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REPORT OF ARMY AIRCRAFT ACCIDENTS

The OH-58 was Chalk 2 in a flight of four in cruise flight on the return leg of an NVG mission. Chalk 3 attempted to warn Chalk 2 that he appeared to be going into the clouds. Simultaneously, the crew of Chalk 2 transmitted that they no longer had visual contact with Chalk 1. Chalks 3 and 4 observed Chalk 2 initiate a rapid decelerative maneuver (30-degrees nose up) and enter into a climbing right turn. The aircraft was last seen entering a left turn as it disappeared into the overcast clouds. Several members in the flight attempted to establish radio contact with Chalk 2 but were unsuccessful. Search and rescue located the downed aircraft a few hours later. The aircraft was totally destroyed, and both crewmembers sustained fatal injuries.

"I'M INADVERTENT IMC"

Few phrases elicit as much instant anxiety to Army rotary wing aviators as do those three words. Regardless of the aviator's status—master aviator, instructor pilot, instrument flight examiner, commander, or newbie—accidently bumping into a cloud presents many problems not typically encountered during a planned instrument flight rules (IFR) flight.

An analysis of inadvertent IMC-related accidents over the last 20 years provides some insight into the significance of these accidents.

■ From January 1974 through January 1994, the Army experienced 50 Class A through Class C rotary wing accidents involving inadvertent IMC.

■ Of these 50 accidents, 40 (80 percent) were Class As.

■ In the three Class B accidents, the aircraft sustained substantial damage but fortunately only two cremembers were injured.

■ Of the seven Class C accidents, four were slingload operations where the aircrews released the load after encountering IMC in order to maintain aircraft control. Of the remaining three accidents, one involved an overtorque, one involved hail damage during the recovery, and one involved an engine failure while on vectors for an instrument approach.

■ UH-1 and OH-58 crews experienced most of the accidents with 17 each.

■ Of the 50 Class A through C accidents, 36 (72 percent) were at night.

■ Of the 14 day IMC accidents, 10 occurred in mountainous terrain.

■ The accidents occurred when the aircraft encountered clouds at flight level, flew into ground fog, or flew into heavy rain.

Prevention measures/techniques

What can be done to eliminate this type of accident? The solution probably requires action at several levels—individual aviator, instructor pilot/instrument flight examiner, and commander.

Individual aviators should—

■ Maintain "very good" instrument flight proficiency instead of minimal proficiency.

■ Practice instrument flight until they are very confident in their abilities.

■ Be familiar with and practice local inadvertent IMC procedures. Commit to memory altitudes, headings for procedures, ATC frequencies, and NAVAID frequencies and identifiers. Back it up with an approach plate.

■ Realize when accomplishing the hazard assessments that combinations of hazards may increase risk beyond the sum of individual hazards.

■ Avoid routes over areas of low contrast and definition, particularly at night.

■ Not continue flight purely on aided-flight visibility during night-aided flight with either NVGs or night vision systems. During any given flight, periodically evaluate unaided visibility. If restrictions to visibility deteriorate below the required minimums, make a weather decision; don't just continue.

■ Maintain situational awareness while in flight, particularly regarding flight visibility and ceilings. Be willing to turn around when the weather begins to deteriorate.

■ Be willing to land the aircraft and wait the weather out if turning around doesn't resolve the problem!

■ Not push the weather in mountainous terrain. There is no guarantee the weather on the other side of a pass will improve.

■ Have NAVAIDs tuned to navigation radios as opposed to commercial radios.

■ *Never attempt to reestablish VMC if you bump into a cloud.* ***Commit to IMC!*** This is probably the most important prevention measure/technique. You have been trained to accomplish a recovery. Execute!

Instructors/instrument flight examiners should—

■ Conduct instrument training in the aircraft at night. This forces good cockpit organization and eliminates peripheral visual cues that may help aviators retain orientation with other than the flight instruments.

■ Initiate instrument renewals using inadvertent IMC scenarios, particularly in observation and attack aircraft.

■ Require proficiency in full approaches, as well as vectors to final.

■ Exercise the local inadvertent IMC procedures. Aviators and controllers get the benefit of the training.

■ Make instrument evaluations challenging but realistic. Promote aviator confidence. The old "instrument checkrides from hell" aren't very useful in developing aviator confidence.

■ Teach aviators and nonrated crewmembers to make flight-visibility estimates; for example, what is

the difference between ½-mile and 1-mile visibility?

■ Reinforce good crew coordination and crew interaction.

■ Ensure that if aerial obervers are assigned, they are included in instrument training per the ATM.

Commanders should—

■ Require aviators to fly hooded training scenarios at night.

■ Ensure the risk-assessment matrix shows the proper risk for crew experience and crew mix. For example, the assessment should show that an NVG, marginal, VFR, single-pilot mission with an aerial observer on board is an extremely high risk.

■ Include instrument training as part of training scenarios when possible. That is, at the end of a unit METL training session, plan to have some or all aircraft recover with an instrument approach.

■ Never send aircraft out on "weather checks."

■ Require crews to brief specific responsibilities when weather is marginal.

■ Not demean aviators who identify weather below minimums.

■ Evaluate aviator experience. Does the local weather criteria match the experience level of the unit's crewmembers? If it doesn't, consider increasing ceiling and visibility requirements for all night missions.

■ Be a good example. If you push weather, you set the standard for every other aviator to also take chances with the weather.

■ Maintain "very good" instrument proficiency instead of minimal proficiency.

As previously stated, the majority of the inadvertent IMC accidents occurred at night. Over the years, the amount of night/night vision devices as a percentage of our total flying hour program has increased and appears to continue to rise. As night operations increase, we as an aviation community must continually do all we can to reduce these deadly and costly accidents.

The material presented in this article is just a start. Many other aviators have experienced inadvertent IMC that did not result in an accident. If you have experiences, ideas, or training methods that have proven beneficial, send them to Commander, U.S. Army Safety Center, ATTN: CSSC-PMA (*Flightfax*), Fort Rucker, AL 36362-5363 or FAX DSN 558-9136, commercial 205-255-9136. Or if you prefer, call the POC for this article. We'll work those ideas into another article in *Flightfax*. ❑

POC: CW5 Robert A. Brooks, Aviation Branch, DSN 558-3262, commercial 205-255-3262

Survival equipment must be serviceable . . .

It's called survival equipment because it is designed to help you survive in adverse conditions. If it isn't serviceable, it won't be of much benefit to you at a time when you could need it the most.

Following a recent OH-58 accident, the crew's SRU-21 survival vests were inspected and many items were either expired, missing, or unserviceable. There was no standardization concerning the placement of items within the vests. Had the need arisen for the use of any of these missing or unserviceable components, the crewmembers could have been in a serious situation.

Perform required inspections

Each survival kit must be inspected at prescribed intervals to determine the serviceability of the kit and its components. Commanders must ensure that the personnel in their units are equipped with *serviceable* survival equipment. They must also ensure that crew training stresses the proper use and operation of survival equipment. It's also each individual's responsibility to ensure the serviceability of his or her equipment and to know how to properly operate the equipment. If an item is missing or unserviceable or you don't know how to use it, it can't help you.

Think safety all the time. The standards are there; all we have to do is follow them. Safety is a byproduct of professionalism, and professionalism means complying with all the standards. By-the-book, disciplined operations, including required survival equipment inspections, are mandatory. ❑

POC: SFC(P) Alcides Santana-Cruz, Aviation Branch, DSN 558-3262, commercial 205-255-3262

Returning to flight duties

Following a recent Class A OH-58C accident, a review of the pilot-in-command's medical records revealed that he had been given an upslip the morning of the accident despite the fact that he was taking two medications that require grounding. Did this error cause the accident? Luckily, in this case, it was not found to be a contributing factor and no one was seriously injured. However, such errors are unfortunately too common and certainly could contribute to aircraft mishaps.

How the error occurred

The unit was training in a remote maneuver site away from their home station. The flight surgeon was inexperienced and did not have the applicable Army regulations and aeromedical policies with him in the field. The pilot in question came down with a flu-like illness 2 days before the accident and reported to the flight surgeon at the battalion aid station. The pilot was treated appropriately with antihistamines and a cough suppressant (Robitussin DM) and given a grounding 4186.

The pilot spent the next 2 days resting and recuperating. On the third day, he felt better, probably in part because the medications alleviated some of his symptoms. The pilot believed that he was letting his troop down and felt some self-imposed pressure to get back up.

Although the pilot had taken the last dose of a time-release antihistamine the evening before and the last dose of cough suppressant the morning of the accident, the flight surgeon reevaluated him and gave him an upslip despite the medications and the relatively brief grounding. The pilot proceeded to fly low-level missions for the next 5 hours until the time of the accident.

Regulatory requirements

AR 40-8: Temporary Flying Restrictions Due to Exogenous Factors requires that all aircrewmembers receiving the following drugs or types of drugs will be restricted from flying duties as indicated:

- *Alcohol*—12 hours after the last drink consumed *and until no residual effects remain.* (Alcohol is also found in some cough preparations.)
- *Antihistamines or barbiturates*—for the period taken and for 24 hours after discontinued or following any adverse aftereffects or results, whichever is longer.
- *Mood ameliorating, tranquilizing, or ataraxic (calming) drugs*—for the period they are used and for 4 weeks after the drug has been discontinued. When medications are used for nonpsychotropic reasons, such as for symptomatic relief of vomiting or muscle spasm, the period of disability will last only for the duration of the acute illness and for 72 hours after cessation of the medication.

Aeromedical Policy Letter 9-89: Medications requires that all aircrewmembers be temporarily grounded during the therapy initiation or after cessation of these medications:

- *Alcohol*—12 hours and no residual effects.
- *Antihistamines, except Seldane*—24 hours after use.
- *Barbiturates, mood ameliorating, tranquilizing, or ataraxic drugs*—72 hours after use.
- *Cough preparations with dextromethorphan/ codeine analogues (Robitussin DM)*—24 hours after use.
- *Diet aids (Dexatrim, Acutrim)*—use not allowed.

■ *Nicorette gum*—for the first 72 hours of use and no use in flight.

■ *Quinine, bitters, or tonic water*—72 hours after use.

■ *Sleeping aids (Nyquil, Nytol)*—24 hours after use.

■ *Temazepam (Restoril)*—12 hours after use.

Flight surgeon's responsibilities

It is the responsibility of every flight surgeon to be thoroughly familiar with the applicable regulations and policies regarding the use of medications by aviation personnel. Flight surgeons should take their regulations and policies into the field and on deployments with them and make frequent reference to these policies.

Aviation medicine requires more than simply following policies and regulations. The flight surgeon must take into account the effects of the underlying illness in addition to the effects of the medications. An aviator with an upper respiratory illness is much more likely to experience ear or sinus pain with changes in ambient pressure and vertigo than a healthy aviator would be. An aviator with a stomach virus is much more susceptible to motion sickness and simulator sickness than is a healthy individual. A bad head cold makes all of us more susceptible to fatigue and frustration and less able to attend to secondary tasks.

It is better to be on the safe side and recommend that a crewmember remain down for an extra day or two than to assume that the crewmember's condition has completely resolved. For example, someone with a cold often feels much better early in the morning but begins to feel worse as the day goes on.

A good policy is for flight surgeons to insist that before they will recommend return to full-flight duties, crewmembers must feel good after discontinuing all medications. Furthermore, flight surgeons should be sufficiently familiar with the individual crewmembers in their care to anticipate an individual's self-imposed pressures to help the unit despite an illness or lack of experience. Flight surgeons should discuss missions and crew selection with the aviation unit commanders and aviation safety officers before making return-to-full-flight-duty recommendations. An individual recovering from a minor head cold might be capable of flying a 2-hour administrative/logistic mission but not be up to flying 4 hours of low-level NVG tactical missions.

Crewmember's responsibilities

Every year, you sign a statement on your flight physical that says,

> *I understand that I must be cleared by a flight surgeon after hospitalization or sick in quarters (AR 600-17) and must inform the flight surgeon after treatment or activities that may require restriction (AR 40-8). I have read AR 40-8. I have informed the examining physician of any changes in health since my last examination.*

In addition, AR 40-8 is a required subject for aeromedical training each year. It's your responsibility to be familiar with it. All aircrewmembers are prohibited from self-medicating. You must also be honest with yourself and with the flight surgeon about how well you feel. Flight surgeons are usually very busy and must be able to trust you to tell them how you feel. It is a good policy to not rush to get back up even after minor illnesses. No one is more responsible for your health and well being than you are. If you don't fly today, you can always fly tomorrow. If you get an upslip in order to fly today and have an accident, you might not fly tomorrow—or ever again. ❑

POC: MAJ Ronald Johnson, Brigade Flight Surgeon, 4th Aviation Brigade, 4th ID(M), Fort Carson, DSN 691-8665, commercial 719-526-8665

Aviators needed

The U.S. Army Aeromedical Research Laboratory (USAARL) at Fort Rucker, AL, needs aviator volunteers to participate in several research studies.

Many of these studies will require a 2-week commitment. And participants will be able to acquire either simulator or aircraft time, depending on the study.

Temporary duty funds and travel funds will be provided by USAARL on a case-by-case basis. Anyone interested in participating in the research should contact Mr. Larry Woodrum, DSN 558-6834, commercial 205-255-6834.

Individual risk assessment needed too

Throughout the Army, soldiers are being taught how to do mission risk assessments and manage risks to avoid accidents. Don't forget to include an individual risk assessment.

Whether you're an enlisted soldier driving a truck or an officer flying a $10 million Apache attack helicopter, effective risk management is the way to prevent accidents and accomplish the mission safely. For soldiers at every level, knowing how to use the risk management process and being able to apply the risk management rules to every task are must-have skills in today's Army.

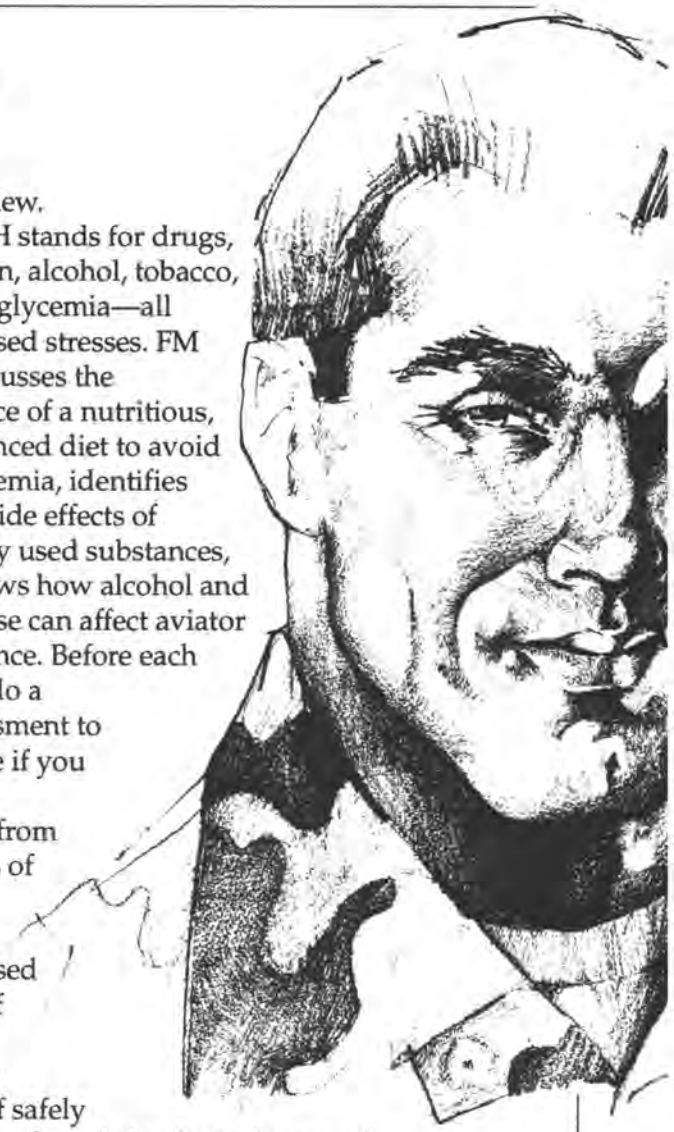
When identifying the hazards—the first step in the risk assessment—don't forget to consider yourself as a possible hazard. Do an individual risk assessment or self assessment to determine if you have any training deficiencies and to identify any self-imposed stress that could affect mission accomplishment.

■ *Training.* Are you fully trained to do the mission or task? Inexperienced and untrained or poorly trained crewmembers are a hazard. Most soldiers are dedicated to the mission and want to do a good job. Sometimes in their desire to excel, soldiers will do things in an attempt to please their commander even if they aren't fully trained for the task.

Don't allow overconfidence and eagerness to please cause you to attempt a task for which you are not trained. If you are in a leadership position, make sure the soldiers in your unit are adequately trained and make sure they know they can say "I'm not sure how to do that" without fear of being criticized.

don't forget to consider yourself as a possible hazard

■ *Self-imposed stress.* Self-imposed stress can impact your ability to complete the mission safely. FM 1-301: Aeromedical Training for Flight Personnel uses the acronym DEATH to teach aviators about self-imposed stress. Can't remember what DEATH stands for? Now is a good time for a quick review.



DEATH stands for drugs, exhaustion, alcohol, tobacco, and hypoglycemia—all self-imposed stresses. FM 1-301 discusses the importance of a nutritious, well-balanced diet to avoid hypoglycemia, identifies possible side effects of commonly used substances, and reviews how alcohol and tobacco use can affect aviator performance. Before each mission, do a self-assessment to determine if you could be suffering from the effects of any of these self-imposed stresses. If you are, then your chances of safely completing the mission have decreased.

Be honest in your individual risk assessment before every mission. Don't think of the individual risk assessment as an obstacle to be overcome before you can clear yourself to do the task or participate in the mission. If you're self-medicating, if you're tired, if you're abusing alcohol or tobacco products, or if you're simply not eating well-balanced meals, chances are your performance will be impaired. And impaired performance is a risk that is not worth accepting. It only takes one accident, which could happen when you least expect it, and others will know whether you're being honest in your individual risk assessment.

The bottom line is, soldiers who ensure they are adequately trained and take precautions to reduce self-imposed stress are necessary for safe operations. "Can I do this safely?" is the first question every soldier should answer before any mission. ❑

—CW3 Owen S. Wargo, Company B, 7-159 Aviation Regiment, APO AE 09182-5000

Too much pressure can lead to an accident . . .

That's a lesson I learned the hard way. I really didn't think I would ever be "pressured" into doing something that could cause an accident. After all, I was a competent mechanic whose skills were recognized by both my peers and supervisors.

After being assigned to the Safety Center and finally learning how to retrieve information from the data base, curiosity got the best of me. Almost afraid of what I would see, I punched in my own social security number. There before me on the computer screen appeared the evidence that this "competent" mechanic wasn't quite as competent as he had thought. In fact, I had made a maintenance error that cost the taxpayers of this country quite a lot of money.

It has been more than 10 years since my name was added to the vast amount of information stored in the Safety Center's accident data base. But reading about the accident brought back all too vividly what happened that day. It is a lesson I will never forget, and I'm sharing it with you in the hope that you can learn from my mistake.

Inspection required

I was serving in a combat aviation company, and our unit was beginning its second year of flying the new Black Hawk helicopter. We were in the middle of performing the first 500-hour phase maintenance inspection, and one of the requirements was to disassemble and inspect the power control and load demand spindles. This inspection was supposed to be completed by the aviation intermediate maintenance (AVIM) support facility. But at that time no one in the AVIM facility was a school-trained 67T Black Hawk mechanic; and the AVIM support facility decided that they didn't feel comfortable about doing the inspection.

Although no one in the AVIM support facility was qualified to do the inspection, it was required to complete the phase. To get the job done, our unit maintenance officer and the factory technical representative decided that we would do the inspection even though we were not authorized to do it at our aviation unit maintenance (AVUM) level. I had been in the first group of mechanics from the unit to attend the 67T30 school; therefore, they reasoned that I was qualified to do the inspection.

The accident

So I did it, and it looked like everything had gone well—or so we thought. With the maintenance phase completed, the aircraft was on the wash rack for postphase engine washes. I was in the maintenance office when I heard an aircraft crank up on the ramp next to the hangar. By the time the maintenance officer and I ran downstairs, several other people had already got there. They were watching the aircraft as it coasted down with pieces of the tiedown ropes still attached to the main rotor blades.

It wasn't Murphy proof

Once the chaos subsided and the investigators had finished their work, there was no doubt that yours truly had reassembled the power demand spindle 180 degrees out. What was supposed to have been a Murphy-proof reassembly, I had managed to put together incorrectly.

When the pilot started the engine, he did everything by the book. The UH-60A was designed to run with one engine up to flight idle against the gust lock. But because I had reassembled the spindle incorrectly, the engine went all the way to full flight on start and broke the gust lock. Once the main rotor blades started turning, the tiedown ropes became entangled in the tail rotor blades and the tail boom, causing the aircraft to yaw and bounce around on the ground.

The pilot couldn't shut down the aircraft with the control levers, and he was having major difficulty controlling it. Fortunately, the crew chief was in a position to reach up and shut off the fuel. After a few seconds, the aircraft shut down, and luckily, no one was injured.

The cause

Like most accidents, this one was caused by a number of different things going wrong. But the real culprit in this case was pressure to accomplish the mission.

We all wanted our unit to be the first to successfully perform a Black Hawk phase at our

installation. Even though I knew that I was *not authorized* to do the inspection because I was assigned to an AVUM unit, I felt I was qualified and was confident I could successfully perform the inspection. And I was proud of the fact that my supervisors felt I was capable of doing the inspection. Naturally, I was more than eager to prove that their confidence in me was justified.

In line units, especially in combat-deployable commands, soldiers sometimes feel a strong sense of urgency to accomplish the mission and fail to take into account the risks associated with haste. Mechanics and supervisors need to be aware that undue pressure, whether real or perceived, can lead soldiers to take shortcuts and attempt to perform tasks they are not authorized or qualified to perform.

While going about our everyday tasks, we encounter all kinds of pressure—some we place on ourselves, and some peers and supervisors unknowingly place on us. No one in the chain of command wants to deliberately pressure individuals into performing unauthorized tasks or performing tasks that they are not fully qualified to perform. However, people often do feel pressured and are reluctant to speak up and say that they don't feel comfortable performing a specific task.

Surely if there is time to repair the damage caused by improper maintenance, there is time to prevent it from happening. And performing *authorized*, by-the-book maintenance procedures is the only way to ensure maintenance is successfully and safely accomplished.

Don't allow yourself to be tempted to perform any maintenance procedures you aren't qualified or authorized to do even if there is pressure to get the job done. If you do, you could make the kind of mistake I did. Even worse, you could make an error that could cost somebody their life. ❑

—MSG Robert E. Price, Aviation Branch, DSN 558-3262, commercial 205-255-3262

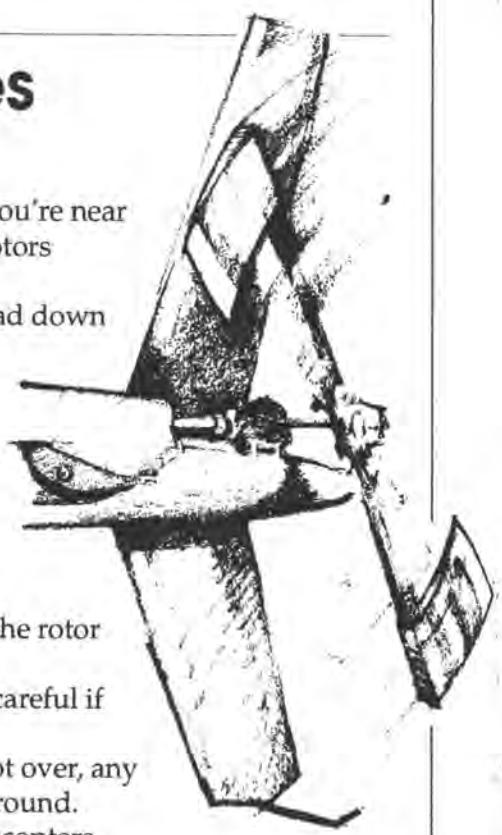
Working around aircraft requires extra care

In a recent OH-58A accident, a crew chief walked into the tail rotor of his aircraft while it was in operation. The crew chief was lucky in this case; he sustained only a deep cut into his upper arm.

Fortunately, we don't have a lot of accidents where personnel are injured by aircraft rotors. People who work around aircraft know the inherent danger associated with a helicopter's rotor system and are usually extremely safety conscious. However, sometimes individuals become so absorbed in what they are doing, they momentarily forget about the danger.

This recent incident serves to remind us that even a momentary lapse of safety vigilance can be costly, even deadly, when working around an operating aircraft. And the possibility of being struck by the rotor blades isn't the only potential hazard for people who daily work near operating aircraft. Mechanics, crew chiefs, and pilots know that they must also be extremely cautious around propellers, jet exhaust, and live armaments.

■ *Rotor blades*. The most serious hazard is that of being struck by the main or tail blades on approaching or leaving the aircraft while it is in operation. The following are just a few reminders about accident prevention measures that must be followed whenever you're near an aircraft with the rotors turning:



• Keep your head down when approaching a helicopter. Remember that the tips of the main rotor blades droop when the engine is idling, so there is less clearance at the ends of the blades than at the rotor hub.

• Be especially careful if the ground slopes.

• Go around, not over, any obstructions on the ground.

• Approach helicopters with tail rotors (preferably 45 degrees to the front in view of pilot and crew) from the side, never from the rear. The tip of the tail rotor may be as little as 1½ feet off the ground, and the pilot cannot see the tail of the aircraft.

• Go around the front (except CH-47s), never around the rear, of the aircraft under normal

circumstances when moving from one side to the other.

• Approach CH-47s from the side or rear, never from the front. When operating, the forward rotor blades can be as little as 4 feet off the ground.

■ *Propellers.* Do not touch the propeller of an aircraft. If the engine is still warm, moving the propeller could make the engine turn over and start.

■ *Jet engine exhaust.* Jet engine exhaust is a potential hazard because its intense heat can cause burns. Stay clear of the exhaust and exhaust vents. Don't make the mistake of lingering near exhaust vents in an effort to stay warm. If you're cold, a quick trip to the warming tent is the safest way to stay warm *and healthy.*

■ *Live armaments.* Live armaments are a hazard because they could be fired accidentally. Ensure that all armaments have been safetied before approaching them or performing any maintenance on the aircraft. Follow your unit's SOP, which should be designed to ensure maximum safety from armaments during ground operations.

We sometimes forget that following these simple, established procedures is the best way to manage the risks as we go about our daily operations near aircraft. When we do forget the simple precautions, accidents happen. Constantly being alert to the hazards presented by rotors, propellers, hot engine exhaust, and live armaments when working near aircraft will help us avoid painful and costly personal injuries. ❑

—SFC(P) Alcides Santana-Cruz, Aviation Branch, DSN 558-3262, commercial 205-255-3262

Attention CH-47D operators

Several months ago, the crew of a CH-47D experienced a partial loss of aircraft control due to a broken screw head, PN NAS 1351-3LL10P, lodging in the pilot valve of the *aft* upper dual boost actuator. The screw failure was the result of hydrogen embrittlement.

Hydrogen embrittlement is a consequence of an improper manufacturing process (specifically a heat-treating process) wherein hydrogen pockets are entrapped inside the metal mass and become a potential for stress corrosion cracking. All applications of NAS 1351-series screws in the CH-47D have been reviewed. The screws were found in one flight control location on the integrated lower control actuator, P/N 145H7300. The suspect screw, P/N NAS 1351-4-22P, retains the control valve input arm to the input crank. Although there have been no reported failure incidents of this screw in this location, the potential for hydrogen embrittlement exists.

The only visible failure mode on this bolt will be a fracture. An engineering change proposal to replace the screw has been approved. The Safety Center recommends that maintenance and flight crews pay special attention to this component during maintenance and flight inspections until the hardware is replaced. ❑

POC: SFC John M. Morthole, Aviation Branch, DSN 558-3262, commercial 205-255-3262

Uniforms for aircraft fuel handlers

The Safety Center has recently received several telephone inquiries concerning the appropriate uniform for aircraft fuel handlers. FM 10-68: Aircraft Refueling, dated 29 May 1987, requires that personnel wear protective clothing (which includes the uniform, helmet, goggles and hearing protection, gloves, and boots) when handling fuels. The answer to the general question concerning the appropriate uniform for aircraft fuel handlers is found on page 9-2 of the FM. It states that "there is no special uniform for personnel handling aviation fuels. Therefore, wear the standard combat uniform."

Other questions

Another frequent question concerns why some fuel handlers are presently wearing Nomex flight suits to service aircraft while others do not have Nomex available to them. The Army did not include fuel handlers in its Nomex basis of issue plan (BOIP). But some unit commanders are providing Nomex flight suits to the fuel handlers out of their own unit budget.

As a reminder for those fuel handlers who are provided with Nomex flight suits, it is important to remember that Nomex will burn if contaminated with flammable substances such as petroleum products or household starch. TM 10-8400-202-13:

Nomex Flight Gear Coveralls, Section IV, contains instructions for cleaning and the use of fabric softener to dissipate static electricity.

Several of the recent calls were in reference to the amount of static electricity produced by cotton clothing versus the Nomex flight suit. No recent tests have been conducted comparing the static tolerance of cotton directly to Nomex fabric. However, both fabrics have been individually tested, and there is no discernible difference between the two.

Another question focused on the appropriate uniform for fuel handlers to wear during cold-weather operations. The type of clothing issued depends on the severity of the weather in the area. For example, the extreme cold-weather equipment would be issued only to soldiers in areas designated to use this type of equipment.

Some calls from the field concern the availability of the aviation battle dress uniform (ABDU). The ABDU BOIP was developed to provide only onboard aircrewmembers an issue of ABDUs, and these aircrewmembers will have to turn in their ABDUs when changing duty stations. Central issue facilities will have an opportunity to buy additional ABDUs after the total fielding of the ABDU distribution plan in 1995. Therefore, it will be some time before the ABDUs will be available to anyone other than onboard aircrewmembers.

The information contained in FM 10-68 remains the current Army standard for aircraft refueling. Therefore, supervisors and safety officers who work with fuel handlers should periodically review the requirements for protective clothing as well as the information on static electricity found on pages 7-6 through 7-11. ❑

POC: CW4 Daniel O. Baxter, Aviation Branch, DSN 558-3262, commercial 205-255-3262 or Mr. Don Mynard, Policy, Installations, and Evaluations Division, DSN 558-3759, commercial 205-255-3759

Operation of mobile fuel laboratories

The Department of the Army policy concerning the operation of airmobile fuel laboratories is contained in FM 10-70: Inspecting and Testing Petroleum Products, dated 10 February 1986, and FM 10-72: Petroleum Surveillance, Laboratories and Kits, dated 11 August 1986. If standards of operation are not addressed in these references, Occupational Safety and Health Standard for General Industry (29 CFR PART 1910) with amendments as of 1 October 1993 apply. ❑

POC: Mr. Don Mynard, Policy, Installations, and Evaluations Division, DSN 558-3759, commercial 205-255-3759

Closed-circuit refueling nozzles

Closed-circuit refueling nozzles that function properly and provide acceptable refueling rates when used to refuel identified aircraft are currently available in the supply system. However, units are requesting the nozzles under NSN 4930-01-194-8324, which is a reference number only. Units should request closed-circuit refueling nozzles for AH-64 and UH-60 series aircraft using NSN 4930-01-264-2067. For UH-1, AH-1, OH-58, and OH-6 series aircraft, units should use NSN 4930-00-204-9452 (Wiggins nozzle). (Note that the Wiggins nozzle does not include an inlet strainer assembly/cam lock coupling. It must be obtained from either a salvaged Wiggins or a tube-alloy nozzle assembly.)

The Army has numerous back orders for closed-circuit refueling nozzles referencing NSN 4930-01-194-8324. If your unit has a requisition on back order, please cancel the requisition and request the closed-circuit refueling nozzles for your aircraft using the correct NSN for the nozzles that are now available.

A universal closed-circuit refueling nozzle has been developed for use on all equipment and will be available in the near future. Watch for notification of availability in future issues of *Flightfax*. ❑

POC: Ms. Marilyn Arnold, Aviation and Troop Command, DSN 693-7535, commercial 314-263-7535

Accident briefs

Information based on preliminary reports of aircraft accidents

Utility

UH-60 Class C

A series - During APART checkride, IP simulated single-engine failure while aircraft was hovering and pilot landed aircraft. Upon return to hover, crew chief reported broken landing strut drag brace. Postflight inspection revealed that main landing strut was bent.

Attack

AH-1 Class E

F series - Crew felt binding in tail rotor controls during takeoff and decided to land immediately. On short final, pedals again became stiff and nearly impossible to move. Crew completed successful landing. Postflight inspection revealed that a battery that had been used for jump start had been left sitting unsecured in battery compartment. During flight, battery shifted and became wedged in tail rotor servo.

AH-64 Class E

A series - While on the ground at 100-percent Nr, cyclic had uncommanded full aft and forward inputs. BUCS light came on, and pilot pulled power levers off. When generators went off line, BUCS also went off. Inspection revealed that two wiring pins in connector plug had pulled out.

Cargo

CH-47 Class B

D series - During preparation for maintenance test flight to verify rotor system track and balance, crew performed HIT check on No. 2 engine. After returning No. 1 engine to flight position, crew heard noise, followed by vibration. Crew performed shutdown procedures without further incident. Postflight inspection revealed that spars of aft yellow and red blades were severed and one droop stop was broken. 9410

CH-47 Class C

D series - While performing routine training flight, crew executed reconnaissance of and approach to confined area. Just before touchdown, flight engineer noticed aft rotor blades were contacting trees to left rear of aircraft.

CH-47 Class E

D series - Crew was performing water-bucket operations when No. 2 flight control hydraulic caution light, No. 2 AFCS, and master caution lights flickered on momentarily and then extinguished. No. 2 flight hydraulic pressure fluctuated, decreasing to 2200 PSI. No fluid loss or high temperature was evident. Pressure continued to fluctuate between 2800 and 2200 PSI. Crew turned on No. 2 PTU and performed precautionary landing. During engine shutdown, No. 1 flight hydraulic pump failed with fluid loss but no fire. Crew completed emergency engine shutdown.

Observation

OH-58 Class C

A series - While on landing approach to pinnacle, IP descended through line of demarcation. Aircraft began to settle. To arrest rate of descent, IP increased power, resulting in overtorque. Crew completed landing to nearest clearing.

A series - While in battle position, aircraft drifted as crew was performing target handoff with another aircraft. Both main rotor blades struck trees.

D series - Aircraft drifted right upon touchdown following autorotation with turn. IP took controls as aircraft reached edge of lane, advanced throttle, and added collective in an attempt to get aircraft airborne. Aircraft came off ground and made two 360-degree turns, at which time IP lowered collective and maneuvered aircraft left onto parking ramp. Aircraft came to rest upright with damage to crosstubes and vertical fin.

OH-58 Class D

C series - With IP navigating and student pilot on controls, crew was conducting NOE training. IP warned pilot that wires were coming up, and aircraft crossed set of wires along road. As aircraft descended beyond this set of wires, it struck another wire. IP took controls and maneuvered aircraft over tree line and into open field. Pitch change link broke just as crew was setting aircraft down.

Fixed wing

C-12 Class D

C series - During after-takeoff sequence, crew noted that gear transit lights remained on. Visual check of landing gear revealed only partial retraction of main and nose gears. PC notified ATC of situation and requested clearance to holding point to analyze situation and initiate emergency procedures. Attempts to recycle gear were unsuccessful and emergency gear extension did not work. Crew established communications with BASI representatives who recommended removal of cabin floorboard to check for FOD obstructing gear system. Crew found no FOD. Second recommendation was to remove forward floorboards to check wiring and circuit breakers. Pilot found that 50-amp landing gear circuit breaker had tripped. PC stowed emergency gear engagement handle and ensured landing

Class A Accidents through January

	Month	Class A Flight Accidents		Army Military Fatalities	
		FY93	FY94	FY93	FY94
1st Qtr	October	6	2	2	0
	November	2	3	6	0
	December	0	2	0	2
2d Qtr	January	1	1	0	2
	February	5		8	
	March	1		5	
3d Qtr	April	4		0	
	May	1		1	
	June	0		0	
4th Qtr	July	0		0	
	August	1		0	
	September	2		0	
	Total	**23**	**8**	**22**	**4**

gear relay circuit breaker was pulled and that landing gear handle was in the down position. Pilot then reset circuit breaker. When pilot was clear of exposed floor area and ready with fire extinguisher, PC pushed in landing gear relay circuit breaker. Landing gear immediately extended to full-down and locked position. Pilot secured floor panels, and crew completed landing without further incident.

U-21 Class C

A series - Props severed runway position light while aircraft was taxiing.

Messages

■ Aviation safety-of-flight technical message concerning inspection of main rotor trunnion for mislocated master spline in all OH-58A/C aircraft (OH-58-94-01, 131921Z Jan 94). Summary: The manufacturer has issued an alert service bulletin notifying commercial users that some main rotor trunnions were manufactured with the master spline mislocated, which if installed may allow misalignment of the control rods, resulting in a reduction of main rotor control. The manufacturer's notice was followed by an airworthiness directive issued by the FAA. The purpose of this message is to locate and remove from service any main rotor trunnions with the master spline mislocated. Contact: Mr. Lyell Myers, DSN 693-2258, commercial 314-263-2258.

■ Aviation safety action maintenance mandatory message concerning updated information on night vision goggles (GEN-94-ASAM-02, 091900Z Dec 93). Summary: The purpose of this message is to provide consolidated and updated information on aviation NVG messages. This message is not intended to replace any publication. It does not address NVGs used for ground operations. Contact: Mr. Brad Meyer, DSN 693-2085, commercial 314-263-2085.

■ Aviation safety action maintenance mandatory message concerning revision to updated information on night vision goggles (GEN-94-ASAM-03, 202020Z Dec 93). Summary: The purpose of this message is to provide consolidated and updated information on aviation NVG messages. This message revises CDR ATCOM message 091900Z Dec 93, GEN-94-ASAM-02, paragraphs 8H and 8I concerning modification work orders (MWOs) and red or white lighting. Contact: Mr. Brad Meyer, DSN 693-2085, commercial 314-263-2085.

■ Aviation safety action maintenance mandatory message concerning return for exchange of certain Aerospace Research Associates (ARA) manufactured buckle/crotch strap assemblies, P/N D4495-28, in all H-60 series aircraft (UH-60-94-ASAM-02, 111446Z Jan 94). Summary: Lanyard pull-type buckle/crotch strap assemblies manufactured by ARA, P/N D4495-28, used as replacements per TB 1-1520-237-20-142 are suspected of having distorted detent pin assemblies that could result in difficulty operating the release mechanism. Some aircraft have not yet been equipped with the P/N D4495-28 assemblies as required by TB 1-1520-237-20-142. The purpose of this message is to require units to return for exchange certain ARA type buckle/crotch assemblies. Contact: Mr. Lyell Myers, DSN 693-2258, commercial 314-263-2258.

■ Aviation safety action maintenance mandatory message concerning one-time refurbishment of main rotor spindle and replacement of certain main rotor thrust bearings on all H-60 Army aircraft (UH-60-94-ASAM-03, 131826Z Jan 94). Summary: During overhaul, some main rotor spindles have been found with localized debonding of the spindle liner. To correct this problem, a new bonding procedure has been developed that must be incorporated on all previously produced spindle assemblies. Sikorsky Aircraft has identified a potential problem with delamination of some Chicago rawhide elastomeric thrust bearings. This delamination can potentially allow metal to metal contact between the spindle assembly and the bearing shims. Contact: Mr. Lyell Myers, DSN 693-2258, commercial 314-263-2258.

■ Aviation safety action maintenance mandatory message concerning one-time inspection of fuel level sender in all OH-6A, and AH-6C aircraft (OH-6A-94-ASAM-01, 211652Z Dec 93). Summary: ATCOM has received an accident report indicating false fuel level readings. Investigation showed that this has occurred on more than one occasion and at various activities. The purpose of this message is to require inspection of the OH-6A and AH-6C fleet to assure fuel sender accuracy and freedom of travel. Contact: Mr. Lyell Myers, DSN 693-2258, commercial 314-263-2258.

■ Aviation safety action maintenance mandatory message concerning tail boom visual inspection of all OH-58D and improved OH-58D aircraft (OH-58-94-ASAM-03, 162021Z Dec 93). Summary: Previous safety-of-flight messages 131600Z Feb 91 and 162330Z Feb 91) required a one-time inspection of the tail boom tail rotor gearbox support assembly and inspection for loose or working rivets and skin damage to the tail boom area. No evidence of loose or working rivets and/or cracks in the tail boom skin were reported to have been found during those inspections. Since that time, there have been three reports from the field of skin cracks running circumferentially around the skin in OH-58D tail booms. These cracks have been found in the aft skin just forward of the double row of fasteners that secure the tail rotor gearbox support assembly casting to the tail boom. Investigation into the cause of tail boom cracking is ongoing. At the conclusion of this investigation, further inspection requirements will be determined. The purpose of this message is to require a visual inspection of the tail boom skin in the area of the gearbox support assembly casting attachment for loose or working rivets and skin cracks in the rivet area during preflight and through-flight inspections and to require visual (visually aided) check of the area initially within 10 hours/14 days and recurring at 20-hour intervals. Contact: Mr. Lyell Myers, DSN 693-2258, commercial 314-263-2258.

For more information on selected accident briefs, call DSN 558-3262, commercial 205-255-3262.

In this issue:

"I'm inadvertent IMC"

Survival equipment must be serviceable

Returning to flight duties (after temporary grounding)

Aviators needed (research)

Individual risk assessment needed too

Too much pressure can lead to an accident

Working around aircraft requires extra care

Attention CH-47D operators

Uniforms for aircraft fuel handlers

Operation of mobile fuel laboratories

Closed-circuit refueling nozzles

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