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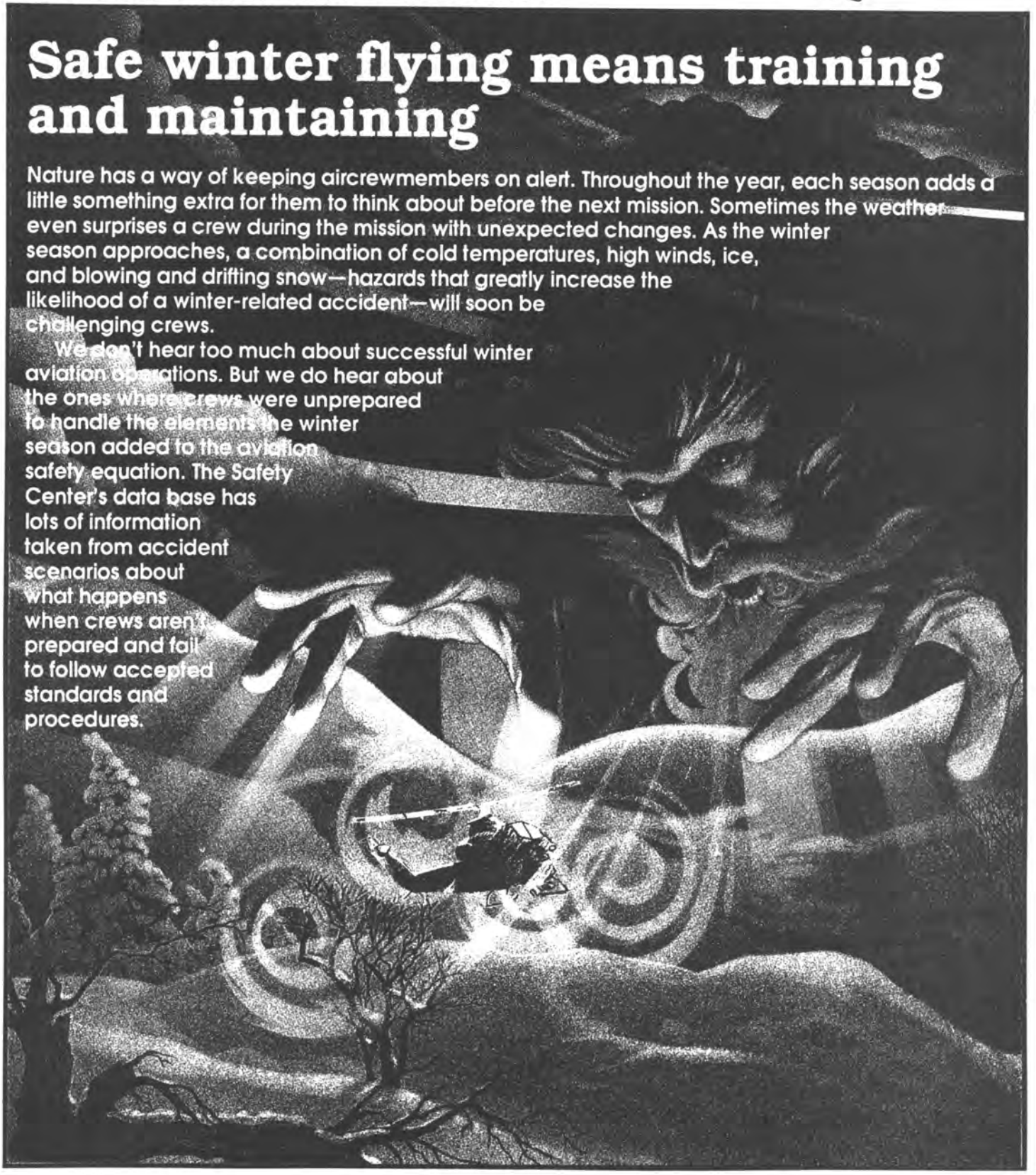
REPORT OF ARMY AIRCRAFT ACCIDENTS

Safe winter flying means training and maintaining

Nature has a way of keeping aircrewmembers on alert. Throughout the year, each season adds a little something extra for them to think about before the next mission. Sometimes the weather even surprises a crew during the mission with unexpected changes. As the winter season approaches, a combination of cold temperatures, high winds, ice, and blowing and drifting snow—hazards that greatly increase the likelihood of a winter-related accident—will soon be challenging crews.

We don't hear too much about successful winter aviation operations. But we do hear about the ones where crews were unprepared to handle the elements the winter season added to the aviation safety equation. The Safety Center's data base has lots of information taken from accident scenarios about what happens when crews aren't prepared and fail to follow accepted standards and procedures.



The present rightsizing of the Army and corresponding reduction in available resources makes it readily apparent that losses due to costly accidents cannot continue. The Army simply cannot maintain its warfighting capability when trained crewmembers and hard-to-replace aircraft and equipment are lost in preventable cold-weather accidents.

Improper cold-weather operational and preventive maintenance procedures and inadequate training and mission planning are often cause factors in winter-related accidents. Overcoming cold-weather environmental problems is not impossible. To ensure safe mission accomplishment during the harshest season of the year, now is the time to start preparing.

Preventive maintenance procedures

Crew chiefs and maintenance personnel should consult applicable operators and technical maintenance manuals to determine those extra procedures required to safely operate and keep aircraft running in cold weather. Some specific tips on cold-weather preventive maintenance for your aircraft are shown in the accompanying article.

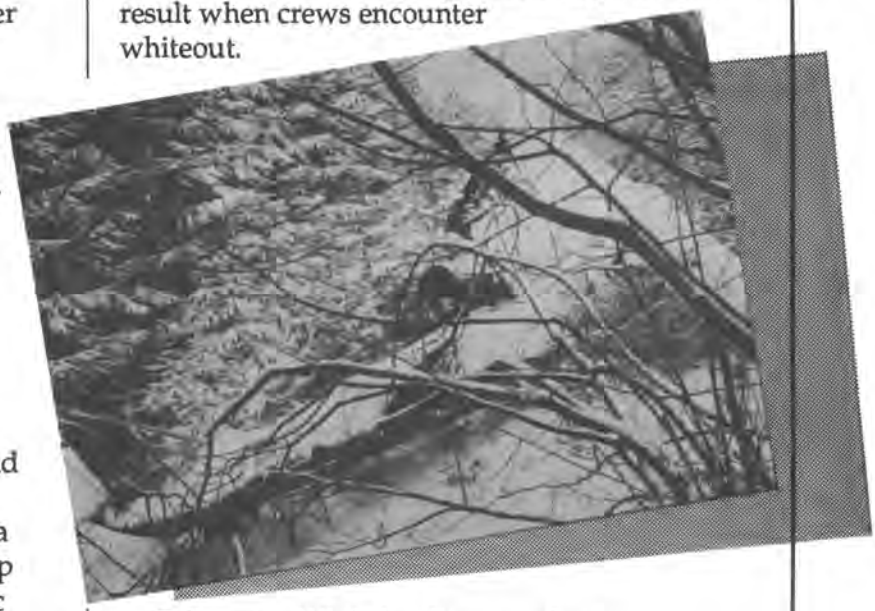
Training

Units should develop a cold-weather training plan that ensures aviators are familiar with flight techniques to use during winter flying before it becomes necessary to use them. Most units require that aviators not trained or current in winter operations demonstrate proficiency to an instructor pilot before being released for regular missions. Special consideration should be given for night checkouts when night vision systems are to be used.

■ *Scenario.* While attempting to avoid whiteout during an NVG blowing-snow approach to a frozen lake surface, the UH-1 pilot maintained excessive airspeed to touchdown. After touchdown, he attempted to aerodynamically brake the forward motion of the aircraft. The aircraft slid 309 feet before coming to a stop slightly right of another aircraft that had already landed in the LZ. As the pilot leveled the rotor system, it struck the rotor system of the other aircraft, causing major damage to both aircraft and minor injuries to one crewmember.

The pilot failed to anticipate the effects of excessive closure speed because of his inadequate experience and lack of formal NVG unit training in the harsh conditions of cold-weather environment.

Additional training is needed for unaided snow takeoffs and landings too. Many accidents result when crews encounter whiteout.



■ *Scenario.* While landing to a sloping, snow-covered field, the pilot encountered whiteout and lost all visual reference. The aircraft rolled left and entered the trees, coming to rest on its left side. Although the pilot was familiar with various snow-landing techniques, he selected an approach-to-the-ground technique that was not suitable for the landing site selected. After touching down, he felt uncomfortable with the slope and attempted to abort the landing while engulfed in whiteout.

Another problem occurs when crews attempt to land with a tail wind, which increases the difficulty in keeping ahead of the snow cloud during approach. Make landings to areas that provide vertical relief and contrast to use as reference points and to aid in depth perception.

Aviators should always leave themselves an out—never commit to a course of action or a maneuver that cannot be aborted or fail to leave room to accomplish a go-around. Follow procedures outlined in Army regulations, local policies and procedures, and FM 1-202: Environmental Flight.

Ensuring winter survival kits are on board the aircraft is not enough; crewmembers must be thoroughly trained in cold-weather survival and the use of cold-weather survival kit components.

Don't wait until you need to use an item in your winter survival kit to see if it works or even how it works.

Unit trainup should follow the crawl-walk-run principle to ensure that adequate individual, crew, and small unit proficiency in required skills is achieved before participation in a major field exercise. This is not restricted just to aviator training; maintainers need to fine-tune their cold-weather procedures to be able to provide around-the-clock support for air operations.

Mission planning

Effective risk management is the best method to ensure safe operations. Managing the additional risks that result from winter conditions demands increased attention to detail from the mission planning phase through preflight checks and postflight shutdown and inspection.

Unit operations personnel and aircrews must identify and assess hazards associated with adverse weather conditions expected to be encountered during winter flying. Integrate force protection (safety) into the mission planning by eliminating unnecessary risks and implementing controls to ensure that those risks that cannot be eliminated are reduced to the lowest level possible.

Remember that cold weather makes everything, especially maintenance, more difficult and time consuming to accomplish. Even moving aircraft around on the ramp requires more caution during the winter season. Speeds at which aircraft are towed must be slower because control is harder to maintain while turning or stopping. Plan for the extra time that will be needed.

Don't forget to carefully select aircraft landing and parking areas in field sites. If you choose the wrong area, a sudden thaw can cause aircraft to sink to their belly panels in mud, or the landing gear can freeze to the ground during the night.

■ *Scenarios.*

• The UH-60 was landing in a snow-covered LZ. The LZ was marked by an inverted Y, and each landing spot was marked by a separate light. Upon landing, the UH-60 settled in the snow and sank into the mud.

• The UH-1 crew performed a blowing-snow approach to semi-frozen muskeg. When the pilot attempted to take off, the crew realized the left ski had frozen in the ice and snow. The PC applied pressure/counterpressure to the tail rotor in an attempt to free the ski. When the ski broke free of the frozen slush, the aft mount strap failed and the aft portion of the ski broke off.

Preflight

Ensuring that the aircraft is ready to perform is as much the responsibility of the pilot as it is the crew chief and the maintenance personnel. This is particularly important during adverse weather conditions. During preflight checks, crews should look for "hurried" maintenance caused by mechanics rushing to get in out of the cold and "forgotten" steps caused by numerous trips to the warming tent.

To ensure aircraft airworthiness, unprotected and even some protected parts require close scrutiny. Icing on aircraft control linkages and surfaces can reduce aircraft performance, alter flight characteristics, and/or restrict control movement. Before flight, check to see that blade and propeller surfaces are free of ice, frost, and snow. Remove ice with heat or deicing fluids. Check the technical manual for your aircraft for correct procedures.

■ *Scenario.* During a UH-60 engine start, the pilot advanced the power control levers to the idle position and a lateral vibration began that increased to a moderate intensity. The crew aborted the start and shut down the aircraft. Inspection revealed some ice buildup near the main rotor blade tips. The crew had failed to anticipate and check for ice buildup during the preflight.

Leaks may appear more frequently due to contraction and expansion of metals as a result of temperature extremes. Suspected leaks should be checked before takeoff but after the systems are at operating temperatures and pressures.

Aircraft runups take a little longer during cold weather. Oil and lubricant pressure readings tend to indicate higher than normal. And engine instruments driven by tachometers may indicate lower than normal indications on initial engine start. Additional running at engine-idle settings is required until normal readings are attained. Hurried aircraft runups can cause water vapor to condense inside components and freeze, which could result in split oil coolers or blocked oil lines.

Postflight

Don't give in to the desire to hurry up and get in out of the cold; follow the checklist.

■ *Scenario.* While air-taxiing into a tactical parking area, the pilot-in-command (PC) made an improper decision to execute a blowing-snow approach (without a visual, fixed reference point) to a location close to another UH-1 operating at engine idle in its assigned parking point. The main rotor blades of the two aircraft meshed.

Other more prudent options were available to the PC that would have assisted him in maintaining proper ground track and clearance from the other aircraft. But he was overconfident in his abilities to execute the blowing-snow approach. And he was anxious to secure the aircraft and move in out of the cold. The crew had just completed cold refueling in subzero temperatures and were extremely uncomfortable.

Even if you are cold and in a hurry to get in, remember to top off fuel tanks at the end of the flight. Don't forget to put blade bags on the blades to assist in preventing ice buildup. And remember that the best time to check oil levels is during the postflight inspection while they are at operating temperatures.

The harsh environment sometimes encountered during the winter season requires that even the most routine aviation missions be well planned and meticulously executed. Winter flying is a difficult task even for the most experienced aviators. But thorough preparation, effective preventive maintenance procedures, proper training, and adequate mission planning will allow units to safely deal with the hazards associated with winter operations. ◆

—CW4 Adrian Booth, Investigations Division, DSN 558-3262, commercial 205-255-3262

COLD WEATHER tips

■ Allow time to become acclimated to colder temperatures. If you're non-acclimated, you will encounter difficulties at even warmer temperatures above -10°F.

■ Wear arctic mittens with the leather shell's wool finger insert or the trigger finger mitten wool insert inside the arctic mitten to keep hands warmer in temperatures of -20°F and colder. This serves two purposes: hands stay warmer and the wool inserts protect the skin from exposure to cold temperatures, thus preventing cold-weather injuries and direct contact with metal items.

■ Don't blow warm breath into mittens or gloves. Air from the lungs contains moisture that will condense on the hands and wet the inside of the gloves, contributing to further hand cooling.

■ Think twice before removing mittens or gloves. It doesn't take long to suffer the effects of frostbite.

■ Use the buddy system when you're out in the cold. Keep an eye on each other for signs of cold-weather injuries. Remember, not everyone has the same threshold for the cold and its elements.

■ Don't forget to do frequent self-checks even though you're using the buddy system.

■ Make sure you eat and drink fluids more often than normal to replace what your body is using. Your body burns more energy (calories) in cold weather trying to keep warm. Remember, you can dehydrate in cold temperatures too.

■ Expect to take twice as long to complete the job when working outside in extreme cold weather (-25°F and below). Allow plenty of extra time in your planning.

■ Keep small batteries warm until needed—for example, in your pocket—so you'll have power when needed.

■ Concentrate on the mission at hand. Your mind starts to drift when your body gets cold. Stay focused.

■ Carry an individual cold-weather survival kit at all times.

■ Be prepared for sudden weather changes. Wear clothing appropriate for the *coldest* weather you expect to encounter.

■ Cold-weather clothing protection is based on the principles of insulation, layering, and ventilation. When using cold-weather clothing, remember to keep it clean, avoid overheating, wear it loose in layers, and keep it dry.

■ See your flight surgeon if you feel a seasonal "cold" coming on. Don't wait until your "cold" gets too serious and causes prolonged medical downtime from flying. ◆

Leadership challenges during cold-weather operations

The principles of leadership are unaffected by the weather, but challenges for leaders can be profound during cold weather. To accomplish the mission, leaders must also contend with the stress of the environment. When addressing cold-weather operations, we most often address the threat of frostbite, chilblain, trenchfoot, dehydration, hypothermia, and so forth. However, the stress of cold can also adversely affect attitudes and morale, and leaders must recognize and cope with these effects if they are to maintain their unit's effectiveness.

Many soldiers come from regions where winters are not severe, and few have experience in working or living outdoors during cold weather. Initially, these soldiers may lack confidence in their ability to cope with and survive in cold weather.

The cold can seem inescapable. Even when soldiers are able to stay warm, the effects of the cold are felt in the need to wear awkward cold-weather clothing, confinement to small shelters, and problems with equipment. These effects can lead to anger, frustration, and depression, which can be intensified by fatigue, periods of isolation, and shortened daylight hours.

When conditions are extremely cold and soldiers have been out for a long time, the need to stay warm tends to become the individual's most important concern. Hurrying to finish the mission and get into a warmer environment can lead crews to take shortcuts, which often leads to accidents.

Leaders are responsible for prevention of cold injuries among their crews. Susceptibility to cold injury varies considerably. The sidebar shows some of the risk factors that can make individuals more susceptible to cold-weather injuries.

Although it's usually the newly-assigned individuals with little or no cold-weather training or experience who sustain cold injuries, leaders cannot fail to monitor the individuals with considerable cold-weather experience. They can become too desensitized to the threat of cold injuries. Leaders must be alert to this kind of carelessness too.

Crews need to be taught that when it is cold, tasks may be more difficult but not impossible. Leaders can build this confidence in their crews by having them practice tasks and survival skills in the cold and by conducting cold-weather training exercises. Viewing the cold as a challenge to be overcome is the key to the positive attitude required to successfully complete the mission. ◆

—Adapted from *Sustaining Health & Performance in the Cold: A Pocket Guide to Environmental Medicine Aspects of Cold-Weather Operations*, U.S. Army Research Institute of Environmental Medicine

Individual cold-injury risk factors

- ***Inadequate training***
- ***Prior cold injury***
- ***Inadequate clothing and equipment***
- ***Illness, injury, wounds***
- ***Fatigue***
- ***Dehydration (poor intake of fluids or excessive caffeine intake)***
- ***Alcohol***
- ***Poor nutrition***
- ***Low body fat***

Aircraft PM in the cold

It's a time-consuming, patience-tasking job to keep aircraft flying when the temperatures plummet and snow, wind, and ice attack. But top-notch preventive maintenance (PM) on your aircraft is critical in cold weather.

Start maintenance procedures by moving the aircraft inside if possible. If you can't and you're faced with some extended maintenance, use a maintenance shelter or rig a temporary shelter out of tentage, other canvas, or a salvaged cargo parachute canopy. Use a ground heater to warm your shelter. A warm, ventilated area will let you work without bulky clothing and heavy gloves. But don't forget to identify and assess any fire hazards associated with operating a ground heater.

The following are some areas you shouldn't forget while doing your cold-weather PM:

❄ **FUEL.** Water in fuel can turn to ice that will block fuel lines. Keep fuel tanks topped off. The gap between the top of the tank and the fuel is full of cold moist air, which causes condensation that drips into your fuel. When taking fuel samples, drain enough fuel to get rid of all the water. Drain the sumps daily.

■ When refueling an aircraft in subzero temperatures, always check the fuel level outside. When a full aircraft is moved into the hangar, the fuel level rises with the higher temperature. Opening the filler cap inside the hangar could result in a fuel spill to clean up.

■ The colder it is, the drier the air. And the drier the air, the more static electricity becomes a hazard. Be extra careful during refueling.

• Static can result from the aircraft moving through the air or by brushing frost or snow off the aircraft. Fuel flowing through the filler neck can also generate a spark that ignites fuel.

• Aircraft must be grounded. Make sure the aircraft and tanker are bonded together and the nozzle is bonded to the aircraft before removing the cap. When you're freezing while refueling, you might be tempted to neglect a ground. **Don't!** Follow all grounding procedures; do not take shortcuts.

• If you're not using a closed circuit

fueling nozzle, put the regular nozzle in all the way. That will keep static down and lessen the chance for a fuel spill.

■ Use extra care if you have to refuel or take fuel out of an aircraft. Spilled fuel can cause instant frostbite.

❄ **OIL and GREASE.** Fuel is not the only fluid affected by the cold. Most fluids get stiffer as temperatures fall; oil thickens, fuel's harder to ignite, and grease gels. You must use the right fuel and lube for cold weather. The lube chart in your technical manual lists the fuel, oil, and grease to use.

■ When servicing an oil tank on a cold-soaked aircraft, never fill it to the brim. If you do fill it to the brim, the tank will overflow when the oil heats up.

■ Oil leaks are a chronic problem in cold weather. Check connections, joints, and seals regularly.

❄ **SEALS.** Cold weather is hard on gaskets and seals. They contract, and that leads to leaks. Moisture can seep in around seals, freeze, and form ice that will cut the seals. Make a list of your aircraft's seal and gasket potential trouble spots. Post that list next to these preventive maintenance tips on your bulletin board.

❄ **BATTERIES.** Unless you're in subfreezing temperatures for a long string of days, nickel-cadmium batteries will do their job well in cold weather without too much effort on your part. However, every cold start shortens the life of batteries. So, if possible, bring batteries indoors when several days of subfreezing temperatures are expected. If that's not possible, turn on the landing lights, searchlight, or other equipment for 30 seconds before an engine start. That "load" will warm up the battery a bit. Always use an auxiliary power unit on the first start of the day. It saves a lot of drain on cold batteries.

■ Lead-acid batteries should also be kept warm. Cold weather saps their charge much faster than it does nickel-cadmium batteries.

■ If you bring batteries in, place them on a shelf or on dunnage, not on a bare floor. Never store nickel-cadmium and lead-acid batteries in the same area. Fumes from a lead-acid battery can cause a discharge of a nickel-cadmium battery.

❄ **TIRES.** Air pressure drops with the temperature, so check your aircraft's tire pressure often. Tires frozen to the ground can be freed with liquid deicer. Move the aircraft immediately to keep tires from freezing again as the slush formed by the deicer refreezes. Use boards, dunnage, or something similar under tires and skids to keep them off snow or ice.

❄ **ALUMINUM AIRFRAME.** A bolt that is overtorqued on a warm day could shear off as the bolt shank contracts.

❄ **LANDING GEAR.** Use a clean rag dampened with hydraulic fluid to remove ice, dirt, and grit from struts and pistons.

❄ **PRESSURE SYSTEMS.** Service them according to the instructions in each aircraft maintenance manual. Remember that any moisture present will freeze into ice crystals and damage seals.

❄ **RUBBER HOSES OR RUBBER-COVERED WIRES.** Never bend them when they're cold soaked. Rubber gets brittle and stiff and could crack. ◆

—Adapted from the October 1992 issue of *PS Magazine*

Notification of Army ground accidents caused by acts of nature

Request that units notify the U.S. Army Safety Center (USASC) as soon as possible (by telephone, electronic mail, or fax) whenever Army equipment or property incurs Class A through D damage caused by an act of nature—lightning, high wind, hail, and so forth. This notification procedure will enable the Director of Army Safety to respond to questions from Army leaders about these kinds of accidents.

Normal accident reporting procedures contained in AR 385-40: Accident Reporting and Records, dated 1 April 1987, apply after the USASC has been notified. ◆

POC: Mr. Lee McCown, Policy, Installation, & Evaluation Division, DSN 558-3759/3913, commercial 205-255-3759/3913

Broken Wing awards

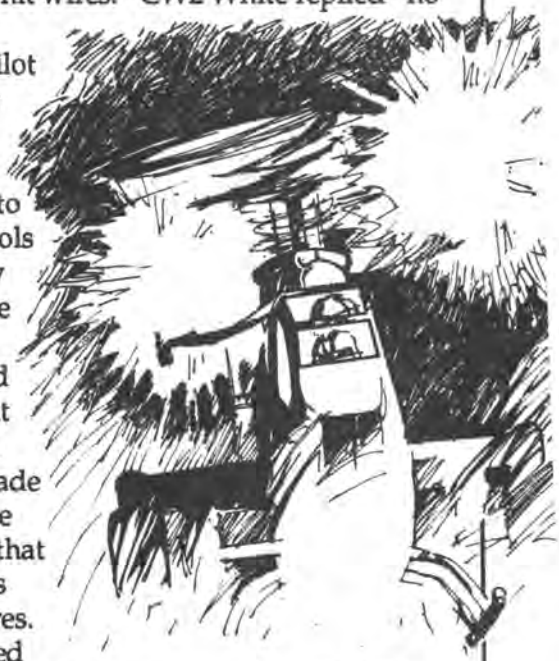
The Broken Wing award is given in recognition of aircrewmembers who demonstrate a high degree of professional skill while actually recovering an aircraft from an in-flight failure or malfunction necessitating an emergency landing. Requirements for the award are spelled out in AR 672-74.

■ **CW4 Sandra L. Beebe and CW4 William J. Clark, B Company, Military Intelligence Battalion (Low Intensity), APO AA 34042.** During an RC-12D continuation training mission, the crew executed four takeoffs and landings without incident or unusual indications. With CW4 Clark on the controls, the crew prepared to make another normal landing. As the crew placed the gear handle down, they heard a loud grinding noise. CW4 Beebe thought it indicated a broken chain. CW4 Clark verified this assessment when gear-indicator lights did not show green (indicating an unsafe condition) and the nose gear was not visible through either side mirror. The crew placed the gear handle up and made another unsuccessful attempt to lower the gear. CW4 Beebe continued to operate the radios and initiated external coordination while CW4 Clark continued to fly the aircraft. CW4 Beebe declared an emergency, requesting and receiving clearance from ground control approach (GCA) to climb in the downwind portion of the traffic pattern. CW4 Clark immediately initiated a climb to 7,000 feet. As CW4 Clark executed a VFR holding pattern above the airfield, CW4 Beebe requested a discrete frequency handling so they could discuss the situation with their command element. Once the situation stabilized, the crew assessed their condition. The crew decided that CW4 Clark would continue to fly the aircraft and execute an emergency landing if necessary and CW4 Beebe would handle all radio traffic except for high-density periods when division of communication workload was required. GCA set up a large box pattern at minimum obstruction-clearance altitude. The crew reviewed the operators manual but found that dual flight failure (nose gear up and unsafe main gear) was not addressed in the dash 10. As a result of conflicts in the operators manual, the crew requested assistance from unit instructor pilots (IPs) who were present in the tower. The IPs contacted the Directorate of Evaluation and Standardization and the Army Safety Center at Fort Rucker, AL, and Beechcraft Aerospace Services, Incorporated. Based on all acquired information and their own experience, the crew assessed the situation and established a plan. After orbiting for about 1 hour, the crew executed a flyby of the tower at about 200 feet AGL to try to determine if the gear was possibly down and locked, which would reduce the complexity of the emergency. The visual review was inconclusive, and the crew re-entered a safe orbit while they burned off fuel and depressurized the aircraft. After further assessment, the crew decided to land gear up because of the unsafe right main gear. However, based on a recommendation from Beechcraft representatives, the crew once again cycled the gear. Subsequently, they received two safe main gear indications. Now with the situation less complex, the crew could land in accordance with the operators manual. Although the crew wanted to burn off another 500 pounds of fuel to minimize the potential danger, the weather started to deteriorate rapidly. Recognizing the potential high-wind conditions that can accompany storm activity, the crew told the tower they were ready to land. CW4 Beebe took the controls while CW4 Clark secured all equipment in the cabin and removed and secured the escape hatch. The crew established a shallow (full flap) approach. Because CW4 Clark was in the best position for aircraft control (left seat), he executed the approach and landing. The aircraft touched down in a slight nose-high attitude. CW4 Clark held the nose off while trimming the elevator to the full-up position. Concurrently, CW4 Beebe guarded the controls to ensure no forward yoke was applied, feathered the props, placed the condition levers in the cutoff position, pulled the fire pull handles, and turned the master switch off. After a landing run on the main gear of about 900 feet, the nose settled down on the centerline of the runway, sliding an additional 1,500 feet before stopping.

■ **CW2 Timothy Wade Whited, B Troop, 6th Squadron, 6th U.S. Cavalry, APO AE 09140.** On 14 August 1991, CW2 Whited was pilot-in-command of a fully armed AH-64 providing escort security for a medical resupply mission. The flight consisted of one CH-47, one UH-60, and two AH-64s. The landing zone consisted of a dusty, loosely graveled parking lot about 100 meters wide by 200 meters long. The aircraft were parked in each corner of the parking lot with CW2 Whited's aircraft in the right rear.

At 1155, the flight was ready for takeoff. The AH-64s departed first. The departure area was surrounded by about 300 to 400 Kurdish spectators, various vehicles, and large construction equipment. To avoid overflight of the other aircraft, CW2 Whited elected to take off to the right and then make a left turn to avoid power lines. Due to the high density altitude and gross weight of the aircraft, maximum torque available was required for takeoff. Upon takeoff, the aircraft was enveloped in a cloud of dust. The aircraft reached 20 knots and 30 feet AGL while maneuvering over the large crowd of onlookers. At that moment, the low rotor RPM audio sounded, the engine-out light came on, and the No. 1 engine failed. CW2 Whited disregarded the emergency procedure to jettison the fully loaded stores and auxiliary tank to attain single-engine flight because of the danger to the Kurdish civilians. The only possible safe landing area was a small dirt field about 50 meters to his front. En route to the landing area, the rotor RPM dropped well below 80 percent and both generators dropped off line, resulting in loss of force trim and stabilization systems. Although the brownout created an IMC situation, CW2 Whited safely landed the aircraft with little remaining rotor RPM on a 10-degree nose-up, 8-degree left-to-right slope with 12-inch-deep ditches running parallel to the aircraft at 3-meter intervals. Immediately after touching down, the aircraft began to roll backwards and to the right. CW2 Whited, still IMC, applied proper brakes and cyclic to prevent dynamic rollover.

■ **CW2 Paul A. White, Nightrider Troop, 4th Squadron, 11th Armored Cavalry Regiment, APO AE 09146.** After a normal departure from home airfield during a routine NVG training flight, CW2 White took the AH-1F controls to allow his copilot to begin his navigation training drill. As the copilot identified the initial holding area, CW2 White descended to 300 feet AGL and slowed to 60 knots. After the copilot identified the holding area, CW2 White entered right traffic for a downwind leg. As CW2 White turned to base, he identified the 150-foot-high tension wires that ran northeast to southwest and paralleled his final approach course. CW2 White verbally confirmed sighting the two support pylons immediately to the north and south of the east/west autobahn that would parallel their final approach. He descended on base leg to about 200 feet AGL and slowed to 40 knots. CW2 White initiated a right turn to the final approach course and verbally confirmed adequate clearance over the wires. At about 200 feet AGL and 40 knots with cruise power applied and in a slight right turn, the crew heard a series of loud, sharp reports from the rear of the aircraft. Simultaneously, they saw bright flashes to the rear of the aircraft. The copilot yelled over the intercom "you hit wires." CW2 White replied "no we didn't."



Again, the copilot yelled "you hit wires." CW2 White felt no external input to the flight controls or adverse yaw but checked the engine/rotor tachometer and saw the RPM at 95 percent and holding. He made sure the throttle was open and that the aircraft was clear of the wires. He then lowered the collective to initiate an approach. CW2 White directed the copilot to make a mayday call over the flight following frequency. At this point, the copilot kept his attention outside the aircraft. CW2 White now saw the engine/rotor RPM was at 100 percent. He continued to hear loud reports and see bright flashes to his rear as he maneuvered the aircraft toward an open area to his immediate front. At about 40 feet and 20 knots, CW2 White felt the aircraft enter a rapid descent, heard the low RPM warning audio alert and saw the engine/rotor RPM rapidly decreasing. Even though the copilot was yelling at CW2 White to pull collective, CW2 White realized he was still too high and waited momentarily before applying full-up collective and aft cyclic to cushion the impact. The aircraft hit the ground in a slightly nose-high attitude at a near vertical angle and high rate of descent. The aircraft remained upright with only its skids spread. In spite of misleading input from his copilot, CW2 White's ability to remain calm and think clearly helped him successfully perform his first low-level, low-airspeed autorotation under NVGs on a totally moonless night. ◆

Information based on preliminary reports of aircraft accidents

Utility

UH-1 Class D

V series - During approach to desert field site, aircraft encountered brownout and landed hard. Both cross tubes, two saddle mounts, and the right skid tube were damaged.

UH-60 Class C

A series - While turning to position aircraft at refuel point, crew was clearing sign next to refuel pad. As pilot continued turn, he saw another sign but was unable to stop before main rotor blades struck sign. Flying debris hit parked civilian aircraft.

Attack

AH-1 Class C

S series - While at OGE hover in battle position, crew swung tail right and tail rotor blade struck overhanging tree branch. Crew flew aircraft at 10 to 15 knots for 1,500 meters to open field and landed without further incident.

Cargo

CH-47 Class D

D series - After landing, crew chief opened cabin door and threw wheel chocks out. One chock did not clear step. Crew chief stepped out on chock, tripped, and fell, fracturing his right ankle.

Observation

OH-58 Class C

D series - Following flight, crew discovered damage to tail rotor but was unable to determine when tail rotor strike occurred.

Fixed wing

C-12 Class C

C series - Lightning struck aircraft at 20,000 feet AGL, damaging both engines and control surface.

C-12 Class D

C series - Maintenance discovered several indications of lightning strike. Lightning appeared to have struck the radome and exited via the rudder and vertical strake below the rudder. Pilots did not recall aircraft being struck by lightning during flight.

OV-1 Class B

D series - Aircraft experienced uneven reverse of props during high-speed maintenance operational check following adjustment of thrust reversers. Aircraft skidded sideways and bounced, right landing gear collapsed, aircraft flapped down, and right prop dug into taxiway. 9341

U-21 Class E

F series - During climbout, pilot noticed torque fluctuation and gradual loss of oil pressure. Crew returned to airfield. During descent at reduced power, oil pressure continued to decrease to 35 PSI. Crew completed uneventful landing and rollout. During inspection, crew found that oil cap had come loose and 6 quarts of oil had pumped overboard.

Messages

■ Aviation safety action maintenance mandatory message concerning one-time inspection of the hydraulic pump module (70652-02300-050) knurled bleed/relief knob securing pin (UH-60-93-ASAM-16, 271723Z Jul 93). Summary: An uninstalled bleed/relief valve adjustment knob retention pin could allow the knobs to fall off and become a hazard within the flight control system. A recent acceptance testing of the hydraulic pump modules has revealed that the pin securing the knurled bleed/relief knob on some valves were not swaged or otherwise secured. Also, the roll pin used on one manufacturer's valve was found to be loose. The discrepant knobs are currently being held in place by friction force developed by a spring that holds the bleed valve in the normal position. The purpose of this message is to require a one-time inspection of all fielded and spare supplies of the subject pump modules bleed/relief valve for knob retention pin security. Contact: Mr. Lyell Myers, DSN 693-2258, commercial 314-263-2258.

■ Aviation safety action maintenance mandatory message concerning one-time inspection of the engine to transmission drive shaft installation bolts on all OH-58D aircraft (OH-58-93-ASAM-10, 041541Z Aug 93). Summary: During a scheduled inspection, it was found that several engine drive shaft bolts were not protruding through the nuts. Further investigation revealed that in some instances, bolts that were too short had been installed. Bolts that are too short may not fully engage with the locking portion of the locknut. To ensure the locking portion of the locknuts is fully engaged, the bolt should protrude through the nut one and one-half threads when installed. The purpose of this message is to require a one-time inspection of all OH-58D aircraft and to require installation of correct engine drive shaft bolts. 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.

U.S. ARMY SAFETY CENTER

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Brigadier General, USA
Commanding General
U.S. Army Safety Center

Safety alert message for H-60 units

On 12 August 1993, the Army Safety Center issued an aviation safety alert message regarding all H-60 series aircraft. The purpose of this message is to correct an inadvertent deletion to the UH-60A and EH-60A operator's manual.

Change 18 dated 15 February 1993 to TM 55-1520-237-10: Operator's Manual, UH-60A and EH-60A inadvertently deleted paragraph 2-193 on page 2-79. This paragraph required taping of the master warning panel before NVG flight. The safety alert message states that "Only upon application of NVG-compatible cockpit lighting will the requirement to tape the master warning panel be negated."

The safety alert message requires that all—

■ H-60 crewmembers be briefed that taping of the master warning panel is still mandatory before NVG flight. See TM 55-1520-237-23, Appendix H. Upon conclusion of NVG flight operations, the tape should be removed, the panel lights switch should be activated, and the lighting rheostats should be adjusted for normal use.

■ Units insert a copy of the 122050Z August 1993 safety alert message in the pilots information file. ◆

POC: LTC William A. Tucker, Chief, Aviation Branch, DSN 558-2119, commercial 205-255-2119

Class A Accidents through August

	Month	Class A Flight Accidents		Army Military Fatalities	
		FY92	FY93	FY92	FY93
1st Qtr	October	1	6	0	2
	November	3	2	4	6
	December	1	1	0	0
2d Qtr	January	3	1	0	0
	February	1	5	0	8
	March	4	1	2	5
3d Qtr	April	1	4	0	0
	May	1	1*	1	1
	June	2	0	2	0
4th Qtr	July	2	0	1	0
	August	1	1	0	0
	September	2		0	
	Total	**22**	**22**	**10**	**22**

*An accident previously reported as Class A has been downgraded

S T A C O M

Interim change to TC 1-212

Task 2099, Perform Extended Range Fuel System Operations, has been added to TC 1-212: Aircrew Training Manual, Utility Helicopter, UH-60 to provide aircrew training guidance for users. The next formal change to TC 1-212 will include this task.

Units should insert the interim change in TC 1-212 after page 6-186 and retain a copy of this STACOM in the front of the manual for reference purposes.

The Department of the Army point of contact (POC) is CW3 James Goddard, ATZQ-TDI-A, DSN 558-3801, commercial 205-255-3801. The Directorate of Evaluation and Standardization POC is MAJ Ken Gwynne, ATZQ-ESF, DSN 558-2442, commercial 205-255-2442.

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TASK: Perform extended range fuel system operations.

CONDITIONS: In a UH-60 or UH-60FS with an ERFS consisting of two 230-gallon fuel tanks or four 230-gallon fuel tanks.

STANDARDS:

1. **RATED.**

a. Correctly perform a preflight inspection of the ERFS components.

b. Determine if aircraft takeoff CG, landing CG, or aircraft gross weight imposes limitations on the proposed flight.

c. Without error, operate the auxiliary fuel management panel system.

d. Without error, recognize ERFS malfunctions that require emergency procedures be conducted.

e. Without error, perform or describe appropriate immediate action emergency procedures according to TM 55-1520-237-10.

f. Correctly perform a postflight inspection of the ERFS components.

g. Correctly perform crew coordination actions.

2. **NONRATED.**

a. Correctly complete all before-flight and preflight duties according to TM 55-1520-237-10 and, if applicable, the unit SOP.

b. Correctly perform crew coordination actions.

DESCRIPTION: All operational procedures will be conducted according to TM 55-1520-237-10 or TM 55-1520-237-CL. The PC will perform or have the P perform the preflight inspection of the ESSS/ERFS according to the CL. The P will monitor the main fuel quantity indicators and the auxiliary fuel management panel to ensure that the system is operating normally. He will also operate the fuel management panel in both the AUTO and MANUAL modes.

REFERENCES:

AR 95-1
TM 55-1520-237-10
TM 55-1520-237-CL
Unit SOP

*U.S. Government