Flightfax

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REPORT OF ARMY AIRCRAFT ACCIDENTS

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It's a dismal picture—24 Class A flight accidents and 24 fatalities as of 30 April. We were riding high coming off the best year ever in aviation safety and barely into FY 93 when our safety shield cracked. We started losing soldiers and destroying aircraft in accidents that should have been prevented. To date, we haven't been able to reverse this alarming trend. Losing soldiers and aircraft needlessly is a tragedy felt across the Army and one we cannot afford.

A closer look at FY 93 accidents and rates

Since 1 October 1992, the Army has experienced 24 Class A flight accidents that have resulted in 24 fatalities (21 military, 1 Army civilian, 2 non-DoD civilians). In addition to the fatalities, crewmembers have sustained 16 nonfatal injuries and we've incurred more than $91 million in damage and injury costs in Class A accidents alone.

■ **Class A accidents.** The 24 Class A flight accidents resulted in a rate of 3.37 per 100,000 flight hours, compared to a rate of 1.91 (14 Class A accidents) for the same time period during FY 92. The FY 92 end-of-year Class A rate was 1.57, and the 3-year average (FYs 90, 91, and 92) was 2.32.

■ **Class A through C accidents.** The 71 FY 93 Class A through C flight accidents and rate of 9.91 has overtaken the 57 FY 92 accidents and rate of 7.79. Although the 71 FY 93 accidents is lower than the 3-year average of 73, the rate is higher than the 3-year average rate of 9.09. Additionally, the current Class A through C rate exceeds both the FY 92 end-of-year rate of 8.00 and the 3-year average end-of-year rate of 8.64.

■ **Fatalities.** The 24 fatalities experienced thus far in FY 93 is up considerably from the seven in FY 92 at this point. The increase in fatalities is due primarily to three accidents; eight fatalities in a C-12 accident, four in a UH-60 accident, and five in a UH-1 accident. The other four fatal accidents resulted in seven additional fatalities.

■ **Damage and injury costs.** The $95 million in damage and injury costs for Class A through C accidents is also higher for FY 93 than the $56 million incurred in FY 92 through 30 April. This is due in part to eight Class A accidents in three of our more expensive aircraft: five AH-64As, two UH-60As, and one CH-47D.

Class A flight accident analysis

Table 1 shows the 24 FY 93 Class A flight accidents by aircraft type. Class A rates for the following aircraft are based on accidents and flying hours through 30 April.

■ **OH-58A/C.** The FY 93 Class A accident rate for the OH-58A/C is 4.89, which is up from FY 92 and the 3-year average rates of 3.43 and 4.55 respectively. Analysis of the six OH-58 accidents revealed three crew coordination failures where crewmembers failed to adequately communicate during flight maneuvers, three failures to maintain or recover orientation, one detection failure that led to a dynamic rollover, and one materiel failure (suspected engine failure). Three of the five human-error accidents occurred with a single rated aviator on board the aircraft. Three accidents are still under investigation.

■ **OH-58D.** The FY 93 Class A accident rate for the OH-58D is 15.38, which is up from FY 92 and the 3-year average rates of 15.03 and 12.66 respectively. One accident was a result of human error (not on the part of the flight crew) and a materiel malfunction. The other accident is still under investigation.

■ **UH-1.** The FY 93 Class A accident rate is 1.99 compared to the FY 92 rate of 0.76 and the 3-year average rate of 1.47. Analysis of two UH-1

Table 1. Class A Flight Accidents (FY93 to Date)

A/C Type	Number of Accidents	Number of Military Fatalities	Number of Destroyed A/C	Human Error	Materiel Failure
OH-58 A-C	6	2	6	5	1
OH-58D	2		1	2	1
UH-1	5[1]	8[2]	6	3	2
UH-60	2	4	1	2	
AH-64	5		4	4	1
CH-47	1		1		1
H-6	2	1	2	2	1
C-12	1	6[3]	1	1	
TOTAL	24	21	22	19	7

As of 4 May 93
Notes:
[1]One accident involved two aircraft
[2]Excludes one non-DoD civilian
[3]Excludes one DAC and one non-DoD civilian

accidents revealed poor risk management and indiscipline led to seven fatalities. A materiel failure resulted in two fatalities. The last two accidents are still under investigation.

■ **UH-60.** The FY 93 Class A accident rate for this aircraft is 1.95 compared to 0.00 for FY 92 and 2.06 for the 3-year average. One UH-60 accident was a night, administrative mission that resulted in four fatalities. It is still under investigation (suspected materiel malfunction). Flight tests are in progress, trying to duplicate the accident sequence. This accident is the first UH-60 Class A accident since FY 91. The second UH-60 accident resulted when the crew failed to properly estimate distance while ground taxiing and hit a hangar.

■ **AH-64.** The FY 93 Class A accident rate is 8.96, which is more than double last year's rate of 4.09 and more than the 3-year average of 7.29. Analysis of the four human-error AH-64 accidents points to several key factors:

• High mission demand; for example, night, NOE, confined areas, and multi-ship operations.

• Channelized attention on aircraft systems, such as pilot night vision system or weapons systems.

• Inadequate crew coordination; for example, failure to provide aircraft systems status and maintain firing position.

There were three crew coordination failures, one scanning failure, one estimation error, and one failure to detect drift in a confined area.

In addition to the human errors, there was one materiel failure (engine failure). The crews of two AH-64 accident aircraft were current in accordance with regulations, but their individual and crew proficiency were suspect due to the low amount of flight time before the accidents.

■ **CH-47.** The FY 93 Class A accident rate in this aircraft is 3.04 compared to the FY 92 rate of 0.00 and the 3-year average rate of 3.31. The CH-47 accident involved a materiel failure that remarkably resulted in only one disabling injury. This was the first Class A accident in this aircraft since FY 91.

■ **AH/MH-6.** Due to the limited number of hours this airframe receives, the resulting Class A accident rate for this year is 14.11 compared to last year's rate of 0.00 and the 3-year average rate of 2.05. The MH-6 accident was single pilot, at night, and in marginal weather. Poor risk management contributed to the accident, which was the first H-6 Class A accident since FY 91. The AH-6 accident is still under investigation.

■ **C-12.** The FY 93 Class A accident rate for this aircraft is 2.45 compared to the FY 92 rate of 2.74 and the previous 3-year average rate of 0.87. This accident was an administrative mission that failed due to a lack of pre-mission planning and poor crew coordination during the mission. Eight fatalities resulted when this aircraft crashed into a mountain.

Accident causes

Remember, accidents may have more than one cause factor. In fact, 2 of the 24 accidents have more than one cause factor at present.

■ Human error was a definite or suspect cause factor in 19 of the FY 93 Class A accidents. However, this may change since 10 accidents are still under investigation.

• Although the data is somewhat preliminary for FY 93, a comparison to FY 92 shows crew coordination failures are the largest problem area in both years.

• The readiness shortcomings that caused or contributed to the latest seven accidents are still under investigation.

■ Materiel failure trends are up at this point in time, but a cause factor has not been determined at this time. There have been seven definite or suspected materiel failure Class A accidents so far this year compared to only three at this time last year and only five for all of FY 92.

Conclusions

Since 1975, with the exception of Desert Storm accidents, the number of Class A accidents in a single month has exceeded the eight experienced in April 1993 only three times (each with only nine) and is matched only three other times.

No evidence exists to suggest this unusually high number of Class A accidents is related to a single problem in Army aviation. However, a review of flight records for crewmembers involved in the FY 93 accidents indicates that the individuals and crews had not logged many flight hours before the accidents. Constrained resources and training programs as well as unit/personnel turbulence may be playing a much larger role in accidents than we realize.

The types of hazards that are being encountered today are not new; they're the same ones we've always faced. However, as flight time

and time on the controls decrease, the risk level increases and the probability of an accident increases. Currency requirements as defined in the ATMs do not necessarily ensure individual or crew **proficiency.**

Analysis does suggest the core aviation problem areas that are causing these accidents are the same problem areas experienced previously: poor crew coordination and failure to employ solid risk management skills. Analysis of the accident data also suggests that if thorough risk management principles had been applied, the probability is good that at least 12 of the human-error accidents could have been prevented (see table 2). From the data, we have also been able to identify the risk management step that most likely failed first and the number of accidents where crew coordination was a problem or an issue.

Recommendations

■ Implement risk management at all levels in the command, maintenance included.

■ Sustain a flying hour program that stabilizes aircraft and crew proficiency on individual and collective training tasks.

■ Use the crawl-walk-run philosophy in training.

■ Implement the Aviation Center's Crew Coordination Training Program upon receipt.

■ Enforce standards (make soldiers accountable for their actions).◆

POC: LTC Gregory M. Gainer, Chief, ORSA/Stats Branch, DSN 558-3530, commercial 205-255-3530

Table 2. Risk Management Failure Step Matrix

	Probability of Accident Prevention Through Risk Management			
Step	Good	Fair	Poor	Totals
1. ID Hazard	3		3	6
2. Assess Hazard	5		1	6
3. Make Decision & Develop Controls	3	1	1	5
4. Implement Controls	1			1
5. Supervise				
Totals	12	1	5	18
Crew coordination problems	6	2	3	11
Single-pilot operation	3			

Note: The cause of one accident (OH-58) is charged to human error but cannot be charged to any of the risk management steps.

Army Aircraft Safety Performance Review

The *Army Aircraft Safety Performance Review* was prepared to provide aviation commanders, safety officers, aircrews, and maintenance personnel an overview of UH-60, OH-58D, AH-64, and MH/CH-47D safety performance for fiscal years 1987-91. The report is in five sections. Section 1 describes overall Army aviation experience. Sections 2 through 5 provide overviews of the accident experience of each aircraft system along with synopses of selected Class A and B accidents. These synopses concentrate on the primary cause factor and do not necessarily reflect all factors contributing to the accident.

The review is now available and can be obtained by writing to Commander, U.S. Army Safety Center, ATTN: CSSC-IM, Fort Rucker, Alabama 36362 or by calling Ms. Sharrel Forehand, DSN 558-2062/4806, commercial 205-255-2062/4806.

U.S. ARMY SAFETY CENTER

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R. Dennis Kerr
Brigadier General, USA
Commanding General
U.S. Army Safety Center

OH-58 trends

A review of recent OH-58 preliminary reports of accidents shows an increase in hot starts. Comments on the reports indicate that pilots were aware of weak batteries yet continued the attempt to start the engines. The task error in each incident was human error and overconfidence in the ability of the pilot or instructor pilot to catch the overtemperature condition in time to avoid a hot start.

Chapter 8 of TM 55-1520-228-10: Operator's Manual, Army Model OH-58A/C Helicopter prescribes free-air temperature and minimum N1 speeds to avoid possible hot starts. Further in paragraph 8-17f, the TM tells the crew to monitor turbine outlet temperature for overtemperature conditions.

The most likely causes of a hot start remain a weak battery or attempting to start the aircraft with the tail into the wind. One report indicated the crew attempted to start the aircraft with a weak battery and the tail into the wind.

Hot starts can easily be avoided. If the aircraft battery is weak, take the time to locate and use an auxiliary power unit. Doing so will avoid hot starts, conserve Army assets, and increase availability of aircraft, which in turn will also increase unit training time. Ultimately, these combined benefits will equate to safer daily operations.◆

POC: MW4 John Allmer, Systems Manager, Aviation Section, DSN 558-3262, commercial 205-255-3262

Warning label not authorized on aviation flight helmets

Several years ago, the Army Safety Center developed a safety packet for motorcycles that contained the warning label shown in figure 1. This warning label was designed for use on motorcycle helmets.

We receive numerous calls about this label: some callers want to know how they can obtain the warning labels, and others want to know what the authority is for placing this warning label on aviation flight helmets.

The Safety Center never intended this warning label to be placed on aviation flight helmets. The warning may be valid for aviation helmets too; however, the Safety Center cannot authorize placement of this warning label on aviation flight helmets.

Safety officers and aviation life support equipment personnel need to ensure that flight helmets are being maintained in accordance with TM 10-84-206-12 & P. They should also ensure that this warning label and all other unauthorized items are removed from aviation flight helmets within their units.◆

POC: CW4 Daniel O. Baxter, Aviation Section, DSN 558-3262, commercial 205-255-3262

Figure 1. Motorcycle helmet label; not authorized for use on flight helmets

New rigging procedures now available

Certified rigging procedures are now available for—

- M1037 shelter carrier with AN/TPQ-36 firefinder antenna radar on an M103A1 trailer.
- Mobile Over Snow Transport (MOST) and sled in a 10,000-pound cargo net. *This is a suitable load.*

If units need copies of certified rigging procedures for any of these pieces of equipment, they may contact the U.S. Army Transportation School, Helicopter Transport Section, ATTN: ATSP-TIP-M (Mr. Ted Rodriguez), Fort Eustis, VA 23604-5408.◆

POC: Mr. Ted Rodriguez, DSN 927-6570, commercial 804-878-6570, FAX 927-6980 or commercial FAX 804-878-6980

Where is your NVG neck cord?

A group of small bones that are stacked one upon the other and held together by ligaments and muscles form the structure of the spinal column. When an aircraft strikes the ground during a hard landing, the sudden stop of the upper body causes shear and bending forces that can tear the ligaments and separate the neck bones. The extent of the injury depends on the head deceleration and the mass supported by the neck. In most cases, the neck-supported mass includes the head and flight helmet. The allowable weight and center-of-mass for current flight helmets are limited by the strength of the neck.

NVGs and the breakaway mount

Night vision goggles (NVGs) and other masses added to the helmet create a new problem. In a crash, the neck is exposed to the additional mass of the helmet-mounted NVGs and the likelihood of neck injuries increases. To protect the neck, a breakaway feature has been designed into the helmet mount for the NVGs. When there is a rapid acceleration of the NVGs or helmet, the goggles fall away from the mount and the neck is freed from this mass.

Often when the goggles bump against an aircraft doorframe or other structure, the NVGs will fall from the mount. To protect the expensive goggles and to ease refitting the NVGs to the helmet, a neck cord is attached.

A recent accident

During an NVG mission, an OH-58 struck rising terrain. The forward speed caused shearing of the skids and crushing of the nose and floor of the aircraft.

The crewmembers' helmets (figure 1) were evaluated at the U.S. Army Aeromedical Research Laboratory (USAARL). The pilot's helmet sustained several severe impacts. Progressive destruction of the shell and liner protected the pilot's head from deceleration injuries, but the pilot died of a neck injury caused by sudden deceleration.

Severe neck injuries can be caused by striking structures within the aircraft or sudden deceleration of the head. In this case, the pilot had tied his NVG neck cord to the top of his helmet. When the aircraft struck the rising terrain, the goggles were "attached" to the pilot's head and his neck was exposed to the deceleration force of the head, helmet, and NVGs. While it isn't clear that this caused the neck injury in this particular case, securing the NVGs to the helmet does increase the risk of a neck injury, even in a minor mishap.

Figure 1. Accident SPH-4 flight helmet with NVG neck cord *improperly* attached

Correct placement of the safety cord

The weight of the NVGs must not be attached to the head when the goggles break free from the mount. Let the NVG neck cord hang around the base of your neck. Do not tie the goggles to the helmet or attach the neck cord to any place on the helmet because this will defeat the purpose of the breakaway mount.

Please check your helmet and your buddy's helmet. Then pass this tip along to others; it could prevent a serious neck injury.◆

POCs: MAJ James E. Bruckart, Mr. Joseph R. Licina, or Mr. Joseph L. Haley, Jr., USAARL Injury Tolerance and Protection Division, DSN 558-6897, commercial 205-558-6897

More information on night vision goggles

■ **Message diskette.** Don't wait until you're scheduled for an NVG inspection to request the latest NVG message disk. We recommend that you update your NVG message disk quarterly. Get the latest diskette now by sending a 5.25- or 3.5-inch disk to Commander, Aviation Training Brigade, ATTN: ATZQ-ATB-NS, Fort Rucker, AL 36362-5218. NVG messages are available in either WordPerfect or ASCII format. Please specify the desired format. If you have questions, contact the Night Vision Device Branch, Aviation Training Brigade, Fort Rucker, AL, at DSN 558-5812/5858/3720, commercial 205-255-5812/5858/3720.

■ **Exportable Training Package (ETP).** Before you request an NVG ETP, check with your battalion and brigade. They may already have a copy of the ETP. If not, the brigade may submit a written request to Commander, U.S. Army Aviation Center, ATTN: ATZQ-TDI-D, Fort Rucker, AL 36362-5035. Requests may also be faxed to DSN 558-4328, commercial 205-255-4328. Point of contact is Mr. Danny Flowers, DSN 558-3011/6012, commercial 205-255-3011/6012.◆

Radar altimeter lighting

Aviation safety action maintenance mandatory message (GEN-93-ASAM-02) 211830Z Dec 92 requires that red or white lighting of any radio control panel, switch panel, instrument, master caution light, etc., must be taped, filtered, or turned off to eliminate effects of red or white lighting before conducting NVG operations. If you're having problems meeting these requirements for the radar altimeters installed in your unit's aircraft, don't lose hope. The Communications-Electronics Command (CECOM) has come to your rescue.

TYPE	STATUS	NSN	NOTE
RT-1115A	red-lit	5841-01-096-8673	1
RT-1115B	red-lit	5841-01-140-0941	1
RT-1115C	ANVIS	5481-01-245-9090	
RT-1115D	ANVIS	5841-01-245-9091	
ID-1917	red-lit	5841-01-058-7994	2
ID-1917A	red-lit	5841-01-137-8445	2
ID-1917B	ANVIS	5841-01-245-9092	
ID-1917C	ANVIS	5841-01-245-9093	
RT1411	ANVIS	5841-01-140-1700	3
RT1411A	ANVIS	5841-01-245-9094	3

Note 1: Can be upgraded at repair facility to RT-1115C.
Note 2: Can be upgraded at repair facility to ID-1917B.
Note 3: ANVIS lighting provided by databus display.

The CECOM item manager for the APN-209 radar altimeter has released an updated list of receiver/transmitters (RTs) and instrument/displays (IDs) that provides the national stock numbers (NSNs) for red-lit and Aviator Night Vision Imaging System (ANVIS) compatible components.

Users should be aware that all the RTs and IDs are interchangeable within each type (for example, RT 1115A and RT 1115C) regardless of lighting. If the radar altimeters presently installed in the aircraft in your unit are red-lit, use the ANVIS NSN when reordering.

CECOM reports that RTs and IDs are currently in short supply. So be sure to turn in old RTs and IDs to supply for credit. Don't forget that old RTs and IDs can be upgraded to ANVIS-compatible components at the Tobyhanna Depot facility.

Points of contact are:

■ CECOM, Mr. Robert P. Gearty, DSN 992-4791, commercial 908-532-4791.

■ Army Safety Center, MW4(P) Robert A. Brooks, DSN 558-3262, commercial 205-255-3262.◆

—SFC(P) Robert E. Price, Aviation Section

Safe thunderstorms? Not a chance

Viewing any thunderstorm as safe is a fallacy—one that could lead to disastrous consequences. There are no safe thunderstorms.

The latest meteorological information shows that *all* thunderstorms still represent a significant hazard to pilots. Surprised? You shouldn't be. It has been stressed repeatedly, no thunderstorm is safe and *all* thunderstorms represent a serious threat to pilots.

More than 44,000 thunderstorms occur throughout the world each day, and each one contains more energy than was released by both nuclear bombs dropped on Hiroshima and Nagasaki, Japan, combined. With this type of potential energy, clearly *no thunderstorm is safe.*

Thunderstorm life cycle

A thunderstorm requires three things to develop: unstable air, lifting action, and moisture. When these elements come together in the correct order, cumulus clouds develop, which is the first stage of the three-stage life cycle of a thunderstorm.

■ **First stage.** All cumulus clouds are supported by updrafts but not all will develop into thunderstorms. If a cumulus cloud is able to continue its vertical development, it is reclassified as cumulus congestus or "towering cumulus." These clouds can have vertical updrafts of 3,000 feet per minute, and the updrafts can extend several thousand feet above the visible cloud top. This represents the true genesis of a thunderstorm. Once the cloud has reached this stage, the release of heat from water droplets in the updrafts provides the energy to sustain the growth of the thunderstorm.

■ **Mature stage.** Because of the strong updrafts, there is little or no falling precipitation in the cumulus stage. The beginning of rain or hail marks the transition into the mature stage of the thunderstorm because significant downdrafts now exist in the thunderstorm. These downdrafts can average 2,500 feet per minute while the updrafts have strengthened to 6,000 feet per minute.

The mature thunderstorm contains the most energy and is the most dangerous. The coexistence of updrafts and downdrafts can create extreme shear and turbulence that can shred an aircraft to pieces. The opposing drafts can also create hail if a water droplet is repeatedly tossed above and below the freezing level.

When the downdraft reaches the earth's surface, it spreads out laterally and creates a gust front—strong winds that could completely reverse the previous wind direction. This is an extremely dangerous situation for aircraft during takeoffs and landings. Also, during the mature thunderstorm stage, lightning is most frequent, rainfall most intense, and the cloud tops will have reached their peaks.

■ **Dissipating stage.** The thunderstorm passes into the final dissipating stage of the life cycle when downdrafts become more dominant than updrafts. Updrafts provide the energy to sustain the thunderstorm and when they cease, the thunderstorm falls apart. The anvil top is usually associated with this stage; however, it's important to remember that an anvil top may be present in the latter half of the mature thunderstorm stage. Therefore, severe weather may still be present even when the anvil top is visible.

The lifespan of a single-cell thunderstorm, from cumulus to dissipation, is 30 minutes. But most thunderstorms occur in groups. And these multicell groups contain thunderstorms in different stages of development. Hence, the gust front from one cell may help strengthen the development of another cell. This is most common when some other system, such as a cold front or squall line, is helping sustain the thunderstorm, and this situation often leads to a severe thunderstorm.

Thunderstorm weather hazards

■ **Turbulence.** The strongest turbulence occurs within the cloud because of the strong updrafts and downdrafts. However, severe turbulence can be encountered several thousand feet above the cloud and 20 miles laterally from a storm. It can also exist up to 30 miles downwind in the anvil top.

Closer to the surface, the gust front can affect areas up to 15 miles away, changing the horizontal wind direction an average of 40 percent. Wind speeds can be affected by as much as 50 percent up to 1,500 feet AGL.

Also, there can be secondary and tertiary gust fronts from a storm. Roll clouds, which always indicate areas of strong turbulence, may

accompany these gust fronts.

■ **Hail.** As a general rule, the larger the thunderstorm, the more likely it will have hail associated with it. Hail can be encountered at 45,000 feet and can be carried as far as 10 miles from the thunderstorm.

■ **Icing.** Icing generally occurs where the temperature is between 0° and -20°C, with the most severe icing occurring between 0° and -10°C. The heaviest rainfall and strongest turbulence usually occurs at freezing-level altitude.

■ **Lightning.** Lightning occurs at all levels of a thunderstorm and is a frequently reported weather-related incident. Most lightning strikes occur when aircraft are operating in one or more of the following conditions:

- Within 8°C of the freezing level
- Within about 5,000 feet of the freezing level
- In clouds
- In some turbulence

Aircraft are rarely struck by lightning when operating below 1,000 feet AGL. Most lightning is cloud to cloud, and only a small percentage of lightning bolts actually hit the ground. However, it is quite possible to be struck by lightning several miles from a thunderstorm.

■ **Tornadoes.** Tornadoes are one of the most feared aspects of severe thunderstorms. They are funnel-shaped vortices of wind several hundred yards wide and have been observed extending out to 20 miles from the main body of the thunderstorm. Wind speeds can reach up to 300 miles per hour, but they move at only an average of 40 miles per hour. Tornadoes usually form on the southern or southwestern flank of the thunderstorm and can last from a few minutes up to 6 hours.

Not all tornadoes can be spotted. When the wind vortice has no associated funnel cloud, tornadoes may be hidden among cumulus clouds or be completely invisible. Even airborne radar cannot spot a spinning column of air. The only way to spot these "invisible tornadoes" is by looking for swirls of dust on the ground or swirls in the clouds.

Altimeter effects

As a thunderstorm approaches, pressure usually falls rapidly, rises sharply with the gust front and rainshowers, and then returns to normal as the storm passes. This is a relatively minor concern compared to other thunderstorm hazards, but it can result in significant altitude errors.

Flight procedures

Operators manuals for most aircraft contain a section outlining speeds, configurations, and techniques for flying through lightning and thunderstorm areas. In addition to the specific procedures outlined in the aircraft operators manual, the following are some general guidelines to use if you must fly through a thunderstorm:

■ Before entering the thunderstorm, use your airborne radar and also call the nearest pilot-to-metro-service (PMSV). The weather station can often provide information the airborne radar cannot.

■ Ready your aircraft for the thunderstorm. Turn instrument and cockpit lights full bright. Turn pitot heat on. Tighten and lock safety belts and shoulder harnesses. Set proper power settings.

■ Maintain a constant attitude. Do not chase the altitude. This increases stress on the aircraft.

■ Do not fly under the cirrus anvil. This area has the greatest chance of severe hail.

■ Do not fly near the freezing level. Try to avoid it by at least 8°C.

■ Avoid unnecessary maneuvering. Do not turn around. This will increase your time in the storm.

■ Once clear of the storm, give a pilot report over the PMSV. Thunderstorms can change quickly, so timeliness is important.

While the specific procedures outlined in the aircraft operations manual and these general guidelines are the best procedures to use when thunderstorm penetration is inevitable, they are not an endorsement to fly through any thunderstorm. No one should ever intentionally attempt to fly through, under, or over a thunderstorm. The best rule is *avoid all thunderstorms*.

Thunderstorms are extremely powerful storms that contain many serious hazards to safe flight. *There are no safe thunderstorms*. Flight into a thunderstorm can make severe demands of even the most experienced aviator. Summer flying and the turbulence often associated with it require that you remain constantly alert.◆

POC: 1Lt Ryan W. Myers USAF, Assistant Staff Weather Officer, Detachment 9, 1st Weather Group (ACC), Fort Rucker, AL, DSN 558-2804/3902, commercial 205-255-2804/3902. **(Portions of this article were adapted from Air Force Manual 51-12: Weather for Aircrews.)**

Information based on preliminary reports of aircraft accidents

Utility

UH-1 Class A

H series - While returning from maintenance test flight, pilot noticed engine torque had dropped to zero. Engine chip light came on, and pilot reduced power to initiate precautionary landing. Detecting smoke, pilot increased rate of descent to land as soon as possible. Pilot completed landing on vacated concrete pad, saw that aircraft was on fire, completed emergency shutdown procedures, and egressed aircraft. Aircraft sustained extensive fire damage in engine area and heat damage forward to main generators and aft to tail boom attaching points. No injuries. 9321

UH-1 Class B

H series - At about 75 feet AGL while on approach to LZ located on pinnacle (8,400 feet MSL), engine/rotor RPM began to bleed off. PC attempted to maneuver aircraft toward lower terrain to the right. Aircraft flew about 200 meters as engine/rotor RPM continued to decay and impacted 20-foot-high trees on 15-degree sloping terrain. Aircraft came to rest upright. One injury. 9322

UH-60 Class A

A series - After landing, crew was taxiing aircraft and executing right turn when tail struck corner of hangar. Aircraft rolled onto its left side. All four main rotor blades were separated. Tail boom was severed from fuselage and tail rotor was separated. No injuries. 9323

Attack

AH-64 Class A

A series - While at 100 feet AGL hover during APART training, IP initiated maneuver to place aircraft in unusual attitude. IP then transferred controls to pilot. Pilot initiated unusual attitude recovery procedures but was unsuccessful in regaining control of aircraft. IP saw pilot was having problems and took controls but was also unsuccessful in regaining control of aircraft. Aircraft began to spin, and IP assumed he had a tail rotor thrust problem. He tried to arrest spin with judicious application of collective but was unsuccessful. He then increased collective and activated chop collar. Aircraft impacted ground hard, bounced into air, flipped, and came to rest inverted. Crew saw fire in engine area, reported it to tower, and jettisoned canopy to egress from aircraft. No injuries. 9324

Observation

OH-6 Class A

J series - After making low-level run while firing minigun, pilot broke right. During turn, aircraft began to mush through and main rotor RPM began to droop. Main rotor blades contacted ground. Main rotor system, tail boom, skids, and rocket pods separated from aircraft as it tumbled before coming to rest. One minor injury. 9325

OH-58 Class A

A series - During night unaided approach to airfield with zero percent illumination, aircraft struck ground in near-level attitude about 1 mile short of intended landing point. Skids collapsed during impact, and wire strike prevention system dug into ground. Indications are that aircraft was left side low and main rotor contacted ground on left side of aircraft. Aircraft turned about 100 degrees left and came to rest upright. Main rotor separated during impact, and aircraft sustained major damage to fuselage, drive system, and tail boom. Minor injury. 9326

A series - Following refueling, crew flew aircraft for about 5 miles en route to NOE training area and was at 300 feet AGL when engine failed. Crew attempted autorotation to terraced field. Aircraft impacted ground hard, coming to rest on right side. Two injuries. 9327

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

Class A Accidents through April

	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	8	0	0
	May	1		1	
	June	2		2	
4th Qtr	July	2		1	
	August	1		0	
	September	2		0	
	Total	22	24	10	21

Changes to TC 1-216

Units should make the following pen and ink changes to TC 1-216: Aircrew Training Manual, Cargo Helicopter, CH-47:

■ **Page 2-6, Figure 2-5.** Change the caption to read: "Training tasks for NVG qualification/ refresher training."

■ **Page 3-1, paragraph 3-2b.** Add the following sentence: "Chapter 2, Figure 2-5, shows those tasks the crew member must perform during NVG refresher training."

■ **Page 4-2, paragraph 4-2b(2).** Change the first sentence of the paragraph to read: "NVG mission training for newly qualified NVG RCMs consists of a minimum of 10 hours of NVG flight training." Delete the second and third sentences: "On a case . . . proficiency. (Any reduction . . . Aviation Training Folder.)"

■ **Page 5-4, Figure 5-1, Task 1080.** Delete the "X" in column I.

■ **Page 6-34, Task 1006.** Delete; this page is a duplication of page 6-33. Change the table of contents to reflect the correct page numbers for subsequent tasks in chapter 6.

■ **Page 6-41, Task 1016, STANDARDS, paragraph 1d.** Delete the words "and record."

■ **Page 6-46, Task 1018, STANDARDS, paragraph 1b.** Change this sentence to read: "Initiate the takeoff from the ground or from an appropriate hover ± 3 feet."

■ **Page 6-76, Task 1076, CONDITIONS.** Delete "VMC."

■ **Page 6-78, Task 1077, CONDITIONS.** Delete "VMC."

■ **Page 6-80, Task 1078, CONDITIONS.** Delete "VMC or."

■ **Page 6-91, Task 1099, CONDITIONS.** Change to read: "In a CH-47 helicopter equipped with the Mark XII IFF System and given a mission briefing that includes signal operation instructions and a keyed system, in a CH-47FS, or orally in a classroom environment."

■ **Page 6-103, Task 2009, NIGHT OR NVG CONSIDERATIONS.** Change paragraph b(2)(a) to read: "**Above 80 feet AHO**. Straight-trail, free-cruise, staggered, and echelon formations." Change paragraph b(2)(b) to read: "**At 80 feet AHO and below**. Free-cruise formations in conjunction with techniques of movement." Delete paragraphs b(2)(c) and b(2)(d).

■ **Page 6-134, Task 2089, DESCRIPTION.** After paragraph 3e, add the following paragraphs:

"• f. **Lights.** The CE will assist the P* and P in checking and setting their searchlights and will notify the MP that the anticollision, position, and formation lights are operational.

"• g. **Fire pull handle and cross-feed fuel valve checks.** The CE will position himself to observe the fuel and cross-feed valves. When the MP pulls the fire pull handle or places the cross-feed valve switch to the open position, the CE will check the fuel valves and appropriate lights for proper operation. When the MP pushes in the fire pull handle or places the cross-feed valve switch to the closed position, the CE will check the valves and lights for proper operation.

"• h. **Flight control travel and hydraulics check.** The CE will check the hydraulic gauges on the maintenance panel and notify the MP when a pressure has dropped or returned to normal. During the control interlock check, the CE will tell the MP the pressures at which the flight control hydraulic systems change over."

■ **Page 7-1, introductory paragraph, line 3.** After the sentence ending with " . . . and evaluation," add the following: "Tasks in this chapter will be performed only when a qualified and current MP or ME is occupying a flight crew station."

■ **Page 7-2, Task 2900, STANDARDS.** Change paragraph 2 to read: "Correctly review appropriate information in TM 55-1520-240-PM and on DA Forms 2408-12, 2408-13, 2408-13-1, 2408-13-2, 2408-14, and 2408-18 for completeness."

■ **Page 9-8, Figure 9-5, item 16.** Circle the number "16."

■ **Page 9-8, Figure 9-5, item 33.** Delete the square around the number "33."

Units should insert page 6-37.1. And a copy of this STACOM should be retained and placed in the front of the manual for reference purposes.◆

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Edward H. Littlejohn
COL, Aviation
Director, DES

TASK 1014

TASK: Clear the aircraft and maintain airspace surveillance.

CONDITIONS: In a CH-47 helicopter.

STANDARDS: Immediately inform the P* of all air traffic or obstacles that pose a threat to the aircraft.

DESCRIPTION: Maintain close surveillance of the airspace surrounding the aircraft. (The CE will move about the aircraft as necessary to ensure total coverage.) Inform the P* immediately of air traffic or obstacles that pose a threat to the aircraft. Call out the location of traffic or obstacles by the clock-and-distance method. (The 12 o'clock position is at the nose of the aircraft.) Give distance in statute miles for air traffic and in feet for ground obstacles. When reporting air traffic, specify the type of aircraft if known.

WARNING

While moving about during flight, the CE must be secured to the aircraft.

NIGHT OR NVG CONSIDERATIONS: The PC will assign overlapping sectors of search to all crew members during the crew briefing. Crew members will use proper scanning techniques while conducting airspace surveillance. They will inform the PC when flight duties will divert their attention from assigned sectors of search.

REFERENCES:

FM 1-301
FM 1-402
FM 17-95
FM 20-150
FM 55-450-3
FM 55-450-4
FM 55-450-5
TC 1-201
TC 1-204
Unit SOP

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