing operating procedures to ensure their procedures are IAW these agreements. If, during any evaluation (Army training and evaluation program, field training exercise or command post exercise), the terms of the agreement are determined unacceptable, a proposal for change can be submitted on Department of the Army Form 2028, Recommended Changes to Publications and Blank Forms, to the following address: Commander, U.S Army Aviation Center, ATTN: ATZQ-CDC-C, Ft. Rucker, AL 36362-5191.

The following is a copy of STANAG 2999/QSTAG 586, Procedures in the Event of Downed Helicopters:

STANAG 2999/QSTAG 586 Procedures In The Event Of Downed Helicopters

Aim

1. The aim of this agreement is to standardize the immediate action and priorities in the event of a downed helicopter during an operational mission.

Agreement

2. Participating nations agree to adopt the procedures set forth below.

General

3. This agreement is intended to provide a common procedure for the recovery, security or destruction of downed helicopters. In combat operations, recovery of downed helicopters and crews is secondary to mission accomplishment by the whole force. The procedures contained herein also may be applied to light fixed-wing aircraft.

Premission Planning

4. Prior to departing on a combat air operation, the air mission commander will brief the aircrews on downed aircraft procedures. Information that will be discussed includes:

a. Location of rendezvous points for downed aircrews.

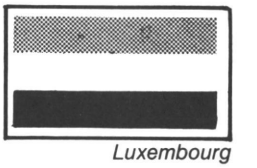
b. Procedures for providing assistance for downed aircraft.

c. Identification, search and rescue procedures.

d. Identification of on-call supporting units that will provide aircraft recovery and security for the downed aircraft.

Procedures

5. The procedures used in the recovery of downed helicopters are based on the location of the helicopter, the capability of the enemy to hinder recovery operations and the capability of the aerial forces to recover the downed helicopter. In the division rear area, the enemy has little influence on the recovery; therefore, defensive recovery procedures may not be required. If the downed helicopter is near the forward line of own troops (FLOT) or in an area where there is not an established FLOT, the enemy has the capability to influence the recovery; therefore, defensive recovery procedures must be used. The most difficult area in which to recover a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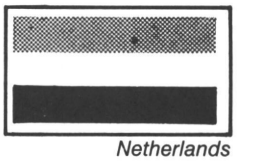
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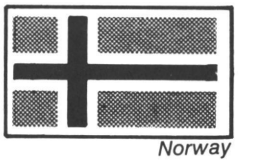
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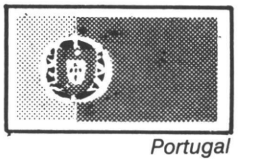
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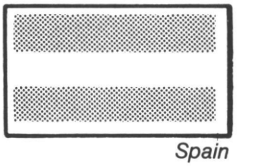
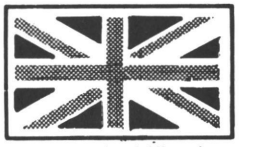

Spain

Turkey


United Kingdom

United States

downed aircraft is within enemy held terrain. The recovery procedure over enemy terrain also may require the suppression of enemy ground forces.

6. If recovery teams and equipment are available and can act immediately, the recovery is more likely to be accomplished. All of the actions listed may not be required during the recovery operation. Each action must be carefully evaluated to determine the most effective procedure for the situation. Aviation units must preplan the recovery procedure before each situation and be prepared to execute the plan quickly. The following are actions that may be required in the event of a downed helicopter:

a. The aviation mission commander should:

(1) Determine the extent of damage and/or injuries through direct communication or reconnoitering.

(2) Report the situation and location and request deployment of the team to the down site or request assistance, as the situation dictates.

(3) Attempt evacuation of personnel only if it does not degrade mission accomplishment nor endanger the recovery aircraft.

(4) When required, request and assist in the control of suppressive fires.

(5) Advise downed aircrew of action to be taken and continue the mission.

b. The aircraft commander of the downed helicopter should:

(1) Administer first aid as necessary.

(2) If possible, report the situation to the air mission commander.

(3) If capture of the aircraft by the enemy is likely, prepare it and all sensitive equipment for destruction.

(4) Employ survival radio/locator and visual signaling devices to aid in locating downed aircrew.

(5) Establish defensive positions around the recovery site.

(6) If not immediately evacuated, proceed to preplanned pickup point or follow preplanned escape and evasion plan.

(7) Assist as necessary in battle damage repair actions and in evacuation of the aircraft and/or personnel from the recovery site.

Actions By The Owning Unit

7. The controlling headquarters of the downed helicopter should be prepared to accomplish the following actions upon notification if the tactical situation permits.

a. Arrange for appropriate forces to provide security for the downed aircrew and helicopter.

b. Dispatch battle damage recovery team and equipment required to the site to recover the helicopter.

c. Initiate rescue operations for recovery of the downed aircrew.

d. When aircraft cannot be recovered, authorize the aircraft to be destroyed.

e. Based on the battle damage repair team assessment and the tactical situation, initiate one of the following actions:

(1) Complete the repairs necessary to fly the helicopter for return to action.

(2) Apply temporary repairs to allow a one-time flight from the down site to a repair facility.

(3) Perform airlift recovery of downed helicopter.

(4) Cannibalize critical and easy to remove components and destroy the helicopter.

Reports

8. Reports of downed helicopter situations must be concise and accurate and include:

a. Identification of aircraft.

b. Location.

c. Personnel injured; personnel able to continue mission.

d. Estimate of aircraft damage (total, major, minor).

e. Existence of evidence of chemical contamination.

f. Enemy situation, to include the air defense artillery.

g. Accessibility to downed helicopter.

h. Intentions.

PEARL'S

Personal Equipment And Rescue/survival Lowdown

Stencil ink

Are you having trouble stenciling required information on your ALSE clothing or equipment? Sergeant Douglas W. Penovich, 11th Army National Guard facility life support equipment technician, contributed the following: Stencil ink is available in an aerosol can and is easy to apply. Just make a stencil and spray it on. Price per 1-pint can is about $1.75.

Ink, Stencil, White 1-Pint Aerosol, NSN 7510-00-419-9564.

Ink, Stencil, Black 1-Pint Aerosol, NSN 7510-00-469-7910.

A fountain pen brush also is available for ink stenciling. It can be filled with any color liquid ink. Cost is about $7.90 each; the replacement tip is $3.91.

Brush, Stencil, Fountain Pen Type, NSN 7520-00-248-9285.

Tip, Brush, NSN 7520-00-369-4714.

Ink, Stencil, Black, 1-Pint, NSN 7510-00-224-6734.

If anyone else has information PEARL'S can use, please send it to the address at the end of the article.

Open Letter to Army Aviation Personnel

The following letter was forwarded by an aviation life support equipment (ALSE) member of the U.S. Army Support Group (USARASG) 75, an ALSE personal equipment handler who has taken a dedicated interest in the critical field of ALSE:

"In Army Aviation, whether it is training, maintenance or management, the key word to success of any program is 'attitude.' From a positive attitude, we get responsible commitment and enthusiastic participation, which ensures the overall Army goal of mission readiness without a compromise of safety.

"The greatest stumbling block to the Army Aviation Life Support System Program is an attitude that can result in the feeling, 'It can never happen to me.' Unfortunately, some commanders may have this feeling. Funding and furthering of ALSE can be restricted, and the end result is that training quality and readiness may be compromised. When aircrew personnel harbor this attitude, the odds for survival and rescue are greatly reduced.

"It is time for these attitudes to be put to rest. Yes, machines sometimes fail and human beings do make errors, aviators work in an unforgiving environment and mistakes such as a lack of ALSE and training should never be allowed to happen."

Give your ALSE program and team your support and attention. Provide your ALSE program and personnel the support they deserve, and you will all be well ahead of this dynamic program. Credit for this letter goes to Mr. Douglas W. Schmidt, USARASG 75, New Iberia, LA 70560-9774.

Delay in Printing of Department of the Army Publications

Headquarters, Department of the Army, printing restrictions have created delays in numerous publications being printed and distributed as scheduled. Specific publications that could have a bearing on ALSE originating from the U.S. Army Medical Materiel Activity are the DA SB-875 series and supply catalogs DA SB-8759 ABD-10, which have not been printed yet.

If you have a question about personal equipment or rescue/survival gear, write PEARL'S, AMC Product Management Office, ATTN: AMCPM-ALSE, 4300 Goodfellow Blvd., St. Louis, MO 63120-1798 or call AUTOVON 693-3573 or Commercial 314-263-3573.

USAASO SEZ

NOTAM Consolidation

Mr. Monroe J. Mitchell
U.S. Army Aeronautical Services Office
Cameron Station, Alexandria, VA

SINCE THE LATE 1970s, the Federal Aviation Administration (FAA) and the Department of Defense (DOD) have talked extensively about integrating their notice to airmen (NOTAM) systems. To determine the feasibility of an integrated system, a joint working group was established. This working group decided that such a system would be feasible and desirable from a user's standpoint.

The program is a rather large and complex one; however, it is an effort to blend the two separate, existing systems while maintaining the unique features of each system. Both systems are used basically for data collection, storage, retrieval and distribution of NOTAMs. The major difference between the two current systems is in the way NOTAM data are distributed. The FAA system distributes data in a real-time mode, while the DOD system distributes in a batch mode. Also, the DOD system provides customized outputs such as summaries and updates, while the FAA system distributes individual data items to be used at the user's discretion.

The integration process has been separated into two distinct phases. Phase I includes the DOD requirements necessary to provide DOD users with the paper products now being produced by the Air Force Central NOTAM Facility (AFCNF). Phase II provides DOD users with the capability for request/reply of NOTAM information from the U.S. NOTAM system data base.

In Phase I, some of the daily summaries that we must be concerned with are as follows:

- NAMSUM - North American Summary.
- EURSUM - European Summary.
- PACSUM - Pacific Summary.
- CSASUM - Caribbean and South American Summary.

The summaries are provided automatically to users who subscribe to the air weather net (AWN).

The integration process has entered Phase I. Development NOTAM software and DOD parallel testing will be complete by this printing. The AFCNF at Carswell Air Force Base, TX, will close on 1 May 1989, and cease to operate. At that time, the DOD system will become the U.S. NOTAM System (USNS). It will operate and all distribution will be made from a central computer at Kansas City, MO.

The user will see very few changes in the way we get NOTAMs. The preflight will be affected, however. When the pilot files a flight plan, a check of the flight supplement must be made to determine if the destination and navigational aids (NAVAIDs) to be used are covered by NOTAMs. If the flight supplement has a diamond, they are covered; if not, you must get NOTAMs from the flight service station (FSS). If your destination is covered by a diamond, check the NOTAM NAMSUM.

Other noticeable differences are in the way we enter NOTAMs into the system. We can no longer enjoy the luxury of entering NOTAMs into clear text, knowing that when it is printed on the NOTAM circuit, it will be correctly displayed.

- When we enter NOTAMs into the USNS, we must use the proper format or the NOTAM will be rejected.
- Only the facility that enters the NOTAM into the system will receive acknowledgement in the form of a comeback copy.
- A NOTAM cannot be entered for a facility if it does not have a four-letter identifier.
- All NOTAMs must be entered using the NOTAM codes in Army Regulation 95-10, *The U.S. Military Notice to Airmen (NOTAM) Systems.*

Recently, we requested all users to revalidate the NOTAM facilities so we can develop the DOD database for civil aerodromes and NAVAIDs. Without this information, the NOTAM summary for civil facilities will be incomplete. Response to this request is a vital link in the integration process.

Phase II will provide NOTAM request and reply capability. We expect this capability in calendar year (CY) 1990 in the continental United States and CY 1989 in Europe. A request or reply is received or transmitted by the AWN, using the American Standard Code for Information Interchange, and may originate from any AWDS (automatic weather distribution system) or ADWS (automatic digital weather switch) terminal. The USNS addresses the response back to the originator.

We expect the consolidated NOTAM system to be much more efficient. For more information, contact the author at the number below.

USAASO invites your questions and comments and may be contacted at AUTOVON 284-7773.

Army Aviation Annual Written Examination

REQUESTS FOR the 1989 Army Aviation Annual Written Examination (AAAWE) have been received from most U.S. Army Aviation units. Distribution of the 1989 AAAWE is ongoing. Test control officers (TCOs) who have not already requested the 1989 AAAWE should do so immediately by telephone.

AAAWE answer sheets are graded with an optical mark sense scanner at the U.S. Army Aviation Center, Ft. Rucker, AL. For this process to work, TCOs need to ensure that answer sheets are not folded or hole punched.

The AAAWE section receives a large number of answer sheets with incomplete administrative data. TCOs are requested to proofread the answer sheet completely before forwarding it to the Aviation Center. The scanner will not accept answer sheets without unit identifier codes, examination version and social security numbers.

Anyone with questions or problems concerning the AAAWE should contact the AAAWE section, Directorate of Training and Doctrine, U.S. Army Aviation Center, Ft. Rucker, AL 36362-5000 at AUTOVON 558-3889/5415 or Commercial 205-255-3889/5415. We also may be reached through the Aviation Hotline AUTOVON 558-6487. Directorate of Training and Doctrine point of contact is Ms. Rarick, extension 3889.

1989 ANNUAL WRIT