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ARMY AVIATION
RISK-MANAGEMENT
INFORMATION

AUGUST 1997 ◆ VOL 25 ◆ NO 11

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SNOW?

IT'S AUGUST, AND WE'RE GONNA TALK ABOUT SNOW?

Risk management in the Hunter UAV Project

ANY INDIVIDUAL, FROM THE PROGRAM MANAGER TO THE NEWEST EMPLOYEE, MAY INTRODUCE AN ISSUE THAT EXPOSES THE PROGRAM TO RISK.

Thunderstorms: A primer

MOST LIGHTNING STRIKES TO AIRCRAFT OCCUR. . .

The rest of the story . . .

THERE'S A SMALL PHOTO ON THE WALL IN FRONT OF MY DESK; IT SHOWS A HAND HOLDING TWO PIECES OF 5/8-INCH, 7-STRAND STEEL SUPPORT CABLE.

"I have the controls,"

I REPLIED CALMLY—CALMLY, THAT IS, UNTIL THE AIRCRAFT STARTED TO MAKE AN ABRUPT RIGHT TURN AND BEGAN TO DIVE FOR THE GROUND.

The "mike" monster

...IT IS EQUIVALENT TO TAKING THE MICROPHONE OFF AND HOLDING IT RIGHT UP NEXT TO THE TURBIN

Attention HU

"FAILURE TO RE EGRESS FRO

Snow + flying – caution = trouble

SNOW? It's August, and we're gonna talk about snow? You bet. In some parts of the world, the snow's about ready to fly. And even if that's not the case where you are, it's not too soon for you think about getting up to speed on winter flying. Units that haven't already begun at least academic training in cold-weather flying should start it now. Once an aircrew is involved in whiteout during an approach or experiences spatial disorientation over a snow field, it's too late to talk about training.

Inexperience or lack of recent training is a frequent contributor to snow-related accidents. If you are new to an area where a lot of snowfall is expected, get into FM 1-202: *Environmental Flight* as well as all the local SOPs and TTPs. Also ask local instructors and safety folks questions—lots of questions.

But even if you have lots of winter-flying experience, the summer hiatus degrades winter-flying proficiency. So don't think you're exempt from the need to review. Remember, overconfidence can lead to an accident just as surely as inexperience can.

Following are a couple of examples.

Blowing snow

The PC was confident in his abilities, and he had reason to be. He had more than 5500 hours of military flying time, 4450 of them in the UH-1. The PI had almost 4200 total military flying hours, more than 2400 in the UH-1.

The PI was at the controls when the Huey approached the designated landing area. There was a 400-foot ceiling, partial obscuration, snow, fog, and estimated winds of 210 degrees at 8 to 10 knots. Using techniques outlined in FM 1-202 for snow operations, the PI terminated the approach at a high hover. He then maintained the hover for 1 to 2 minutes in order to blow away newly fallen snow on top of the 1½ to 2 feet of crusted-over snow that already covered the landing site.

When the Huey landed on the crusted snow, the rear of the skids broke through, putting the aircraft in a nose-high, tail-low attitude. When the crew chief reported that the tail was only 2 to 3 feet above the snow, the pilots decided to reposition to another spot to level the aircraft. Because the PC had good visual reference on a grassy area outside the right window, he took over the controls.

As the PC picked up to a 3-foot hover to reposition to the grassy area, he lost his visual reference in blowing snow. The aircraft began drifting left, and the tail rotor struck trees. As the PC attempted to set the aircraft down, the left forward skid struck the snow-covered ground, and the aircraft rolled over onto its left side.

This crew attempted to reposition their aircraft without a plan on what to do if they lost visual contact with the ground. The PC probably should have executed a takeoff when he lost ground reference.

Lesson learned: A takeoff under these conditions amounts to an instrument takeoff (ITO). Practice ITOs until they are routine maneuvers.

Snow-covered landing areas

It was winter, and two flights of five UH-60s were on a troop-insertion mission to unimproved landing areas. Chalk 3 in one flight was piloted by the unit operations officer. Because of his unit duties, he had flown only 17 hours in the past 4 months. In addition, he had not been able to attend mandatory unit training in which snow-landing techniques and procedures were reviewed, nor did he attend makeup classes or engage in hands-on snow-landing operations training.

The flights proceeded normally with 7 miles visibility and 1000-foot ceilings in scattered snow showers. Then the two flights separated and began a series of false insertions.

Chalk 3's flight encountered a snow shower as they began a formation approach, and visibility was reduced to about 1 mile. The LZ was a large, open, snow-covered field with an apparent upslope in the direction of landing. The crew of Chalk 3 could see a large amount of snow circulating through the rotor systems of the two aircraft ahead of them.

The pilot of Chalk 3 selected a touchdown point downslope and to the left rear of the lead aircraft. Using the upslope aircraft and distant tree lines as visual references, the pilot made his approach. As effective translational lift was lost at about 20 feet above the ground, with a left quartering tailwind of 15 to 25 knots, a snow cloud enveloped the aircraft. The pilot decided to continue the approach without outside references and reduced power to put the aircraft on the anticipated upsloping terrain. The UH-60 touched down hard in a complete whiteout condition on a combination upslope to the front and downslope to the left. The helicopter rolled over and came to rest on it left side.

Several factors contributed to the difficulty of landing at this site:

- The flight was landing downwind to an upslope.
- The aircraft were landing during a snow shower

Be cautious out there in that winter wonderland

to an LZ with very loose, dry snow.

- There were only limited stationary visual cues.

The worst thing that happened was that the pilot continued the approach when he lost visual contact with his ground references. He had to monitor two slopes and his position simultaneously, which is a difficult task, especially for a pilot with limited recent snow experience. In addition, the rate of descent was excessive, even for an approach to level terrain. FM 1-202 states that an approach to the ground should not be made in dry-powered snow unless the touchdown area is known to be level and free of obstructions. In this case, the pilot was aware of both the slope and the looseness of the snow. However, he was not aware of his downwind condition.

Lesson learned: Approach and go-around planning are essential for any formation flight. They are even more essential in snow environments. Planning should include—

- Instructions to execute a go-around if visual contact with ground references is lost or if it becomes apparent that visual contact will be lost.
- Timing and spacing aircraft into LZs to reduce effects of blowing snow.
- Specific go-around instructions in premission briefs (what direction to turn, where to land on subsequent approaches, and takeoff procedures).

Other snow hazards

One of the most dangerous snow environments may just be the main airport. The large open areas found at most airports do not provide the contrast and definition needed to maintain orientation, especially when snow starts circulating through rotor blades. Moving around the typical airport is a little easier when you can "air taxi" (high hover at a speed just ahead of ETL). Just remember to keep a good scan going to keep from inadvertently descending.

On airfields, the snow banks that result after snow plows have gone through are usually dirty and provide some contrast and definition unless there is fresh snow. In those cases, watch out for those well-camouflaged snow banks.

Each geographical location has its own set of winter hazards. Typically, each aviator has some good ideas on how to mitigate the risk associated with those hazards. As part of the winter academic program, it may be useful to survey aircrews to determine which hazards they consider the most severe and then evaluate the effectiveness of controls that are in place. Necessary upgrades and development of new controls can then be accomplished.

Summary

Winter has been following summer for hundreds of years. There's nothing we can do about that, even if we wanted to. That very predictability of the seasons can be in our favor. It gives us time to plan our training for the different kinds of flying problems each season can bring. If you haven't already done it, get your refresher training, review FM 1-202, and be cautious out there in that winter wonderland.

—CW5 Bob Brooks, Aviation Systems Branch, USASC, DSN 558-2845 (334-255-2845)

Risk management in the Hunter UAV Project

Some level of risk is inherent in everything we do. In a project that includes an unmanned flying platform controlled by operators on the ground, aviation issues are compounded by electronic data link issues along with the usual ground-equipment issues that require continual risk assessment. Especially in the case of experimental payloads being tested and evaluated aboard this platform, risk is a constantly changing factor in our operations and must be addressed and mitigated continually. In the Joint Tactical Unmanned Aerial Vehicle (JTUAV) Project, we address these risks through a Risk Management Council. Since the establishment of the Council, we have enjoyed sustained operations of more than 2,000 flight hours, including two National Training Center (NTC) rotations, with no incidents attributed to system failure. We have been labeled "indispensable" by commanders rotating through the NTC. This article addresses the background leading to formation of the Risk Management Council and its impact on daily operations.

Dirty laundry

The Joint Tactical Unmanned Aerial Vehicle Project was born in the fast lane and has been accelerating ever since. To provide tactical commanders the best intelligence in the fastest manner, this system was pushed hard through the acquisition cycle. The result was incidents and mishaps that had to be addressed. In September 1995, the system was grounded, allowing the team to determine root causes and corrective actions. During this down period, all aspects of the program were reviewed intensely. While the engineering aspects were cleared up, we also determined that we needed a forum for candid discussion of inherent risk issues. The Risk Management Council was the result, leading to our return to flight in December 1995 and unbridled success ever since.

The Risk Management Council

The Risk Management Council is a chartered organization that meets both regularly and on an as-required basis. The Council, chartered to oversee identification, assessment, and management of technical and programmatic risk exposures, reports directly to Program Management (PM). The Council is authorized to assign actions and recommend resource allocations to avoid, eliminate, or mitigate identified risks within the contractual constraints of the program. The Council includes a core membership of personnel from the JTUAV Program Office, Defense Contract Management Command, Israel Aircraft Industries, Inc., and TRW, Inc., our prime contractor. It is augmented as required with personnel from other contractors and in-house experts. The core membership recommends courses of action to PM, which then approves or disapproves mission plans.

The Risk Management Council has classified program risk into four major categories: programmatic, hardware, personnel, and flight operations. These basic categories enable us to efficiently tailor membership to particular issues. However, all members of the Council are on equal footing during discussions of risk. Any member may raise any issue, and the issue may not be closed without general consensus of the Council's core membership.

No "nay sayers" are allowed on the Council. All issues are addressed with the assumption that the mission will be undertaken; our sole purpose is to identify risk and recommend mitigation to PM. If a course of action is deemed too risky for the project, PM makes the decision not to undertake the mission. In such cases, PM may modify requirements based on the best information available from the Council.

Risk management in the Hunter UAV Program follows a seven-step process:

1. Identify the risk
2. Gather data and analyze the risk
3. Review analyses, assess impacts, and assign levels
4. Prepare the risk-mitigation plan
5. Implement the plan and track progress
6. Re-plan efforts if plan is not being met
7. Monitor low/retired risks for status changes

The first step, identification of risks, is the most important aspect of the entire process. Any individual, from the Program Manager to the newest employee, may introduce an issue that exposes the program to risk. In fact, everyone is charged with the responsibility to identify risks. Input from the people who do the day-to-day work is crucial. Likewise, it is absolutely critical that, once identified, all issues are given full and impartial hearings until the best method of mitigating each risk is discovered and implemented.

As the Hunter UAV Project continues and expands into payload testing and further deployments, more risks are identified and processed through the Risk Management Council. Meetings are held weekly, and special meetings for time-sensitive subjects may be called at any time. The ability of the Council to discuss complex issues and come to resolution on the least-risky course of action for a given mission has become a cornerstone of our daily operations.

—MAJ Paul B. DiNardo, Joint Tactical Unmanned Aerial Vehicle Project Office Field Site Manager, Sierra Vista, AZ, 520-452-9060/9044

Thunderstorms: A primer

What is a thunderstorm? Simply stated, it's a storm that generates lightning and thunder. But it's also capable of generating a lot more, including high winds, hail, flash flooding, and tornadoes.

During their formative stage, thunderstorms are characterized by strong updrafts that can force the storm to a height of more than 60,000 feet. Moisture in the lowest levels of the atmosphere becomes the fuel that fires up the thunderstorm development process. As tiny moisture particles are forced upward, condensation causes them to develop into droplets. As they collide with other droplets, they merge and grow in size. When they become too large for the updrafts to support, the droplets begin to fall. This falling precipitation creates a ***downdraft***.

As the downdraft reaches the surface, it produces a diverging pool of cool air, which becomes the ***gust front*** or ***downburst***. A downburst with winds extending 4 kilometers or less is known as a ***microburst***. Microburst, and its accompanying ***wind shear*** (rapid changes in windspeed or direction), can be difficult to detect and predict because of its small scale and short lifespan.

On a larger scale, one of the most potentially severe events is the ***squall line***. The squall line is a line of thunderstorms that can form along a front or develop 100 to 300 kilometers ahead of it. The mechanism for this event is the angle of the wind flow at about 10,000 feet. A wind flow aloft that is parallel to the front will generally keep most squall-line activity along the front. However, a perpendicular flow can cause squall-line development well ahead of the advancing frontal system. As the thunderstorms in the line develop downdrafts, downbursts may generate new thunderstorms ahead of the squall line. As the advancing downburst winds advance, they may force warm, moist air aloft ahead of it, generating a new squall line.

Strong upper-level wind flow may cause individual thunderstorms to develop rotation in their core. If a large-enough portion of the core is rotating, it's called a ***mesocyclone***. Within the mesocyclone, there may exist a smaller, more intensely rotating updraft that can lead to the birth of a ***tornado***. This violently rotating column of air descends from the base of the storm, at which point it takes on its familiar appearance. If the tornado, with its windspeeds of more than 180 knots, doesn't reach the ground, it's called a ***funnel cloud***.

One of the greatest threats to aviation is that of ***lightning***. As a thunderstorm develops, an electrical charge builds up in the cloud. The exact cause of this electrification is unknown, but what is known is that unlike charges attract each other. The manifestation of this attraction is the lightning stroke (or bolt), an electric discharge that can have a current as great as 100,000 amperes. A charge of this magnitude can damage an aircraft's fuselage and electrical components; it could even cause fuel combustion.

Most lightning strikes to aircraft occur near the freezing level during ascent and near the tops of thunderstorms in level flight. As an aircraft flies through the air, it develops a charge, which in turn could attract an opposite charged lightning strike. The use of composite materials in aircraft skins increases the buildup of a charge during flight, increasing the probability of attracting a lightning strike.

One final phenomenon associated with thunderstorms is ***hail***. As the updrafts in the storm carry moisture aloft past the freezing level, water droplets freeze into ice. As these ice particles are held aloft, they pass through areas of moisture and acquire further coats of ice. This process continues until the ice buildup makes the particle too heavy to be supported aloft, and it falls. This falling particle is hail, which could be encountered aloft during flight even in areas where the freezing level is high enough that the hail melts before it hits the ground.

Despite all the recent advances in technology, there are still limitations to what can and cannot be done to support aviation when it comes to thunderstorms. Even with Doppler weather radar and new lightning-detection capabilities, the oldest axiom still applies—avoidance is still the best rule to live by.

—MSG Ray O'Brien, U.S. Air Force Weather Service, Fort Rucker, AL, DSN 558-8270 (334-255-8270)

"During NOE training mission, crew heard a thump and felt aircraft lurch slightly upward. IP immediately landed aircraft with power in grass-covered field. IP turned controls over to pilot and got out to inspect aircraft for damage. About 100 meters behind the aircraft he found a wire that had been cut by the WSPS. A second wire had passed along the underside of the skids and scraped against the FM antenna before being cut by the tail-rotor blade. Wires were not marked on hazard map."

—*Flightfax*, 20 June 1990

The rest of the story …

There's a small photo on the wall in front of my desk; it shows a hand holding two pieces of 5/8-inch, 7-strand steel support cable. One piece might have been cut with a hacksaw; the other looks like an explosion in a spaghetti factory. The caption reads, "Tuttle's Incontrovertible Proof of the Existence of God." And therein lies a tale. And, oh, the sharp ***clink*** you'll notice from time to time is the sound of links being forged in an accident chain.

My National Guard Attack Battalion had deployed to our Annual Training (AT) site a week earlier. The battalion commander had dispatched the battalion and company safety officers to the post airfield to make copies of the Master Hazard Map, from which we would create our individual maps. They brought back good news: The hazard map showed only a few areas with wires—mostly around and through permanent campsites. The Engineers had been busy over the winter; they'd run most of the telephone and power lines underground. Based on this, the Boss decided to forego our usual wire recon and proceed with the training schedule.

Clink.

The first day of our "Three-Day War" tactical exercise was hazy with a good ceiling. During the morning mission briefing (Battalion Deep Attack), I got pole-axed with, "Tuttle will be lead Scout. He'll also be giving 2LT Magellan a currency ride and some mission training. Got to get the rest of the staff up soon or they'll need refresher training too!"

Standard joke. Standard reactions—laughter from the line pilots, rueful grins from the staff.

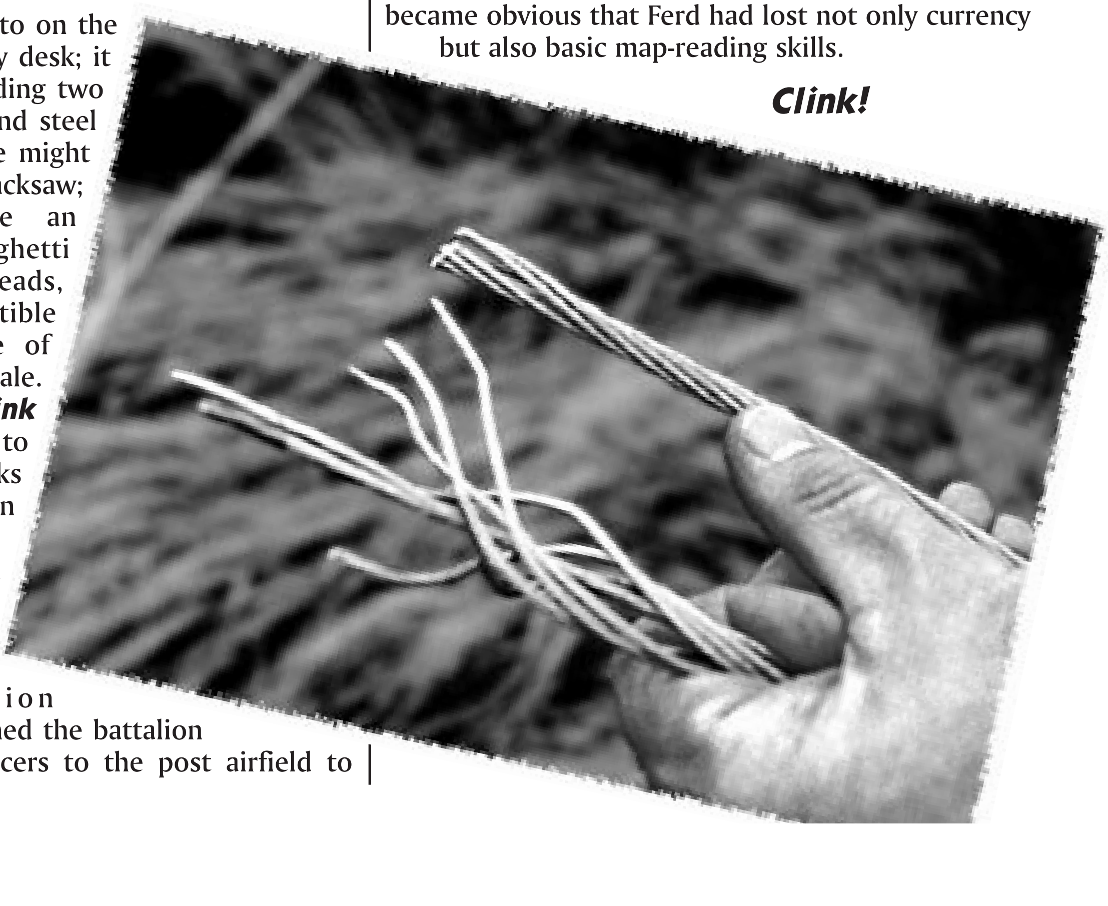
I'd qualified Ferdinand Magellan in the OH-6 and he'd been pretty sharp. As we marked the mission graphics on our maps after the briefing, I asked Ferd how long it had been since his last flight.

"Early December, I think. Things have been pretty hectic at work."

As it was now the middle of May, the phrase "refresher training" lost some of its humor. I told him I would fly during the mission and use the VHF; he would navigate and use the FM and UHF. We'd break off from the flight after the mission for the currency ride—as briefed.

During our NOE flight to the release point, it became obvious that Ferd had lost not only currency but also basic map-reading skills.

Clink!



I radioed our admin bird that I'd be slowing down for Magellan's benefit and got, "Okay, but why haven't you been acknowledging the radio calls?" A quick check confirmed that both FM and UHF volumes were tuned to whisper mode. Why? "Because I couldn't hear what you were saying with all the radio calls going on."

Clink!!!

"Tell you what, Ferd. I'll fly ***and*** handle the radios. You concentrate on the map. Look at the landmarks I'll point out, keep us on the map, and confirm my call at the control points, okay?"

"Okay. You've got the radios and the controls."

CLINK.

We headed southeast into the midmorning sun toward a long, narrow field bounded on the left by a tree line paralleling our flight path. To the right was a large brushy area fading to woodland; an isolated pair of 40-foot trees stood about midway down the field. As we came abeam the pair of trees, we felt the aircraft lift very gently and heard that soft thump later written up in *Flightfax* . . . .

The Engineers had indeed put the telephone lines underground; however, they had not put all the *wires* underground. Hidden behind the tree line to our left was a telephone pole; lurking between the pair of 40-foot trees to our right was another pole. What I had hit were two of three 5/8-inch support cables (nicely oxidized to a soft, pale gray) strung between the poles—supporting nothing.

There are so many lessons in this little horror story: crew coordination, risk management, aviator overload, just plain basic crew communication. Go back to the beginning; count the ***clinks***. I'd had that "Something's wrong" feeling during most of them, but I'd adjusted only enough to assuage the feeling, not eliminate it.

Our battalion again does a wire recon as the first mission at AT; we also fly a monthly wire sweep of our home tactical training area. When the newbies ask why, somebody usually says, "Ask Tuttle."

Oh yeah, the photo caption. On the OH-6, there's a gap about the length of a U.S. Government pen between the tip of the lower wire cutter and the skid toes. I'd caught the first wire an inch above the breakaway tip and the second one about an inch below the skid toe cap. An inch higher or lower and one of the wires would have passed through the gap and flipped us. If I'd been flying slower, the cutter wouldn't have cut the top wire completely; if I'd been flying faster, the wire would have snapped the cutter tip and flipped us. If I hadn't been flying the only Loach on post with skid shoes, the skid cleats would have snagged the middle wire and flipped us.

We were flying at the only possible combination of altitude, attitude, and airspeed in the only possible Loach that would ensure our surviving a multiple-wire strike.

I figure that's Divine Intervention. It sure wasn't due to any skill on my part.

—CW4 William S. Tuttle, New Jersey ARNG, DSN 445-9261 (609-530-4251)

"I have the controls"

There I was in the left seat of an OH-58D(I): 80 knots and 200 feet agl, not a worry in the world; VFR, and not a cloud in the sky. A simple training mission: go out, burn a fuel load, and do some ATM training. Nothing could be easier. Or could it?

It started with "You have the controls," something you hear all the time. Of course, being a crew-coordination graduate, I had all the right responses. "I have the controls," I replied calmly—calmly, that is, until the aircraft started to make an abrupt right turn and began to dive for the ground.

As hard as I tried, I could not stop the turn nor could I get the nose of the aircraft out of the steep dive. I looked over at my right-seater. A brand-new OH-58D(I) pilot fresh from flight school, he was looking at me, trying to figure out why I was trying to impress him with my flying skills. I mean, we were only 200 feet above the trees and making a run for the ground. Of course, by this time, 200 feet was only a far distant memory. About this time, it struck me that the cyclic was not moving like it should. In fact, the cyclic was not moving at all.

All at once, it came to me like a bad meal. My stomach began to churn as I realized what was going on. I had not checked the flight controls on my side during preflight, and guess what? The cyclic was locked out.

A thousand times I had preached to pilots: Whenever you go flying, check to make sure the cyclic is not locked out. Now, here I am, running out of altitude and ideas with no place to run, and my cyclic is locked out. Thanks to my right-seater's ability to recognize fear in the eyes of his left-seater, he was able to take the controls, maneuver the aircraft right side up, and keep us out of the trees.

Of course, we didn't come away completely unscathed. We overtorqued the engine and transmission, and maintenance may have to replace the seats.

I have come to realize that complacency can strike anyone at any time and that warnings in the operators manual are there for a reason: to save lives. If I can leave you with one thought, it is this: Check the flight controls before you fly. It sure is hard to keep a helicopter upright with only the collective and pedals.

—CW5 Bill Ramsey, Aviation Section, Army Safety Center, DSN 558-2785 (334-255-2785)

The "mike" monster

At the end of the hearing-test portion of my annual Class II flight physical, the technician handed me the chart. My eyes focused on "-70" in the 6000 Hertz section for my right ear. "Minus 70?" I thought. The previous year it had been -55, and the year before that it was -50. I obviously was losing my hearing, but I didn't know why. I knew that most of the high-time aviators in my unit had some hearing loss. The loss was substantial for a few of them. Now I was joining their ranks. Some of them were approaching 8000 hours, but I had only about 4000.

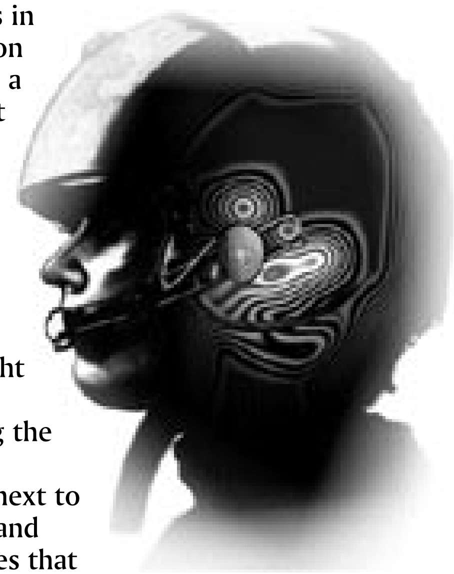
On the drive home, I began to think about how I was damaging my hearing. I'm conscientious about wearing earplugs, changing my helmet earcup seals before they become hard, and keeping the elastic straps behind the earcups tight. I wear bayonet stems on my glasses and make sure they go above the earcups and don't penetrate the earcup seal. I carry earplugs at all times and use them any time there is an aircraft turning on the flight line, when encountering loud music, when driving with the windows down, and when using power tools or lawn mowers. For pistol qualification, I use both earplugs and earcups. What more could I do? I knew that I had better do something fast or I would be going the route of hearing-waivers before very long.

I knew I must reduce my noise exposure to prevent further hearing loss. But to do this, I needed to identify the source of my maximum exposure. I decided to try to be alert for any harsh, shrill, or loud noises. It didn't take long.

During startup on my very next flight, I noticed a shrill whine, the sound of my helicopter's turbine engine. But why was it so loud? I had on my well-fitted SPH-4B helmet with new earcup seals and the chin strap pulled tight.

The answer was that the pilot must keep the mixer panel (C-6533/ARC) mike switch in the "hot mike" position during startup to make required calls to the left seat when both hands are occupied on the starter switch, collective, throttle, and throttle idle detent release button. I had known that this hot-mike switch created a noise problem and had asked my left seaters in recent months to leave their mike switches off during startup and instead use the foot switch. This kept the number of open mikes to a minimum. I also always turn my hot-mike switch off as soon as possible during the starting sequence to minimize our exposure to the one open (hot) mike.

As I began to think about hot mikes, several things became apparent. First was that although we had increasingly been trying to limit their use, there had still been a number of times when we had had one to three mike switches in the hot-mike position for up to 2 hours at a time during difficult missions.



An open switch for the boom mike on an aviator's helmet totally bypasses all the hearing protection provided by the flight helmet. Worse, it is equivalent to taking the microphone off and holding it right up next to the turbine engine and transmission. It takes that noise, amplifies it, and broadcasts it directly into your ears from the speakers located in the earcups of your flight helmet. The only possible salvation here is earplugs. If you do not wear them, your hearing days are surely numbered.

Using the hot-mike position also creates a length-of-exposure problem. The loud whine of the transmission and engine can be heard every time a crewmember keys the mike, even for a moment. The theory is that the microphone is right up against the crewmember's lips and is designed to receive only the crewmember's voice. But the fact is that if the volume is set high enough to hear other crewmembers' communications, then the high-pitched and shrill cockpit background noise is being picked up and amplified anytime a crewmember keys the mike. Perhaps a future solution to this problem will be use of a "notch filter" in the amplifier, or downstream of it, that totally blocks out the primary frequencies that comprise the engine whine.

My sole purpose here is to address the problem of the inadequacy of some of our equipment and to caution young Army aviators of the certainty of things to come if they do not use every possible means to protect their hearing.

—CW4 Don C. Thomson, Missouri ARNG, DSN 555-9330/9347 (573-526-9330/9347)

Attention HUD/ODA users

A recent inquiry to the Night Vision Devices Branch at Fort Rucker involved the ANVIS lanyard that goes around the neck and its use when operating the head-up display or optical display assembly.

In May, change 9 to the OH-58D(I) operator's manual added the following warning: "Failure to remove the ANVIS neck cord prior to operation of the ADSS may prevent egress from the aircraft in an emergency."

GEN-97-ASAM-04 (101430Z Apr 97) said in paragraph 8e(4), "Installation of the ANVIS/HUD DU requires removal of the standard ANVIS neck cord assembly to facilitate egress from the aircraft in the event of an emergency. An additional (removable) neck cord assembly is provided with the ANVIS HUD. This cord must be removed from the ANVIS when the ANVIS/HUD is installed and must be replaced prior to flying with the basic ANVIS. The assembly consists of a neck cord (strap, webbing), P/N 125302, NSN 5340-01-396-1746, and barrel fastener (cylinder), P/N 125301, NSN 5340-01-393-4890. This neck cord can also be used to replace the lanyard used on any standard ANVIS system."

The original intent for this special lanyard was for users of the AN/AVS-7 HUD, but the lanyard will work fine with the OH-58D(I) version of the HUD also.

The ANVIS -10 requires that the lanyard be in place when operating the ANVIS in flight. A change is in the mill to address operations with the HUD/ODA attached to the ANVIS without the lanyard installed. The folks at PM-Night Vision say that, until that change comes out, it's all right to operate the ANVIS without the lanyard installed as long as the HUD/ODA is attached.

The bottom line is, if you are using a head-up display that attaches to the ANVIS—whether you call it a "HUD" or an "ODA"—remove the neck cord to facilitate egress in the event of an emergency.

—CW5 Bob Brooks, USASC Night Vision Systems Manager, DSN 558-2845 (334-255-2845)

STACOM

STACOM 170 ◆ August 1997

Contractor flight crewmembers

The Army uses contractor flight crewmembers in many capacities and situations, and specific guidelines have been established to cover their use. AR 95-20 establishes the minimum qualification requirements contractor flight crewmembers must meet. For example, a contractor instructor flight crewmember who is contracted to instruct U.S. Army pilots (student or rated pilots) must—

- Meet FAA Part 61 Certified Flight Instructor certification requirements, OR
- Be a graduate of a Department of the Army instructor-pilot course of instruction in the category in which he or she will instruct.

These personnel are authorized to perform only the instruction contracted for and only to the students specified in the contract. They may not administer the Aircrew Training Program as defined by AR 95-3. Personnel who are not under contract to instruct or evaluate Army personnel are NOT authorized to do so. Contractor instructor flight crewmembers operating within other contracts are authorized to administer instruction and flight evaluations to other flight crewmembers employed by the contractor if approved by the Government Flight Representative (GFR).

The terms *Maintenance Evaluator* or *Maintenance Test Flight Evaluator (ME)* and *Standardization Pilot* or *Standardization Instructor Pilot (SP)* are U.S. Army specific terms. A contractor flight crewmember can receive his or her annual evaluation and any no-notice or other required evaluation from a U.S. Army ME or SP, or from a contractor instructor flight crewmember who is qualified to perform the duties being evaluated (i.e., MTP or IP) if approved by the GFR. U.S. Army IPs, SPs, IEs, and MEs can administer flight evaluations to contractor flight crewmembers only when authorized in the contract or approved/directed by the GFR or the individual's commander.

Note that separation from military service automatically terminates Army orders as IP, SP, IE, MP, or ME. Separated personnel must meet the qualification requirements of AR 95-20, the contract, and the contractor's procedures.

—CW4 Joseph Gonzalez, DES, DSN 558-2532 (334-255-2532)

Standardization Communication ■ Prepared by the Division of Evaluation and Standardization, USAAVNC, Fort Rucker, AL 36362-5208, DSN 558-2603/2442. Information published in STACOM may precede formal staffing and distribution of Department of the Army official policy. Information is provided to enhance aviation operations and training support.

Accident briefs

Information based on *preliminary* reports of aircraft accidents

AH1

Class C

F series

■ N2 rpm decreased and low rpm audio/light activated during area recon training. PC lowered collective to regain rpm. Upon applying collective to arrest rate of descent, rpm again decreased, and engine failed at 40 feet agl. PC autorotated to muddy, uneven terrain. On touchdown, aircraft skidded about 15 feet, tilted forward on skid toes, and rocked back before coming to rest. Landing gear was damaged, WSPS breakaway rivets sheared, and sheet metal was damaged.

Class E

F series

■ Back-seat pilot saw aft fuel boost segment and master caution light come on (fuel gauge showed 950 pounds) and transferred controls to PI. PC pulled aft fuel boost circuit breakers and aircraft landed without incident. Maintenance found that a required washer was not installed IAW change 22 to the TM. Change was not posted because maintenance was awaiting change 21.

AH64

Class C

A series

■ Postflight inspection revealed damage to No. 2 engine cowling door. Suspect door opened in flight.

Class E

A series

■ While ground taxiing in from runway, tower advised crew that No. 1 engine cowling was open. Normal shutdown was completed. Maintenance inspection revealed damage to ribs of cowling.

■ In cruise flight just after takeoff, BUCS failure caution light came on, and pitch and roll DASE channels dropped off line. Crew landed aircraft back at airfield and attempted to clear malfunction. During subsequent start, BUCS failure light again came on along with oil psi main transmission No. 1 caution light. Maintenance replaced longitudinal servo actuator.

■ Torque gauge changed from 64 to 44 percent during hover. Suspect malfunction of data converter for torque gauge.

CH47

Class E

D series

■ Crew had just completed before-takeoff checks to be followed by VMC takeoff. Just before takeoff, aircraft started to vibrate. Within 3 seconds, vibrations had become extreme, particularly in forward transmission and cockpit areas. Emergency shutdown of both engines was performed. Forward transmission was replaced.

■ Forward hook open light came on after load was lifted. Cable assembly was replaced.

■ Aircraft encountered turbulence in cruise flight, resulting in unusual pitch attitude. Master caution and aft transmission lights came on momentarily. Flight engineer heard noise from vicinity of tunnel area and smelled burning oil. After landing, oil was observed in combining-transmission area. Cause not reported.

■ Flight engineer heard unusual noise in vicinity of forward transmission and felt high-frequency vibrations. Sync shaft sliders were cleaned, and vibrations checked okay.

■ No. 2 hydraulic caution came on in flight. Flight engineer confirmed loss of fluid and high temperature. Aircraft landed with no damage, and maintenance replaced No. 2 hydraulic flight control pump.

OH58

Class A

A+ series

■ Pilot entered autorotation due to suspected underspeed. Control was lost, and aircraft crashed and burned. Two of three persons on board were killed; the other was injured.

Class B

D(I) series

■ PI initiated deceleration during simulated engine failure training. IP took controls and applied collective to arrest perceived high rate of descent. Aircraft touched down hard, damaging main rotor blades, severing tail boom, and collapsing landing gear. No injuries.

Class C

D(I) series

■ Engine flamed out following activation of analog test switch (engine overspeed test procedure) during engine runup. IP noted smoke from engine exhaust during coast-down, performed engine shutdown, and instructed student to monitor tgt and to depress starter if it appeared that tgt would exceed limits. After IP egressed to make initial accident notification, student noted tgt rising and depressed starter. Upon engagement, tgt rose rapidly to 1029° for 3 seconds.

A+ series

■ Crew aborted start due to low N1 reading (14%). Using AH-1F battery, crew attempted second start. N1 peaked at 17 percent prior to opening throttle. Start appeared normal until tgt spiked to 1000°C. Engine replacement required.

UH1

Class A

H series

■ Aircraft was transporting six passengers to remote radar site when it crashed into the side of a pinnacle and rolled downhill. No fatalities, but aircraft was destroyed. Accident is under investigation.

Class D

H series

■ While performing masking/unmasking operations at 20-foot hover, N2 bled off. Collective was lowered, and all indications returned to normal. Aircraft was landed and, after discussing indications, PC decided to conduct OGE power check. During power increase, compressor stalled. Suspect linear actuator became momentarily jammed by dirt and dust, then was cleared by vibration from compressor stall. Both 40-

and 90-degree gearboxes were replaced, but engine was not.

Class E

H series

■ After 1-hour flight, crew noticed wet spots on concrete pad after taxiing aircraft to Compass Rose. Investigation revealed fuel drops coming from fuel vent line, but no leaks were found in engine compartment. Maintenance replaced overspeed governor due to fair wear and tear.

■ Pilot felt cyclic binding in aft quadrant during pickup to hover. Troubleshooting revealed that cyclic controls were not properly rigged, and stops were contacted prematurely in forward CG situations. Controls were rerigged.

■ During cruise flight at 1400 feet msl, smoke filled cockpit, followed by master caution but no segment light. Feedback was felt in controls. PC diagnosed hydraulic failure. Smoke cleared when left-side cabin door was opened, and run-on landing was made without incident. Maintenance found hole in left servo inlet line and replaced hose. Suspect hoses are rubbing against each other. Maintenance personnel are checking every hydraulic line in all UH-1s.

V series

■ During maintenance test flight, power was being applied to TEAC engine when a pop was heard. N2 went to zero, rotor rpm started to climb, aircraft yawed, and engine chip light came on. Collective was increased to further load rotor, and throttle was controlled manually under emergency governor operations. Aircraft was landed to open field without incident, and emergency shutdown was completed. Cause not reported.

■ During 2-minute shutdown for cold refuel at FBO, PC unlatched left cockpit door. Door was immediately slammed open by 20- to 25-knot tailwind, and lower left hinge cracked. Hinge was replaced after mission completion.

■ PC noticed lack of N1 indication on engine start. Maintenance replaced N1 indicator gauge and released aircraft for flight.

UH60

Class C

A series

■ Input module exploded while aircraft was in cruise flight at 900 feet msl. Aircraft was landed without further incident. Explosion damaged hydraulic system, engine, and fuselage.

Class E

A series

■ No. 1 hydraulic pump caution light and backup pump advisory light came on while on the ground. Inspection revealed hydraulic fluid on left wheel and exiting overboard drain. Cause not reported.

■ No. 1 generator caution light came on in cruise flight. After emergency procedures were performed, main transmission temperature entered precautionary range then rose beyond max temperature range within 10 seconds. Main transmission module, both input modules, and accessory modules are being submitted for analysis.

■ No. 1 tail rotor caution, No. 2 tail rotor advisory, and backup pump lights came on in cruise flight. Crew executed emergency procedures and made roll-on landing. When tail rotor switch was placed to normal during shutdown, all caution advisory lights went out.

■ Severe lateral vibration occurred during cruise flight, and crew landed as soon as possible. Vibration stopped when maintenance officer turned off SAS 1.

■ During runup for maintenance test flight, aircraft shook abnormally when rotor blades began turning. Aircraft was shut down. Cause not reported.

C12

Class D

R series

■ Aircraft was struck by lightning while in cruise at flight-level 280. Postflight inspection revealed pinprick entry points on radome and exit points on left aileron and elevator.

Class E

C series

■ During No. 2 engine start, battery charge light failed to illuminate after No. 2 generator was engaged. Loadmeter indicated 20 percent without usual spike associated with generator coming on line. Aircraft was shut down. Caused by failure of right-side current limiter.

D series

■ During takeoff roll, No. 2 engine would not produce calculated power of 84 percent at 31°C. Engine produced only 81 percent at tgt limit. Takeoff was aborted and aircraft was taxied to parking without incident. Maintenance adjusted tgt-sensing unit.

■ Autopilot/yaw damp system would not disengage during taxi to active runway, and mission was aborted. Caused by failure of autopilot engage switch on mode controller.

■ Right fuel gauge indicated 300 pounds less than actual amount in right main tank during cruise flight. Mission was aborted and aircraft returned to base. Suspect faulty probe.

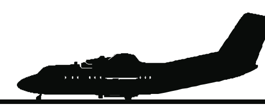
F series

■ Right generator went off line after climbout and could not be reset. Crew returned to home station, where voltage regulator was replaced.

R series

■ When power was reduced to begin descent from flight-level 280, left engine torque would not reduce below 65 percent with engine power lever at flight idle position. No. 1 engine was secured, and single-engine landing was completed without incident.

O5



Class E

DHC-7

■ No. 3 engine would not accelerate beyond 35 percent during startup. Troubleshooting revealed faulty flow divider.

■ No. 3 engine oil pressure fell below 75 psi on short final. Engine was secured and landing completed. Inspection revealed garlock seal on hydraulic pump mounting pad was leaking. Seal was replaced.

■ During takeoff roll, No. 3 engine exceeded 800° at 3500 pounds of torque. Takeoff was aborted and aircraft was returned to ramp. Troubleshooting revealed faulty turbine temperature indicator.

■ No. 1 engine would not light off during engine start. During second attempt, white smoke was seen in vicinity of intake and start was aborted. Troubleshooting revealed failed starter generator assembly.

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

Aviation messages

Recap of selected aviation safety messages

Aviation safety-action messages

AH-64-97-ASAM-06, 161826Z Jun 97, maintenance mandatory.
Cracks have been discovered in fastener holes of the No. 1 stringer in the area of fuselage station 385. This is the area where the anti-flail bearing mount connects to the stringer. In addition, gaps have been found between the stringer and mount. The purpose of this message is to direct a one-time inspection of the No. 1 stringer for cracks in the fastener holes and gaps in the interface of the stringer and the forward anti-flail bearing mount between fuselage stations 383 and 386. ATCOM contact: Mr. Howard Chilton, DSN 693-1587 (314-263-1587).

UH-1-97-ASAM-05, 011330Z Jul 97, maintenance mandatory.
UH-1-97-ASAM-02 directed that all units remove obscuring material from the red and green navigation position lights because masking violated FAA regulations when aircraft were operated in National airspace at night. The original intent of masking these lights was to prevent disruptive glare during NVG operations. Once the masking was removed, an unacceptable level of glare persisted for NVG operations. A masking scheme has now been developed that complies with both FAA regulations and NVG user requirements. The purpose of this message is to require a one-time masking of the red and green position lights to the exact specifications outlined in the message. ATCOM contact: Mr. Bob Brock, DSN 693-2718 (314-263-2718), brockb@stl.army.mil.

Maintenance-information messages

AH-64-MIM-97-06, 160941Z May 97.
Dry film lubricant, dirt, and debris collecting in the lead lag link joint may cause binding and can significantly degrade the life of components and increase the failure rate of AH-64 main-rotor strap packs. The purpose of this message is to outline inspection and correction procedures. ATCOM contact: Mr. Ken Muzzo, DSN 490-2257 (314-260-2257).

OH-58A/C-MIM-97-04, 081054Z May 97.
An incorrect change was incorporated into TM 55-1520-228-23-2, page 11-41, paragraph 11-101r through Change 9, dated 28 February 1997. The purpose of this message is to correct that error and serve as authority to implement the correction until the printed change is received. ATCOM contact: Mr. Kevin Cahill, DSN 490-2252 (314-260-2252).

UH-60-MIM-97-02, 101135Z Jan 97.
Different stabilator actuator assemblies require different electromagnetic environment (EME) tests. This message explains which EME tests are to be performed on which assembly. ATCOM contact: Mr. Derek Dinh, DSN 490-2264 (314-260-2264).

UH-60-MIM-97-03, 241638Z Jun 97.
In October 1996, change 4 to TM 1-1520-237-23-1 changed the retirement life of the H-60 main rotor spindle nut from 2500 to 500 hours. At the time, it was cheaper to buy a new nut and replace it every 500 hours than to overhaul the old nut until retirement at 2500 hours. Present economic conditions dictate that it is more cost effective to overhaul until the retirement life is reached. The purpose of this message is to change the overhaul/retirement life and SMR code of the main rotor spindle nut. ATCOM contact: Mr. Derek Dinh, DSN 490-2264 (314-260-2264).

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Class A Accidents

through June

		Class A Flight Accidents		Army Military Fatalities	
		96	97	96	97
1ST QTR	October	1	0	0	0
	November	0	0	0	0
	December	0	1	0	0
2D QTR	January	1	2	0	2*
	February	0	0	0	0
	March	2	2	7	1
3D QTR	April	1	2	3	2
	May	0	2	0	1
	June	1	2	6	1**
4TH QTR	July	0		0	
	August	0		0	
	September	1		0	
	TOTAL	7	11	16	7

*Excludes 1 USAF pilot trainee fatality
**Excludes 1 Air National Guard passenger

U.S. ARMY SAFETY CENTER

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