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Flightfax®

Online Report of Army Aircraft Mishaps

The 2011 Aviation Trends (page 3) indicate several problems that Aviation Leaders should be focusing on with their aviators. Overconfidence , complacency, and inadequate mission planning increased from last year. A staggering 88% of Class A mishaps involved overconfidence and complacency. In November, we provided some ideas as to how complacency becomes accepted, and Dr. LeDuc pointed out how this occurs. "You begin to accept lower standards of performance and start pencil whipping those checklists because you know you'll remember to check everything; you've never missed anything before." By looking at last year's Class A mishaps, "everything" was certainly not checked in the end, and the environment judges without compassion.

Inadequate mission planning, specifically - failing to plan for obstacles and management of power requirements, increased in 2011. To provide some thoughts on mission planning, the mitigation strategy starting on page 2 is highlighted in this month's issue. Dr. LeDuc reminds us that our mission approval process continues to be an important mitigation tool. "If you, or someone you work with, are conducting mission planning, you may want to take a second look at that plan and solicit information from the people around you. Granted, it can be tedious, but the preplanning and planning processes require continued focus and objective approaches to prevent a disastrous outcome in the form of an accident and to ensure mission success."

As we review the 1st Quarter FY12 mishap statistics, we are reminded that Leaders and Soldiers need to stay engaged. In the manned category, the overall number for class A - C is down (25 vs 27) from the 1st quarter last year but there has been a spike in Class A's (5 vs 2). 5 of the 9 Class A/B's occurred under NVD. We had four Class B mishaps, the same as from the previous year, and a decrease to 16 Class C mishaps from 21 the previous year. UAS losses are trending slightly down from last year first quarter.

The "Blast from the Past" of 2001 reminds us that these human error trends are nothing new, and that diligence and engagement make a difference. Mission accomplishment is what Leaders always strive to achieve, and must be balanced to ensure the safety of all involved. The primary method of accomplishing this is detailed planning, which includes in-depth rehearsals and everyone's input.

Until next month, fly safe!

LTC Christopher Prather USACR/SC Aviation Director

email: christopher.prather@us.army.mil

Five P's — Prior Planning Prevents Poor Performance

Dr. Patricia LeDuc, Human Factors Director, USACR/SC

Yes, I know — most aviators and aviation mechanics would insist that it really is "The Six P's," but even with that other one edited out, inadequate mission planning for aviators and acceptance of poor norms in maintenance practices are among our top human errors in aviation accidents. While I have never planned a flight mission, I have planned maintenance overhauls and aviation research projects. You would be surprised how much those three activities have in common. In addition to the preparation, execution and after-action review, there is the ever-important planning and preplanning, which is what I want to focus on here.

During the preplanning stage for any of these activities, we develop the goals or tasks we need to achieve in order to fulfill the mission requirements. For aviators, this might involve reconnaissance or reviewing the history of previous missions to learn about the "lay of the land." For a researcher, it might involve reading a bunch of articles on a particular topic. For an aviation mechanic, it could involve studying tech manuals and talking with manufacturing engineers. The purpose of preplanning is to collect data that will help us understand how the mission will be conducted and alert us to any pitfalls that might have happened in previous missions. It is also the phase where documentation begins in case someone has to replace you during a later phase of the mission.

In the planning stage, the availability of resources and issues, such as integration and mission timing, are considered. Contingencies are evaluated. We look at all factors required to ensure a favorable outcome for the mission. It's at this point in the process that the "I-can-handle-it" attitude starts to creep into our planning. One of the things I've noticed from reading our accident reports and reflecting on some of the research projects I have conducted, is that ego can get in the way of good mission planning. If you hear yourself saying or thinking, "I know best," you may be setting yourself and your crew up for failure.

In reality, the best thing you can do during mission planning is involve everyone in the process. Listen to other people's ideas; they may actually have a better one than yours. I can't tell you the number of times one of my research techs said, "Doc, did you know there is an easier, better, faster or more efficient way to do that?" You would be surprised how much tunnel vision you get when you do the same thing over and over. I learned to let my techs explain their point of view and to listen to their suggestions. A different point of view can often give you a fresh perspective on things and save you from making a critical mistake.

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How do you recognize when you aren't using proper mission planning techniques? What pitfalls should you look for? From my perspective, here are a few prime tipoffs:

1. Your approach has been predetermined before the goals are set and all data gathered.
2. Your approach is rigid, inflexible and may not actually be taking reality into consideration.
3. There is an inadequate division of labor causing overload on some personnel.
4. There is no process in place to obtain timely data relating to changes in the situation.
5. You have leaders grandstanding and attempting to take center stage.

We, "research types," have those huge egos too. We believe we are the best and the brightest and we've been known to adopt rigid philosophies about our projects because we're certain our ideas and ways of doing things are infallible. And yes, when we start a project in that frame of mind, we often fall flat on our face and end up having to start over with a more open mind. In most cases though, a bungled research project only wounds our pride, not our teammates.

If you, or someone you work with, are conducting mission planning, you may want to take a second look at that plan and solicit information from the people around you. Granted, it can be tedious, but the preplanning and planning processes require continued focus and objective approaches to prevent a disastrous outcome in the form of an accident and to ensure mission success.

Dr. LeDuc can be contacted at the United States Army Combat Readiness/Safety Center at (334) 255-2233.

Class A – C Mishap Tables

	Manned Aircraft Class A – C Mishap Table									
		FY 11					FY 12			
	Month	Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities
1st Qtr	October	0	1	3			2	1	5	1
	November	0	2	14			1	1	7	0
	December	2	1	4	4		2	2	4	4
2nd Qtr	January	0	0	8					1	
	February	0	2	2						
	March	2	1	5						
3rd Qtr	April	2	1	11						
	May	2	2	2	1					
	June	3	1	3	2					
4th Qtr	July	2	2	9	2					
	August	2	2	9	2					
	September	0	1	5	0					
	Total for Year	15	16	75	11	Year to Date	5	4	17	5

As of 12 Jan 12

UAS Class A – C Mishap Table									
	FY 11 UAS Mishaps					FY 12 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	2		1	3	W/GE				
MQ-5	3		1	4	Hunter		1	2	3
RQ-7	1	11	30	42	Shadow		3	4	7
RQ-11					Raven				
RQ-16A			3	3	T- Hawk				
MQ-18A									
SUAV			1	1	SUAV			2	2
Aerostat	6	9		15	Aerostat				
Total Year	12	20	36	68	Year to Date		4	8	12

As of 12 Jan 12

DES' Evolving Role

CW5 Greg Turberville
Chief of Standards
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL

Over the past decade, the DES role has evolved due to the influences of the Global War on Terror, Army Force Generation (ARFORGEN), Flight School XXI, etc. DES remains relevant and important to the Aviation Branch as a standardization influence for the Commanding General, United States Army Aviation Center of Excellence (USAACE). Recent guidance from the Aviation Branch Commander directed a modification to the DES mission. Replacing the word "assistance" with "assessment" in our mission statement is the fundamental change to the DES mission. To paraphrase, the guidance is to bring the "Big S" back into standardization. This month's article details the evolution of the DES role/tasks as a tool for the commander.

Prior to 2004: DES routinely supported FORSCOM ARMS Teams in conjunction with their resource survey visits to aviation units. The focus of DES involvement was primarily on the overall garrison pre-combat Aircrew Training Plan (ATP). The assistance visit was oriented on evaluating individual Aircrew Training Manual (ATM) base, or 1000-series, aviator tasks. During this time frame, directorate personnel were more representative of the United States Army Aviation Center (USAAVNC) expertise.

From 2004 to November 2011: In addition to directed or requested assistance visits for garrison-based units, DES routinely deployed to combat theaters conducting CAB-level assistance visits. These visits focused on assisting the warfighter by bringing updates to training techniques, new equipment, and branch-level initiative briefings. DES collected tactics, techniques, and procedures (TTPs) throughout these deployment visits to allow cross pollination of lessons learned across theaters and within the Branch (TDA and M/TOE). These deployments allowed combat mission warfighting skill sets and proficiency to be maintained within directorate SME personnel. During this period, DES assistance visits evolved to include a greater percentage of training participation as opposed to purely evaluation. Coincident with this evolution and the ARFORGEN process, DES assisted with programs, such as unit level Individual Readiness Progressions, Combat Maneuvering Flight (CMF), Mobile Training Teams (MTT), New Equipment Fielding and Training (NETT), High Altitude Mountain and Environmental Training (HAMET), Full Authority Digital Electronic Control (FADEC), in order to accelerate the ARFORGEN process and unit readiness during shortened unit dwell cycles.

From November 2011 to Present: New command guidance required a re-focus on assessing the CAB and Battalion/Taskforce ATP during the pre-deployment phase. While DES will and does still include many of the tasks detailed above, the percentage of mission focus during unit visits will trend back towards an assessment philosophy versus an assistance and training philosophy. Assessments are conducted typically at 24 to 36-month intervals, whether requested by CAB commanders or directed by higher headquarters. Assessment visits will be scheduled on CAB timeline and flexible to most ongoing CAB operations. Visits will consist of

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a detailed assessment of the ATP and all associated programs IAW CDR's ATP, ATM, AR 95-1. Aircrews will receive oral, written or flight evaluations to better determine the overall ATP effectiveness. Each BN/TF and CAB commander will receive a findings and observations out-brief following the collective assessment.

During this evolutionary decade, DES continued to participate in key Army-level processes, such as AR, TM, and TC review/rewrite initiatives with appropriate agencies, new equipment fielding, MTT, etc. Likewise, DES provides SME support to the CRC in accident investigation and prevention. And, as always, DES personnel routinely assist 110th Aviation Brigade at Fort Rucker with aircraft qualification courses in all MDSs.

Just as in the past, each SP and ME assigned to DES are fully vetted and their assignment is coordinated through HRC, assuring we incorporate the best of the best to the branches within the directorate. All have the heart of a trainer and come with vast experience and a proven record of performance. Due in large part to the evolutionary experience of the past decade and the new guidance consistent with our mission statement, the old cliché "DES is here to help," truly is the case today, as much as anytime in the history of the DES.

DES Mission Statement

Serves as proponent agency for the Army Aviation Standardization Program for the CG, USAACE. Executes assessments and evaluations of Army Aviation units worldwide in order to achieve standardization of the Army Aviation Aircrew Training Programs (ATP) and all Aviation Standardization Programs. Serves as a direct link between warfighting units and the CG, USAACE, on all matters of the ATP and standardization programs. Provide subject matter expertise to enhance the warfighting commanders' combat readiness. Establish and enforce Army Aviation standardization policies through oversight and staffing of Army Aviation regulations and publications.

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https://safety.army.mil/atf/Home/tabid/1565/Default.aspx

Broken Wing Awards

The Army Aviation Broken Wing Award recognizes aircrew members who demonstrate a high degree of professional skill while recovering an aircraft from an in-flight failure or malfunction, requiring an emergency landing. Requirements for the award are in DA PAM 385-10, Para 6-3f.

CW4 Brian Robinson
CW2 Larry Ciancio
Detachment 33 Operational Support Airlift Command, AASF Buckley AFB, Aurora, CO

At 10,000 feet MSL and 170 KIAS while rolling out from a left 30-degree bank, the C-26E lost aileron control after the aileron control cable snapped. As the aircraft continued to roll to approximately 60 degrees, CW4 Robinson, sitting in the left seat, applied maximum power to the left engine and reduced the right engine to flight idle. He simultaneously applied right rudder in an attempt to stop the airplane from continuing its roll to the left. The airplane responded to the control inputs, stopped the roll rate and leveled. After discovering the right seat pilot, CW2 Ciancio, had at least minimal aileron control, CW4 Robinson decided to transfer the controls after they realized that CW2 Ciancio could control the airplane in roll with generous input of right aileron trim, in conjunction with using counter pressure on the left aileron. CW2 Ciancio handled the controls during the approach and landed the aircraft with minimal to zero aileron control.

CW3 James Hagerty

Task Force Brawler, Forward Operating Base Shank, Afghanistan

While establishing a hover in a UH-60L for a speedball resupply mission, a cardboard box wrapped in plastic flew up from the LZ and entered the No. 2 engine inlet. The crew heard a loud pop, followed immediately by the low rotor audio. From CW3 Hagerty's performance planning, he knew the current conditions negated single engine hover capability. The aircraft began an immediate descent with the rotor drooping to 82 percent. To avoid descending into the rocky pinnacle, CW3 Hagerty chose to maintain collective position rather than reduce collective and attempted to gain forward airspeed. After clearing the rocks, he nosed the aircraft down the side of the mountain to increase airspeed. Once forward airspeed was established, he reduced collective to regain the rotor. CW3 Hagerty decided not to shut off the No. 2 engine as it was supplying 35 percent torque and did not exceed the 10-minute TGT limit for the 6-minute flight back to FOB Shank.

Mr. Vicky Mitchell
A Company, Special Operations Aviation Training Battalion, Fort Campbell, KY

Mr. Mitchell demonstrated extraordinary judgment and skill during helicopter refuel operations on a zero illumination night, utilizing night vision goggles. The refuel drogue on the MC-130 hose failed to disengage from the probe of the receiver aircraft. Subsequently, the hose failed at its attachment point to the pod reel on the MC-130, leaving 95 feet of hose hanging from the refuel probe of the MH-47G. Once the refuel hose tore free, Mr. Mitchell

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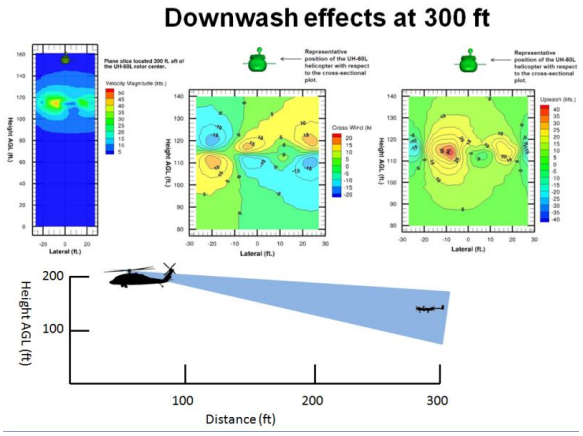
maneuvered the aircraft to avoid the flailing hose from striking the aircraft. Mr. Mitchell then piloted the aircraft to the closest airfield using a shallow approach path and airspeed which kept the hose under the aircraft until he came to a high hover above the airfield. From this point, he began a descent until the hose contacted the ground, then hovered and descended backward laying the hose on the ground in front of him until he touched down.

CW4 Michael Hambrecht
5th Aviation Battalion (P), JRTC and Fort Polk, LA

While at 1500 feet and 90 KTS at night in the OH-58C, the crew experienced a LOW ROTOR light and audio alarm. The pilot on the controls entered a power on autorotation. CW4 Hambrecht confirmed full throttle and verified the PI had not unintentionally decreased the rotor RPM with the GOV RPM switch. During descent, rotor RPM could not be maintained when outside of an autorotative profile. CW4 Hambrecht requested the PI to increase engine RPM using the GOV RPM switch with no effect. With the only suitable landing area behind the aircraft, CW4 Hambrecht turned 180 degrees to the left towards a confined area surrounded by lights which washed out the NVGs, making it difficult to see obstacles in or around the landing area. During descent and already at max glide airspeed, CW4 Hambrecht realized he would be short by approximately 150 feet. At about 75 feet above the trees, with partial power, CW4 Hambrecht pulled the collective momentarily, in conjunction with a very small deceleration maneuver, to extend the glide distance to a point past the tree line. He lowered the collective again and executed a zero ground run landing with no damage to the aircraft.

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

Mishap Review: MQ-5B Hunter UAV



Synopsis

During a night landing, an MQ-5B Hunter Unmanned Aerial Vehicle (UAV) encountered a UH-60L's rotor wash, lost control, and landed hard with significant damage.

History of flight

The UH-60L was conducting an NVG training flight and had been cleared for a practice GPS low approach to runway 24. Concurrently, an MQ-5B Hunter UAV was returning from a mission and entering a north downwind for landing runway 24. While on final and with visual acquisition of the inbound UAV, the crew of the UH-60L determined a potential airspace conflict existed with the UAV and executed two left 180-degree turns for spacing before establishing back inbound on its final approach heading for landing. The MQ-5B Hunter turned final approach directly behind the UH-60L. The UAV encountered rotor wash on short final, resulting in loss of control and a hard landing with Class B damage to the vehicle.

Commentary

It was determined that the UH-60L did not follow the approach clearance instructions issued from the tower. After acquiring the UAV, the PC commanded the PI to turn 180 degrees without amending his approach clearance instructions. Unbeknownst to the PC, the UAV was approximately 3 nautical miles to the north and established in the northern downwind of the traffic pattern. The spacing turns actually decreased the separation between the helicopter and the UAV.

The Board noted that once clearance is accepted, the aviator is required to comply with ATC instructions. The aviator may request a clearance different from that issued if another course of action is more practical or aircraft equipment limitations or other considerations make acceptance of the clearance inadvisable. Aviators should also request clarification or amendment, as appropriate, whenever a clearance is not fully understood or considered unacceptable because of safety of flight. The aviator is responsible for requesting an amended clearance if ATC issues a clearance that would cause an aviator to deviate from a rule or regulation, or place the aircraft in jeopardy.

All information contained in this report is for accident prevention use only.
Do no disseminate outside DOD without prior approval from the USACRC.
Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report
https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required

"Hope" is never a Course of Action (Reprinted from Flightfax, October 2001)

Aviation has proven time and again that it is the most maneuverable and lethal weapons system on today's ever-changing battlefield. During the last several years, Army Aviation has found itself involved in a myriad of atypical missions. Atypical because the mission requested doesn't exactly fit into the unit's Mission Essential Task List (METL). These missions, rather than a one-time requirement, are becoming the "norm." As the force structure continues to shrink, and the mission load continues to grow, aviation units will continually find themselves asked to perform multifaceted, highly complex missions in unfamiliar airspace.

Select aviation units may be the "only show in town," and our inherent capabilities provide a dimension to the battlefield that no other combat arm can produce. And it is because of this complexity and variation that we must stay ever vigilant about mission execution. Leaders must guard against complacency, loss of risk assessment objectivity, or the failure to make risk management a continuous process. There is no substitute for thorough mission planning, detailed rehearsals, and strict adherence to risk reduction and control measures … these things are an aviator's Intelligence Preparation of the Battlefield (IBP) … and you ***MUST*** know your enemy.

Unfortunately, because of our high OPTEMPO, many units are forced to rapidly transition from one complex mission profile to another. Such frequency may cause the atypical missions to be perceived as routine, where unvigilant leaders allow these missions to be treated with less than appropriate planning and oversight.

An analysis of recent mishaps illustrates how shortfalls in the planning process, coupled with the absence of institutionalized risk management and leader involvement, can foster an environment of mission planning complacency. In two cases, the missions involved multi-ship, sling load operations under night vision goggles (NVD) conditions. Coincidentally, these units had successfully executed a number of varied missions in the preceding six months, which may have further contributed to their false sense of security. The units failed to recognize the cumulative effects of risk, and leaders allowed risk reduction decisions to be made at an inappropriate level. Instead, both units relied on prior planning and crew experience to fill in the blanks for basic, thorough, detailed planning and risk assessment. In both cases, the missions were received well in advance, and planning was assigned to junior officers. This was considered adequate because similar scenarios had just been executed without incident weeks earlier. However, we all know that the first step in sound mission planning is to conduct a complete mission analysis (MDMP). Planners must also ensure that all members understand the commander's intent, ground tactical plan, reverse planning sequence, risk assessment, and any control measures/abort criteria that can effect mission execution. This is commonly referred to as the 5 "W" process: who, what, when, where, and why. The "how" is determined by the commander and S-3. Once the plan is set, the aviators must begin their task of thorough mission planning to execute the "how. Finally we must REHEARSE … REHEARSE … REHEARSE to ensure EVERYONE knows their role … NO CONFUSION!

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Unfortunately, this is where these units allowed their false sense of security to fly lead. As stated, these missions were planned as NVG, Air Assault missions into confined LZs or unfamiliar terrain. On one particular mission, the winds were high, the clouds were low, and the rain was heavy. Somewhere in the decision cycle, in a flight of four aircraft flying a staggered right formation, it was determined that the heaviest, least maneuverable (HMMWV sling load) aircraft would fly as Chalk 4 instead of Chalk 1. Additionally, the ingress route was changed at the PZ because of deteriorating weather. This change now required the crews to negotiate a 180-degree right-hand turn to final at the LZ. In a similar incident, a UH-60 unit previously identified a weakness in their ability to execute NVG sling load operations. However, the command elected not to do anything about it, and the mission attempted by an inexperienced flight crew. Subsequent to "brownout" during load pickup, the crew attempted to fly out of the cloud. Instead, they allowed the load to hit the ground, and the Black Hawk ultimately crashed in a right nose-low attitude and rolled across the desert floor. Final result in one incident: six personnel dead, nearly a dozen injured, two UH-60s and one HMMWV completely destroyed. Final result on the second incident: five personnel injured, the aircraft and HMMWV were totally demolished.

In both scenarios, there was little supervision or mentoring during the mission planning process to ensure all facets (risks) of the operation were examined in depth, to identify hazards, and modify courses of action to implement the necessary risk mitigation/reduction controls. Both scenarios evidenced crew overconfidence in their ability to handle situations even as cumulative effects rapidly reduced the margin for error. Decision makers, (senior commanders, unit commanders/SPs/IPs) must remain objective enough to recognize the escalating cumulative effects of a number of seemingly benign individual risks. They are responsible for analyzing continuous feedback from mission focused subordinate leaders in order to identify risks that can adversely affect mission execution. Once the planning process is complete, it is absolutely imperative that every potential branch or sequel is played out and rehearsed. Crews and leaders at all levels must clearly understand the hazards, risks and controls that have been put into place to reduce mission risks. Without a clear understanding of these elements, all participants can't actively recognize and assess changing hazards and the associated increase in risk. A rehearsal is a key vehicle for establishing this common understanding and essential to mission success.

The Center for Army Lessons Learned (CALL) sites rehearsals as highly effective and an excellent tool in risk control and reduction. Moreover, it is fundamentally critical that all mission personnel attend and participate in the rehearsal. That is the time to voice concerns, ask questions, and iron out confusion. The rehearsal must cover all aspects of the mission: staging plan, loading plan, en route plan, landing plan, FARP plan, battle position occupation, screen line establishment … from primary ingress and egress routes, to any reasonably expected or anticipated contingency that may be implemented. It must be clear in everyone's mind exactly what will be required during every phase of the operation, and how outside factors can change mission requirements.

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Blast From The Past continued from previous page

Senior aviators/leaders and crewmembers have a professional, if not moral, responsibility to voice all concerns, real or perceived, anytime their "comfort threshold" is broken. The old adage is true; *"The only stupid question is the one that isn't asked."* Questions must be voiced regardless of the perception; i.e., *"my suggestions are always ignored"* or *"these guys will think I'm dumb"* … well, better dumb than dead!

Mission accomplishment is what we as leaders always strive to achieve. It must be balanced to ensure the safety of all involved. The primary method of accomplishing this is detailed planning, which includes indepth rehearsals and everyone's input. Don't be a shrinking violet. When a point of concern becomes evident, such as deteriorating weather, stand up, be counted, and let your concerns be known. Never allow complacency, or fear of ridicule, determine your actions in and out of the cockpit … or let yourself become the guy that has to look in the mirror and say: *"If only I had said something, they might be alive today."* If you're struggling with the decision to stand up, picture yourself at a memorial service for the crew, or in an interview with the investigation board. Would you be equally convinced or could you justify your actions? And if not, take action — do the right thing! Remember, ***"Hope is never a course of action!"***

Preliminary Loss Reports (PLR)

ARMY PRELIMINARY LOSS REPORT 12026

OH-58D CRASH CLAIMS FOUR SOLDIERS' LIVES

Four 4th Squadron, 6th Cavalry, Fort Lewis, Washington, Soldiers were killed in an accident involving two OH-58D Kiowa Warrior Helicopters on 12 December 2011, at approximately 2000 near community of Rainier. The four pilots (25-year-old CPT, 32-year-old CW3, 36-year-old CW3 and 32-year-old CW2) were conducting routine night training flights when the accident occurred. A Centralized Accident Investigation (CAI) team from the US Army Combat Readiness/Safety Center is investigating. Local News

These four are the **1st** Class A **Flight Accident** fatalities in FY12 compared to **0** for the same time frame in FY11. This PLR does not identify specific root causes of this incident as the investigation is ongoing. Further details will be available at a later date on RMIS (RMIS Login Required).

Preliminary Loss Reports (PLR) are ***For Official Use Only*** and are to provide leaders with awareness of Army loss as we experience it and to point out potential trends that affect our combat readiness.

Our Army depends on you to use these PLRs to help Soldiers understand the impact of decisions made on and off duty.

The U.S. ARMY COMBAT READINESS/SAFETY CENTER is interested in your comments; please click here to provide feedback on the Preliminary Loss Reports (PLR). FAQs and additional resources can be found on the USACR/Safety Center website at https://safety.army.mil

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in December 2011.

Observation helicopter

OH-58D

- Engine overspeed (NP126%/6 sec) occurred during FADEC manual training. Aircraft was landed without further incident. (Class C)

- Two aircraft collided during NVG training missions. Four fatalities. (Class A)

- Engine experienced an overspeed condition (124%/5sec) during MOC run-up. (Class C)

- First round of an HE rocket engagement reportedly fell short, resulting in three injuries to friendly forces. (Class C)

MH-6M

- Crew experienced debris in the main rotor system during fast-rope training and executed a forced landing. Aircraft touched down hard and sustained damage to the undercarriage, structure and main rotor blades. (Class B)

Attack helicopters

AH-64D

- Aircraft rotor system contacted and severed the tether to an aerostat. Damage to one main rotor blade tip cap. Balloon was lost. (Class B)

- Crew experienced loss of tail rotor authority during flight, followed by low rotor RPM and generator loss. Aircraft contacted the ground with the left main landing gear, after which it rolled onto its left side. (Class A)

Unmanned Aircraft Systems

RQ-7B

- Crew received an IG FAIL reading shortly following launch. Recovery chute was unable to be deployed. UA descended to ground contact with damage and was recovered. (Class B)

Fixed Wing

C-12X

- Crew experienced a # No. 2 engine surge and overtorque during takeoff. (Class C)

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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Online Report of Army Aircraft Mishaps

This edition is the last in a series of four focused on the human errors behind a majority of Army Aviation accidents. Through these four editions, we've explained strategies to combat overconfidence/complacency, inadequate mission planning, aircrew coordination errors, and assumption of low risk missions.

As we finish fiscal year 2011 and thus far in 2012, we are seeing a disturbing trend in training and executing aviation combat missions. Data shows a breakdown of communication in step two of the three-step flight mission approval process, specifically in mission planning and briefing. Publications and messages from the U.S. Combat Readiness and Safety Center may seem to get repetitive in covering this topic. It is also repetitive for us to review accidents where human error is evident. There's certainly room for improvement in the mission briefing process, as evidenced by everything from conducting ad hoc "VOCO" briefs when there could have been time to conduct a face-to-face or over-the-shoulder brief to mission briefing officers. This critical step involves detailed planning and thorough risk assessment from each crewmember and briefing officer before every mission. This cannot happen without communication and personal interaction in ensuring key elements are evaluated, briefed and understood by everyone involved in the mission.

In an effort to develop another tool for commanders to diagnose and mitigate hazards, especially human error hazards, we began an operational field test on February 16 with the 3rd Combat Aviation Brigade that will yield information to help aviation leaders combat the human-error problem. Perhaps our most important venture is the study on the Safety Awareness Program – Aviation. The SAP-A is a proactive hazard reporting program designed to enhance aviation safety through the prevention of accidents and incidents. This identity-protected, self-reporting system is modeled after similar systems currently in place at many airlines under auspices of the Federal Aviation Administration that encourage voluntary reporting of safety issues and events. SAP-A is designed to provide a non-punitive environment for the open reporting of safety concerns and information that might be critical to identifying precursors to accidents. The submitter may either observe or experience a safety concern. The goal of SAP-A is to prevent and predict mishaps by addressing those unintentional errors, hazardous situations/events, and high-risk activities not identified or correctable through traditional safety reporting sources. The test will continue through the third quarter of this year, with follow-on development after a thorough review of the test results.

We've addressed the "low-hanging fruit" risks. With diligence and teamwork, we can significantly reduce risk induced by human error.

Until next month, fly safe!

LTC Christopher Prather USACR/SC Aviation Director
email: christopher.prather@us.army.mil

Are Your Assumptions Realistic?

Dr. Patricia LeDuc, Human Factors Director, USACR/SC

If you have been reading Flightfax over the past few months, you know we have been looking at human error failures in aviation accidents. Three of the top four human errors (overconfidence or complacency, aircrew coordination failures, and inadequate mission planning) have already been discussed. In this article, I want to discuss the last of the top four: the assumption of low risk missions for aviators and expectancy for aviation maintenance crews.

Just look up the words assumption and expectancy on the web and you will see they are listed as synonyms. In addition, both define something taken for granted; a supposition, an opinion or a belief accepted as true, but without sufficient evidence or proof. OK, so how does this relate to you? Well, in the case of aviation maintenance folks, you are most at risk to make this type of error during routine maintenance procedures or standard inspections. You do these tasks all the time and you rarely – or never – encounter unusual problems. Since nothing is ever there (cracks, dents, holes), you begin to approach these tasks with the expectancy that nothing out of the ordinary will be there this time either. When this starts to happen, chances are you will eventually miss a major problem because your brain is expecting things to be just like they were every other time you performed the task. Don't rush through the procedures or inspections and use that checklist. Don't let your brain hit that expectancy mode.

Aviators, just because I started with the maintenance folks, don't think you are exempt from this issue. How does this expectancy creep into your world? You begin to assume missions are low risk without examining all the factors. For example, take a typical pair of aviators who are in the middle of doing a risk assessment; they mark everything low risk. Weather meets minimums, power calculations are within limits (even though just barely), and since everything will go smoothly, they will be there and back before weather deteriorates or they exceed crew rest limits. In case you didn't notice, those aviators made quite a few assumptions about the mission, any of which could be wrong. What happens if nothing goes right? Factors like extended flight hours or degrading environmental conditions might become very real problems and could change the mission's risk level from low to medium or high.

Yes, I know, it can be a hassle to get higher level approval for missions if you mark any of those things on the risk assessment M or H, but you also need to be realistic. The purpose of doing a risk assessment is to incorporate those possible scenarios into your mission plan just in case everything *does not* go perfectly.

In research, you have to do a very similar process. You have to plan for everything imaginable. There has to be established procedures for things like simulator egress with a power failure, tornado alerts, medical emergencies, and exercise and food preparation with sleep-deprived volunteers. You name it, we have to consider it, and

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we have to have a plan to deal with it. Believe it or not, obtaining approval for a high-risk flight is much easier than approval for high-risk research. It could take two or three years to get approval to conduct a high-risk project (sometimes longer). These projects are typically reviewed at three different levels locally, and at least two at higher HQs. Why so many layers of review? Same reason missions deemed medium- or high-risk require higher-level review: SAFETY. It is for the safety of the pilots, safety of the crewmembers, and safety of the people on the ground.

While I am not suggesting you take two years to get mission approval or go through five levels of review, I am suggesting that you reasonably examine the overall risk of the entire mission. Don't assess each risk as if it existed in isolation with no possible impact on or interaction with the other factors. You often hear what happens when you "assume" something. Unfortunately, the outcome from assuming during risk assessment can be much more than a humiliating event.

--Dr. LeDuc can be contacted at the United States Army Combat Readiness/Safety Center, (334) 255-2233.

Manned Aircraft Class A – C Mishap Table

	Month	FY 11					FY 12			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities
1st Qtr	October	0	1	3			2	1	4	1
	November	0	2	14			1	1	9	0
	December	2	1	4	4		2	2	4	4
2nd Qtr	January	0	0	8			2	0	9	0
	February	0	2	2			2	1	1	0
	March	2	1	5						
3rd Qtr	April	2	1	11						
	May	2	2	2	1					
	June	3	1	3	2					
4th Qtr	July	2	2	9	2					
	August	2	2	9	2					
	September	0	1	5	0					
	Total for Year	15	16	75	11	Year to Date	9	5	27	5

As of 21 Feb 12

Why should aviation leaders "Enforce the Standard?"

COL Dave Fee
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL

General Robert W. Cone, the commanding general of U.S. Army Training and Doctrine Command, recently briefed the Aviation Senior Leader's Conference about the importance of enforcing standards. He discussed the word "standard" in much detail. He asked all the senior leaders present to consider what standards the Army needs. "Why do young leaders want senior officers to enforce standards?" So why are standards so damn important?

From the first day a Soldier enters Army Aviation, we begin to establish a standard. Haircuts, uniforms, a salute, the Army Physical Fitness Test and the rest are defined, demonstrated, trained and evaluated. We even define our best Soldiers with terms like "setting the standard" or "exceeding the standard." We define a standard as a rule or measure, established by authority, for the measurement of quality or value. Our aircrew training manuals define a standard as a "degree of proficiency to which a task must be accomplished." Even our heritage defines our flag carried into battle as a standard. To this very day, many command sergeants major (CSM) and first sergeants (1SG) choose the unit's best Soldiers to be the standard-bearers.

In no place could following the standard be more important than Army Aviation. The ability of Army Aviation to support the ground force commander, to evacuate the wounded, to find, close with, and destroy the enemy is without peer. The cost of our equipment, the time and effort to train our aircrews and the price to replace either one imposes a great responsibility. Army Aviation leaders must enforce an exceptionally high standard.

So how do we maintain this standard? The diagram on the next page details a simple process. We define the standard and we train aircrews how to accomplish the task, drill or mission to that standard. We evaluate the aircrew's performance and allow them to accomplish the mission.

The first step is "setting the standard." Army Aviation regulations and publications from DA level to Combat Aviation Brigade (CAB) standing operating procedures define unit and individual aircrew member programs, requirements and standards. Each aviation command is designed to ensure the standard is defined, disseminated, followed and trained. From the U.S. Army Aviation Center of Excellence commander's Directorate of Evaluation and Standardization (DES) team through CAB standardization teams, brigade commanders, company commanders and standardization pilots (SP) — the standards are set.

Training can begin once we've defined the standards. The Commander's Aircrew

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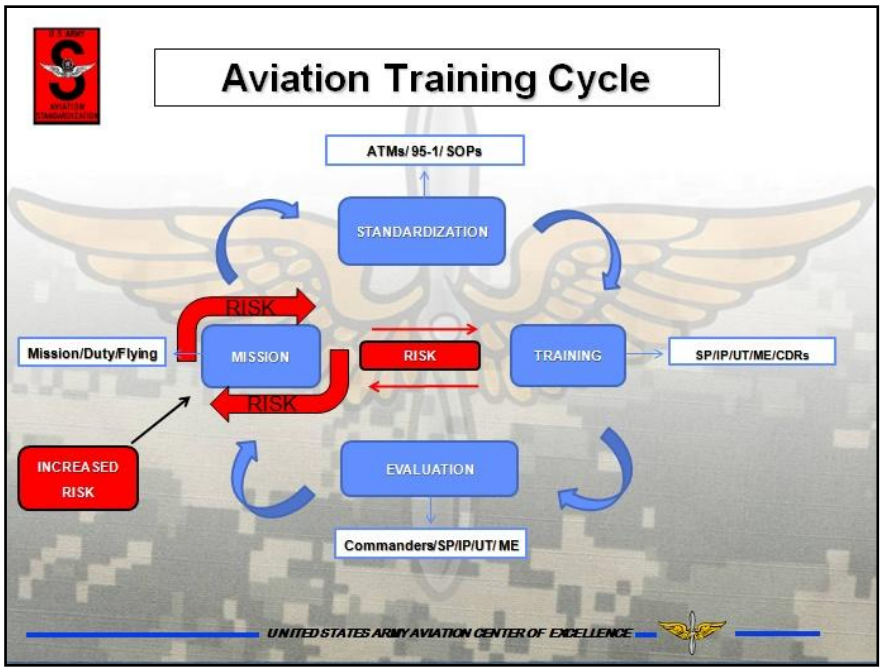

Training Program for Individual, Crew and Collective Training is a great place to start. Led by the commander and CSM and executed by the SP, ME, SI, SO, IP, MTP, PC, FI, aircrew training begins. Well-planned and executed training measured against a clear, defined and obtainable standard assures units are combat ready.

Leaders should evaluate training whenever they lead, participate and observe a training event. Leaders who fail to evaluate, discuss and direct training are not fulfilling their obligation. Worthwhile leaders constantly evaluate, assess events and provide feedback; coaching, mentoring and executing training to ensure aircrew members are mission ready. Some evaluations need to compare individuals, crews and units against the set standard. These “check rides,” no-notices, annual proficiency and readiness tests, instrument rides, helicopter gunnery skills tests, battle drills, and combat training center rotations demonstrate our mission readiness. The Commander’s Aircrew Training Program standardizes training and evaluation to ensure combat readiness.

Once the individual, crew and unit have met the standard, then they are ready to accomplish the mission. Each day, Army aircrews worldwide accomplish their missions to a high standard without the supervision of commanders or SPs. Our young, focused, hard-charging aircrews supporting ground forces, evacuating the wounded, rapidly moving across the battle space to find, close with and destroy the enemy is why Army Aviation has dominated the battlefields of Iraq and Afghanistan.

We begin to have problems when steps are forgotten, lost, or overcome by events. For example, when SPs don’t fly with IPs, check records and enforce standards, or when commanders either stop flying or only fly with SPs, and don’t assess or evaluate training, these standards will soon be forgotten. Aircrews are so focused on the mission that if not checked, they may drift away from the standard. Leaders like the CSM and 1SG must fly with crews as an SI or crew chief. Commanders must constantly assess, evaluate and adjust. Commanders should be PCs, with SPs and CSMs serving as their advisors to enforce the standard. If the standard goes unchecked, Soldiers will eventually lose sight of the right way to do things. Not enforcing standards or ensuring proper training, and missing evaluations increases the risks.

So why should aviation leaders “Enforce the Standard?” It is our duty and responsibility as aviation leaders to enforce standards, thereby guiding units to success. We must be the ones to carry that standard.

--COL Dave Fee, Director DES, may be contacted at (334) 255-2603, DSN 558.

Mishap Review: OH-58D Mid-air Collision

Two OH-58D aircraft, conducting individual NVG RL progression training in their local training area, collided in mid-air resulting in two destroyed aircraft and four fatalities.

History of flight

The accident aircraft were two OH-58Ds from different companies. Aircraft 1 was scheduled to conduct NVG RL2 mission training and a local area orientation. Aircraft 2 was conducting NVG RL3 training. The crews completed aircraft preparation, crew briefs and run-ups with no noted problems. Both aircraft were up full lighting. Weather was VMC with clear skies, winds at 140/04 knots and unrestricted visibility. Moonrise in the eastern sky was 1850 hours local with 97% illumination.

At approximately 1911 hours, Aircraft 1 departed the home airfield en route to the training area. Aircraft 2 departed at 1912 hours and proceeded to a designated LZ on the western side of the flight training area with arrival at 1928 hours. Both aircraft were in contact with the installation's flight following agency as were several other aircraft operating in the training area. At 1935 hours, Aircraft 1 contacted flight following of its intended flight route to the west to complete its local area orientation. Aircraft 1 was advised by flight following of aircraft in the vicinity to include Aircraft 2 and its western location. Aircraft 1 acknowledged. At 1941 hours, Aircraft 1 reported to flight following its position (2 KM east of the LZ occupied by Aircraft 2) and their intent to exit the training area to the west. Approximately one minute later, while traveling westbound at 90 kts and an altitude of 219' AGL, Aircraft 1 impacted the left rear quadrant of Aircraft 2. Aircraft 2, which was conducting right closed traffic in the LZ, had just completed its crosswind to downwind turn and was heading southwesterly at a speed of 70 kts when impact occurred. Both aircraft received catastrophic damage and resulted in fatal injuries to both crews.

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Crewmember experience

The IP of Aircraft 1, sitting in the right seat, had more than 2500 hours total flight time, with 680 NVG hours and 330 hours as an IP. The PI had 257 hours total time with 36 under NVG. Aircraft 2's IP, occupying the right seat, had over 3300 hours total flight time, 1000 NVG hours and 820 as an IP. The PI had a total of 188 hours flight time with 35 NVG.

Commentary

The accident board determined that the aircraft crews failed to maintain close surveillance of their surrounding airspace and adhere to published altitude guidelines for transitioning and terrain flight aircraft. Factors that contributed to restricting crew visibility, scanning, and airspace awareness included the high illumination and angle of the rising moon, PI inexperience with NVG flights, cultural lighting, and the right turn of Aircraft 2 as it turned to its downwind heading. The board recommended that altitudes associated with transitioning aircraft as outlined in the local guidance be addressed as MSL versus AGL due to the rolling terrain and tall trees on the reservation.

All information contained in this report is for accident prevention use only.
Do no disseminate outside DOD without prior approval from the USACRC.
Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report
https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required

UAS Class A – C Mishap Table

	FY 11 UAS Mishaps					FY 12 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	2		1	3	W/GE				
MQ-5	3		1	4	Hunter	1	1	1	3
RQ-7	1	11	30	42	Shadow		5	6	11
RQ-11					Raven				
RQ-16A			3	3	T- Hawk				
MQ-18A									
SUAV			1	1	SUAV			3	3
Aerostat	6	9		15	Aerostat				
Total Year	12	20	36	68	Year to Date	1	6	10	17

As of 21 Feb 12

Blast From The Past

Articles from the archives of past Flightfax issues

VCSA's Thoughts on Aviation Risk Management and Leadership (reprinted from Flightfax July 2006)

Army Aviation continues to be an integral part of the combined arms team in the Global War on Terrorism. Through almost 5 years of continuous combat operations, our aviators have flown more than 1 million hours in Operations Enduring Freedom and Iraqi Freedom (OEF/OIF). As a result, our crews are reaching combat experience levels unprecedented since the end of Vietnam. However, despite our tremendous achievements, we have lost 123 aircraft since 9/11, with over two-thirds of those losses to preventable accidents. Although this equates to the loss of a combat aviation brigade worth over $2 billion, more importantly, it means we have lost far too many aviators and Soldiers to preventable accidents. The trends in these accidents are clear: insufficient leader involvement in low-risk missions, inadequate pre-mission planning, poor aircrew coordination, and indiscipline. Our Army cannot afford to continue to lose aviation crews, Soldiers, and aviation combat power, and our aviation crews owe our prime customer – the American Soldier – the best aviation support that will complete the mission safely. Therefore, I want each of you to redouble your efforts to ensure your units are following standards, managing risk, and doing the basics right.

Leader Involvement in Low-Risk Missions

As experienced combat crews return from OEF/OIF, there is a tendency to become complacent as their units transition to training and non-combat operations. Commanders must pay special attention to aviation tasks that are assessed as "low risk" and guard against complacency by aircrews and mission planners. Seemingly low-risk missions are needlessly killing our Soldiers and destroying our combat equipment. Home station resources are limited due to reset and preset of aircraft, therefore leaders must do the following:

(1) Skillfully manage your aircrew training programs and maximize the use of our combat mission simulators.

(2) Carefully scrutinize missions and ask tough questions to ensure we are not allowing complacency on low-risk missions or allowing *perceived* low-risk missions (e.g., visual flight rules (VFR) cross-country to become high-risk missions because of changes in operating conditions).

A specific area of concern is single-ship operations, which are most often categorized as low-risk operations. Multi-ship operations – the standard in combat – lower risk by adding experience, maturity, judgment, and command attention to the mission. The more aviators involved in the planning and execution of a mission, the better the preparation and decision making. When briefing single-ship operations, specific involvement by the command and mission brief authority are required to identify all hazards and have thorough, honest dialogue with crews to assess the aircrew's ability to conduct the mission and ensure the appropriate level of pre-mission planning has taken place.

Continued on next page

Pre-mission Planning

In a previous message, I emphasized the importance of the air mission approval process as the mechanism for the chain of command's oversight to ensure proper risk management and optimal use of limited flying hours. When used properly, this process shapes low-risk operations into fully functional training events and ensures detailed pre-mission planning. Currently, it is evident low-risk operations are not getting the appropriate amount of command involvement. Mission briefing authorities have the responsibility to not only ensure proper mission planning and risk assessment requirements are met, but also that the mission meets the intent of the commander and is a proper utilization of limited aircraft hours.

A specific issue of pre-mission planning that needs increased focus is cross-country flights. All too often our crews push VFR flight into deteriorating weather conditions and turn a low-risk mission into a high-risk mission. Army Regulation (AR) 95-1, *Flight Regulations*, requires all Army aircraft that are instrumented for instrument flight rules (IFR) flight and flown by an instrument-rated pilot to operate on IFR flight plans with limited exceptions. Leaders must coach standards and discipline for limited visibility operations so aircrews will conduct hard, realistic training and gain the skills and confidence necessary to conduct operations in all flight regimes. Part of this coaching is supporting the pilot in command's "no go/mission abort" decision when weather en route is found to be insufficient for continued flight under VFR. Once in flight, mission-focused aircrews are hesitant to make decisions to land short of the objective, turn back to the point of origin, divert to alternate airfields, or continue the mission under IFR. Failure to file an IFR flight plan limits options while en route, and the unwillingness to commit to IFR flight exponentially increases the risk of an accident. Units and aircrews need to maintain the skills necessary to successfully accomplish all aviation missions.

In November 2004, our Army lost seven Soldiers to a UH-60 wire strike in marginal weather. The lessons learned from this accident about pre-mission planning and Composite Risk Management are highlighted in a video available through the U.S. Army Combat Readiness Center (USACRC). Due to the sensitive nature of this video, distribution has been closely managed. Due to recent accident trends, I encourage each battalion-level commander to obtain this video from USACRC and use it to train their crews.

Crew Coordination and Indiscipline

A hallmark of our Army is strict discipline and adherence to standards. When we deviate from these standards, we assume unnecessary risk. Recent accident trends indicate aircrews are all too often failing to do the most basic things right. From adhering to the mandated flight envelope, altitude selection, or power management, Army Aviation is experiencing a spike in indiscipline. Professional aviators do

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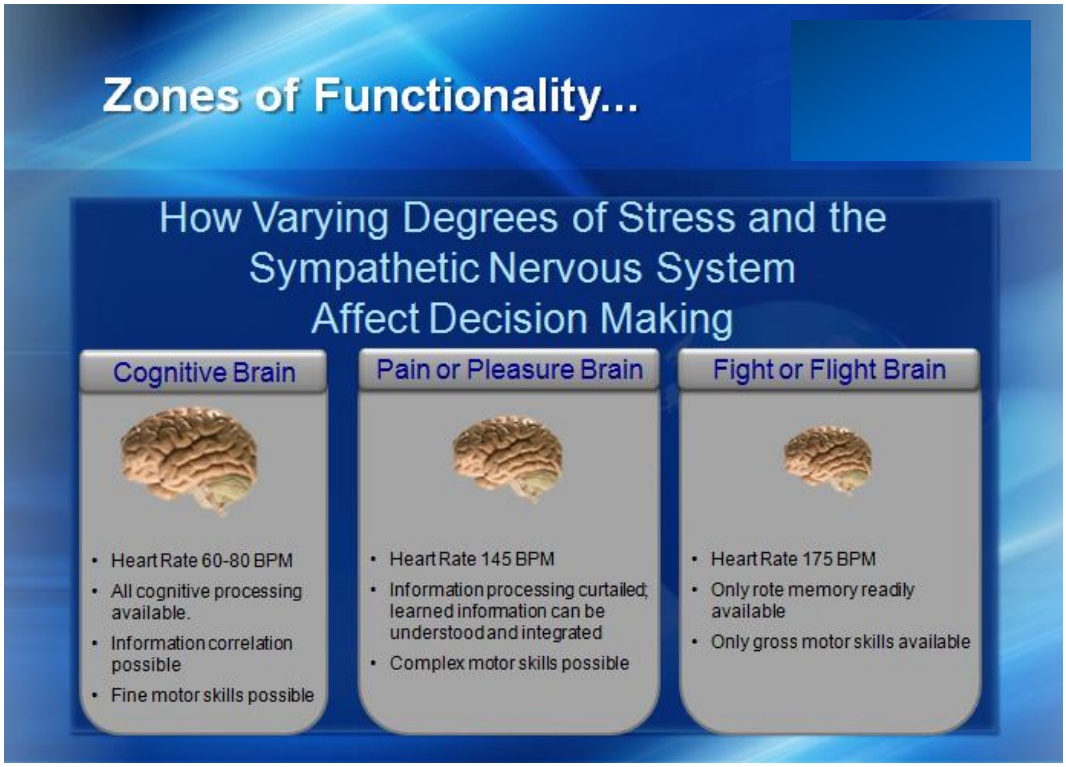
Blast From The Past continued from previous page

100 percent of the basics right 100 percent of the time. As we continue to fight an intelligent enemy with more sophisticated equipment, no amount of technology can replace the need to do the basics right. We need to recognize there is a major difference between disciplined, aggressive combat flying and reckless, foolhardy flying. We as an Army will not tolerate the latter.

Stay focused. Your personal involvement in low-risk missions, pre-mission planning, crew coordination, and discipline will preserve our combat power. You represent the best of the warrior ethos and are a vital part of our nation's success in the war on terror.

- Adapted from GEN Richard A. Cody's message to general officers, assistant division commanders, aviation brigade and battalion commanders on 23 June 2006. GEN Cody, an Army Aviator, became the 31st Vice Chief of Staff on 24 June 2004.

Know your emergency procedures!



- Much of the research in this area comes from WWII where there was a major effort to determine the most effective hand-to-hand combat techniques for people functioning under extreme duress.
- An understanding of how stress impacts decision making is extremely important in improving human performance in aviation.
- I don't think too many people know that "memory items" were designed to allow people functioning in the "fight or flight" area to stop the escalation of the problem without thinking about it. The idea was that if you can react properly using "a rote procedure," your mind will be forced to function which will hopefully return you to the "Pain or Pleasure" functional area where performance is greatly improved.

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Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in January 2012.

Utility helicopters

UH-60

-L series. During single-wheel landing for exfil of passengers, a local national interpreter was struck in the helmet by a main rotor blade resulting in serious injury. (Class A)

-A Series. Aircraft had a No.1 engine compressor stall with TGT spike followed by engine failure. Aircraft landed without further incident. Post-flight inspection revealed additional damage to a tail rotor blade due to internal engine debris. (Class C)

-A Series. Aircraft experienced No.1 engine TGT and torque exceedance during hovering flight. Aircraft landed without further incident. Post-flight maintenance inspection revealed that the No.1 engine inlet plug had been partially ingested into the No.1 engine. (Class C)

-M series. Aircraft was being taxied to parking when the turret cover of an MRAP parked on the HLZ was blown into the main rotor system. One MRB was damaged. (Class C)

MH-60

-L Series. Aircraft FLIR turret shroud was damaged during landing in brown-out conditions. (Class C)

Attack helicopters

AH-64D

-No.1 engine nacelle was observed in the open position and damaged during aircraft refuel. Crew reported it was checked during pre-flight and in the closed position. Nacelle required replacement. (Class C)

Observation helicopters

OH-58D

- Aircraft contacted a tree with the tail rotor during NOE training. Post-flight and subsequent maintenance inspections revealed that one tail rotor blade required replacement due to damage. (Class C)

Cargo helicopters

CH-47

-F series. During environmental training, aircraft contacted sloping terrain and rolled on its side. (Class A)

-D series. Aircraft contacted a sod berm during landing to an LZ under NVGs. Aircraft was repositioned for exfil and damage was identified on post-flight. (Class C)

MH-47G

-Rotor wash resulted in damage to a parked aircraft as the aircraft was on departure from the runway. (Class C)

Fixed wing aircraft

C-12

-K Series. Crew experienced engine restart anomalies. Post-flight inspection revealed failure of the No.2 engine bearing. Engine required replacement as a result of the associated damage. (Class C)

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Selected Aircraft Mishap Briefs

Continued from previous page

Unmanned Aircraft Systems

RQ-7B

-Engine failed in flight. Chute deployed. UA recovered with damage. (Class C)

-Engine failed during RTB. Operator was able to fly/guide it within 200 meters of the base and deployed the recovery chute. (Class C)

-UA experienced uncommanded airspeed and altitude fluctuations followed by IMU failure and loss of control. Recovery chute was deployed. (Class B)

MQ-5B

- Nose gear collapsed when it hit the arresting gear during landing. UA swerved and came to rest off the runway with damage. (Class A)

- UA landed during currency evaluation and sustained damage to the landing gear and forward propeller. (Class C)

Aerostat

- Aerostat blimp was struck by lightning and crashed outside the FOB. (Class B)

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https://safety.army.mil/atf/

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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Number 11 March 2012

Flightfax®

Online Report of Army Aircraft Mishaps

Discipline is the soul of an army. It makes small numbers formidable; procures success to the weak, and esteem to all. *– George Washington*

Consider these summaries of findings from mishaps in the last 60 days –

- The crew failed to coordinate their actions.
- The crew failed to announce and communicate the decision to delay extension of the landing gear.
- The crew failed to communicate positively…in contravention of the ATM.
- The pilots failed to announce their actions, an error in crew coordination.
- One crewmember was unrestrained during the accident sequence.

Bottom line, across our Class A mishaps, we continue to see issues of overconfidence and complacency, inadequate mission planning, aircrew coordination errors and a general assumption of low risk during mission planning and execution. In human factors language, we are seeing acts of omission – specifically, omission involving indiscipline and lack of adherence to standards.

CW4 Saville points out in his DES article, "Aircrew Discipline," that indiscipline may manifest itself in many ways during aviation operations. Selecting which rules to obey and which ones to ignore, as well as judgment lapses places the aircraft, crew, and others in needless danger. The problem with minor indiscipline infractions when the mission has not been compromised, is that we are lulled by the perceived success and/or survival, and then let our guard down and accept even more risk from these behaviors.

Human errors are nothing new to us in Army Aviation. In providing background and, more importantly, suggestions on how to mitigate this risk with unwavering discipline, we've included two Blast from the Past articles. The first titled, "Let Me Do It…You Hold Your Diet Coke," from September 2005, is an accident investigation that spotlights the ways in which aircrews become lulled into not recognizing the increased risk due to indiscipline. In the second article, "Accountability," from March 1999, BG Charles M. Burke, reiterates to Commanders that "we must curb indiscipline by creating a climate of accountability in which violations of regulations and procedures are not tolerated. And we must do it before an accident happens."

Leaders carry a tremendous responsibility, for our profession tolerates no margin for error. Discipline, communication and training are the keys to safe aviation operations.

Until next month, fly safe!

LTC Christopher Prather, USACR/SC Aviation Director
email: christopher.prather@us.army.mil

Blast From The Past

Articles from the archives of past Flightfax issues

"Let Me Do It…*You Hold Your Diet Coke*" reprinted from September 2005 Flightfax

Discipline is the most important attribute of an Army Aviator or crewmember. Learned discipline allows inexperienced aviators and crewmembers to overcome a deteriorating tactical situation or unexpected weather conditions. Unwavering discipline keeps a mid-level aviator from attempting maneuvers beyond his capabilities and from placing his crew in situations of unnecessary risk. Discipline enhanced by experience allows senior aviators and crew chiefs to make solid recommendations to air mission commanders and influence the actions of fellow crewmembers.

Indiscipline can result in anything from a paper cut, to brain damage, to death. That is what's so disturbing about the whole indiscipline thing – you never know what the results might be. As an aircrew, you might be able to find that "sucker hole" and get your aircraft with eight passengers onboard below the clouds, OR you might hit a 1,000-foot television broadcast tower! You might do that break turn and get a great photograph you can e-mail home, OR you might impact a rocky hillside and suffer brain damage so severe that you won't be able to recognize any of your family members.

Discipline is not isolated to the cockpit, but it can end in the cockpit. Just as several layers of carbon fiber make armor plating strong, multilayered discipline – including your air mission commander, troop or company commander, and squadron or battalion commander – is essential. However, no matter how robust the discipline in these top layers, a discipline breach in the cockpit can be catastrophic.

A recent accident illustrates the result of cockpit indiscipline. In this accident, the crew was providing security during a supply ring flight. A risk assessment worksheet (RAW) was completed for the mission, with the mission complexity portion of the RAW indicating COMBAT. During the flight, a request was made from one of the aircraft in the flight to perform a maneuver with a steep bank angle which would expose the underside of the aircraft. The crew agreed to this photographic opportunity and had a short discussion on who would be on the flight controls during the maneuver. The discussion ended with, "Let me do it, you hold your Diet Coke."

The crew performed a breaking turn with a bank angle in excess of 60 degrees. Consequently, the crew failed to anticipate and recover from the high sink rate from the aggressive maneuver and the aircraft impacted the ground and was destroyed. Thankfully, the crew suffered only minor injuries.

As stated earlier, the RAW indicated COMBAT, but this was not meant to allow the crew to do whatever they wanted. The crew was briefed to perform maneuvers or mission deviations only in response to tactical situations.

When the accident occurred, they were not maneuvering away from surface-to-air fires, there was no call for immediate assistance by ground troops, nor were there any troops-in-contact. The crew's indiscipline resulted in the total loss of a helicopter. The enemy never lifted a finger. This lack of discipline directly impacted the combat readiness of this unit.

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The facts

Many of you may be unaccustomed to this level of exposure. To further emphasize the situation, we offer the following –

- Between 1 October 2002 and 29 June 2005, 88 Army aircraft have been lost to accidents. Replacement costs for these aircraft will exceed $1 billion.
- In fiscal year 2005, 34 Soldiers lost their lives to aviation accidents; that's 14 percent of all Army Soldier accidental fatalities.

Any feelings these statistics and this article might give you pale in comparison to a visit to one of our regional medical centers or civilian hospitals treating survivors of these accidents. Our national industrial base can manufacture or rebuild helicopters, but no factory can restore brain function or full mobility to a Soldier injured in an accident.

Conclusion

With the recent sharp rise in Army Aviation accident rates, increased emphasis has been placed on determining what root causes precipitated the accidents. Are you a potential root cause? Does your current level of discipline rule out inappropriate behavior in the face of command pressure or peer pressure? What about loss of "cool points?" If YOU have been trained, signed-off, and knowingly induce a maneuver while flying an aircraft, then YOU are required to anticipate, adjust, and recover from any flight conditions that may transpire.

If you are unsure of your abilities given the environmental conditions (wind, density altitude or temperature), the performance limitations of your aircraft, or your personal limitations, don't do an extreme maneuver until the conditions are more favorable. If you are not briefed to do a certain type of maneuver or mission, don't do the maneuver or mission until you are properly authorized and have applied all applicable mitigation measures. Extreme tactical situations may require real-time mission modification, but these situations should be taken into consideration during contingency planning. Most importantly, if you know you can successfully execute the maneuver and have been briefed, BUT the maneuver is not appropriate – **DON'T DO IT!**

Discipline begins and ends with you, the Army Aviation Soldier. Unwavering discipline will result in increased professionalism between your aircrew members and will reduce the probability of accidents within your unit.

"Nothing can be more hurtful to the service than the neglect of discipline; for that discipline, more than numbers, gives one Army superiority over another."
--GEN George Washington

Aircrew Discipline

Chief Warrant Officer 4 Todd Saville
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL

Standards — everything we do in the Army involves standards. Any endeavor that is inherently dangerous requires adhering to an established set of norms to mitigate risks. The environments that we operate in as Army aviators demand that we follow procedures and regulations and, in their absence, exercise good judgment.

During the past 10 years, the Army has been successful in developing exceptionally battle-focused individuals with skill sets unimaginable in previous decades. We now have aviators with 4 or 5 years' experience and between 1,500 and 2,000 hours' combat time in demanding environments of high-density altitude, high gross weight and rugged terrain. Operating under these conditions has matured our aviator's experience levels at a rate not seen since the Vietnam War. However, the benefits have not come without some costs. Combat tends to breed a culture of focusing on the objective while treating everything else as relatively unimportant. Aviation standards apply to all aviation operations, whether downrange on a combat mission or on the "back 40" at home station. Regulations have been developed to provide the aircrew with boundaries that ensure the highest probability of success, coupled with safe mission accomplishment. Regulations cannot and should not address every possible scenario an aviator will face — this is where judgment must dictate appropriate actions. The pressures to complete the mission can create tough situations and challenge aircrews, but as professionals, we must always strive to do the job correctly and safely. Leaders (formal and informal) must be alert to acts of indiscipline within their formations as these are indicators of poor or flawed judgment that can lead to accidents.

Indiscipline may manifest itself in many ways during aviation operations. Selecting which rules to obey and which ones to ignore, as well as judgment lapses places the aircraft, crew, and others in needless danger. Leaders must address these willful violations of known standards immediately. Crew coordination errors, failure to maintain airspace surveillance and being unaware of the aircraft's performance limits reflect a dangerous breakdown in situational awareness. When aircrews demonstrate indiscipline by violating regulations and procedures, exceeding the capabilities of their aircraft (i.e., the laws of physics and aerodynamics), or exceeding their own capabilities, the results can be disastrous. Discipline is not only something to be administered; it's something to be practiced. By conducting effective training, following regulations and standards, and making prudent decisions in each situation, we increase our effectiveness and reduce accidents. Safety begins with standardization.

Broken Wing Awards

The Army Aviation Broken Wing Award recognizes aircrew members who demonstrate a high degree of professional skill while recovering an aircraft from an in-flight failure or malfunction, requiring an emergency landing. Requirements for the award are in DA PAM 385-10, Para 6-3f. The following have been approved for the Broken Wing Award:

1LT John A. Bailey
1LT Hector M. Echevarria
1st Battalion, 214th Aviation Regiment

On 6 April 2010, 1LT Bailey and 1LT Echevarria demonstrated extraordinary judgment and skill when the engine housing and propeller system on the left engine of a C-12U separated from the aircraft. While descending from 15,000 ft. to 5,000 ft. in instrument meteorological conditions (IMC) the crew heard a loud bang which emanated from the left side of the aircraft. During the initial phase of this emergency the aircraft pitched up, yawed to the left, and decelerated approximately 50 knots within the first few seconds. With the damage incurred to the critical left engine, the sudden Center of Gravity shift of approximately 350 pounds and extreme left yawing tendencies of the C-12, the immediate actions of the crew prevented any further loss of airspeed and losing control of the aircraft. A single-engine landing was accomplished without further incidence. 1LT Bailey's and 1LT Echevarria's composure under pressure, appropriate response to the emergency, and superior airmanship prevented what could have been a catastrophic accident and loss of life.

CW3 Anthony DeJiacomo
1-14th Aviation Regiment, Fort Rucker, Alabama

On 6 May 2010, while on the controls of the OH-58D and demonstrating a simulated engine failure with 180 degree turn, CW3 DeJiacomo felt a thump in the controls and experienced a complete loss of hydraulic power while in a 45 degree left bank at approximately 800 ft and 80 knots. CW3 DeJiacomo immediately began to recover the aircraft from the bank while directing his student to begin the emergency procedure for a hydraulics failure. He simultaneously corrected for the left bank, leveled the aircraft, increased the throttle to 100%, and adjusted the collective to continue controlled flight. He quickly realized he could not safely land at his initial intended landing area for lane one. CW3 DeJiacomo then visually cleared the airspace, contacted tower, announced his intentions on the air-to-air frequency and was granted an emergency clearance to lane four. Through exceptional airmanship, CW3 DeJiacomo instinctively applied the proper control inputs to land at the most suitable, safe landing area, touching down at 25 knots. His quick thinking and skill averted an airborne rollover and prevented the complete loss of aircraft and life.

Mishap Review: EO-5C PIC Evaluation

While conducting a pilot In command (PIC) evaluation, the crew failed to ensure their landing gear was lowered prior to descending below 500 ft AGL during a simulated two engine inoperative emergency procedure. Consequently, the aircraft touched down gear-up on the runway, causing significant damage to the aircraft.

History of flight

The accident aircraft was scheduled to conduct a day pilot in command (PIC) evaluation. The flight was scheduled for approximately 3.5 hours. The crew completed aircraft preparation, crew briefs, checked weather, preflight and filed the flight plan. Weather was VMC with clear skies and unrestricted visibility just as the crew was briefed.

Following run-up, the aircraft departed on the first leg of their composite flight plan at 1209 local. Following several turns in holding, at two different airfields, the crew completed a full stop landing followed by a departure back to their home station. Upon arrival at their home station, the crew completed their second full stop landing where they then conducted a seat swap. Remaining in closed traffic, the crew then departed, and began their emergency procedure training portion of the evaluation.

After completing a single engine inoperative emergency procedure followed by a three engine go-around. The IP failed the second engine and the PI receiving the PIC evaluation began the steps for a two engine inoperative emergency procedure. After reading, but not completing all of the steps of the emergency procedure, the crew received clearance to land from tower. The crew turned final and touched down on the runway at 1519 local without extending their landing gear. The aircraft received significant underside damage with no injuries to the crew.

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Crewmember experience

The IP, sitting in the left seat, was the battalion SP. He had more than 6,700 hours total flight time, 2,600 fixed-wing hours, of which 240 was in the EO-5C. The IP was on his first assignment as an EO-5C pilot. The PI, in the right seat, had 4,400 hours of total flight time, of which 1,390 was in a fixed-wing aircraft. The PI was also on his first assignment as a EO-5C pilot and had 132 hours in the EO-5C.

Commentary

The accident board determined the IP, who was flying the aircraft, failed to ensure the landing gear was down prior to completing the landing by checking the landing gear handle or landing gear advisory lights in the cockpit. Additionally, the board determined that the PI failed to properly respond to a simulated emergency procedure. While reading aloud the emergency procedure steps associated with a two engine inoperative emergency from the -10CL, the PI failed to take appropriate action at step 11, LANDING GEAR-DWN.

Additionally, the board determined the crew failed to coordinate their actions. Their coordination failure was characterized by a failure to announce and communicate the decision to delay extension of the landing gear during execution of the emergency procedure, and failing to communicate positively in reference to extending the landing gear on final approach. The aircraft's Ground Proximity/Terrain Awareness Warning System was operational and provided audible warnings at the time of the mishap.

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Mishap Review: CH-47F Environmental Training

While conducting Combat Crew Training (CCT) at night, in low illumination conditions, the CH-47F attempted to land during dust conditions and contacted a sand dune with the forward rotor blades. The aircraft came to rest on its right side with significant damage and serious injuries to two crewmembers.

History of flight

The accident aircraft was scheduled to conduct day and NVG CCT training for two pilots and six non-rated crewmembers as part of the unit's relief-in-place (RIP) operations. The crew completed aircraft preparation, crew briefs and run-ups and departed late afternoon to complete the day iterations of dust landings. Weather was VMC with clear skies and unrestricted visibility. The moon had set at 1430 local resulting in zero illumination and low contrast conditions.

After completing day training approaches using the Digital Automated Flight Control System (DAFCS) as the primary method for landing, the aircraft returned to home station for refuel and prepared for the NVG flight. Following refuel, the accident crew returned to the training area and completed three NVG dust landings. During the fourth dust landing, the aircraft impacted the terrain and rolled onto its right side. The aircraft was extensively damaged and two crewmembers received serious injuries.

Crewmember experience

The IP, sitting in the right seat, had more than 1050 hours total flight time, 530 NVG and 8 hours as an IP. This was his first flight in the aircraft acting as an instructor pilot. The PI had 199 hours total time with 24 under NVG. The unit SP, receiving his RIP training, occupied the center jump seat. Both FE/FI's had approximately 2500 hours total flight time and more than 1000 NVG hours. The CE occupying the right cabin position had 144 total hours with 87 NVG. The left door gunner position had a total of 83 hours with 25 NVG. Additionally, there were two CEs on the ramp and one OR in the left rear cabin area.

Commentary

The accident board determined that the PI allowed the aircraft to descend below his planned altitude with a high rate of descent/rate of closure and the IP failed to take timely and appropriate actions to stop unsafe conditions. Additionally, the aircraft landed

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approximately one-half mile short of its previous landing area. The site was dominated by sand dunes ranging 10 to 30 meters in height. The aircraft struck a sand dune with the forward rotor blades during landing.

Also noted were errors in crew coordination in that the pilots failed to announce their actions to the remaining crewmembers when they initiated the approach to the LZ. It was also determined one crewmember was unrestrained during the accident sequence.

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Manned Aircraft Class A – C Mishap Table

	Month	FY 11					FY 12			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities
1st Qtr	October	0	1	3			2	1	6	1
	November	0	2	14			1	1	5	0
	December	2	1	4	4		2	2	8	4
2nd Qtr	January	0	0	8			2	0	9	0
	February	0	2	2			2	1	5	0
	March	2	1	5			0	0	2	0
3rd Qtr	April	2	1	11						
	May	2	2	2	1					
	June	3	1	3	2					
4th Qtr	July	2	2	9	2					
	August	2	2	9	2					
	September	0	1	5	0					
	Total for Year	15	16	75	11	**Year to Date**	9	5	35	5

As of 6 Mar 12

Blast From The Past Article #2

Articles from the archives of past Flightfax issues

Accountability Reprinted from March 1999 Flightfax

Much too often, safety is defined as the absence of accidents. Such a definition can easily lead to an attitude similar to that of a lawbreaker who measures his success by the number of times he gets away with it. As leaders, we must recognize that even a seemingly small infraction can become a key factor in a set of circumstances that leads to an accident. Therefore, we must create a climate of accountability in our units by taking positive action to deal with every breakdown in professional discipline and standards.

Safe aviation operations require elimination of undisciplined actions before they cause an accident. But many times, in the name of "protecting" an aviator's career, we hesitate to hold aviators accountable for breaches of flight discipline, disregard of procedures, and failures to perform to standard. We sometimes treat such violations as isolated incidents that don't warrant disciplinary action. However, doing this can allow a climate of tolerance to develop, a command climate in which breaking the rules is overlooked.

This must stop. We must create a command climate of accountability in which violations of regulations and procedures are not tolerated. And we must do it before an accident happens.

There is no better predictor of future performance than past performance. The insurance industry knows this to be true. Their studies have shown, for example, that a person convicted of a first offense of drunk driving has gotten away with it many times before being caught. This is why insurance rates go up immediately upon the first conviction: the insurance companies know it wasn't the first time the driver drove drunk; it was simply the first time he or she was caught.

There's a lesson here for commanders. Few of us will ever deal with a true first-time violator; what most of us will see are repeat violators who are caught for the first time. And that's why we must take action at the first sign of a regulatory or procedural violation. If we do not, we as leaders set a new standard – a lower standard.

This is not to suggest that every infraction should result in the violator being removed from the cockpit; rather, every infraction should be dealt with appropriately. We have powerful tools – harsh and not so harsh – we can use to show that we will not tolerate even the slightest infraction. And we do this without ruining the careers of aviators who deserve a second chance.

All it takes is consistent enforcement of standards. We have the tools – actions ranging from counseling to removal from flight status – to make the "punishment" fit the "crime." There is no excuse for a commander ever to overlook an infraction, even a minor one, because overlooking violations creates a tolerant command climate that will eventually result in an accident. Let me give you an example.

Several years ago, an Army aviator flew his helicopter into a lake while flying at 90 to 100 knots within 5 feet of the water. In the 12 months before the accident in which he died, this

Continued on next page

Blast From The Past continued from previous page

aviator had had four operational hazard reports (OHRs) filed against him, in addition to at least two verbal reports about his flying. Although the unit commander knew about the OHRs, written and verbal, and rumors about the aviator's "cowboy" style of flying and reputation as a "hot dog," the commander apparently looked at each report as a separate incident and never considered them as an indication of a pattern. As a result, this aviator got a "second chance" one time too many, and cost him his life.

Many years ago, the Army Safety Center surveyed three aviation organizations that consistently maintained excellent safety records to determine the characteristics that led to their exceptional safety records. Each of them – a combat aviation battalion, an air cavalry squadron, and an aviation battalion – had different organizational structure. And mission-wise, they had little in common except their success. But their commanders had one important characteristic in common: Each of them consistently took immediate and effective action against deviations from established standards.

Undisciplined behavior rarely corrects itself. It's the commander's job to deal appropriately with violations as they occur. And, as commanders, we must take it one step further: We must document infractions so that habitual violators don't revert to "first-time" violators when a new commander comes in or the aviator moves on to a new unit.

Where soldiers' lives are at stake, we cannot afford to forgive and forget. **Leaders save soldiers.**

-BG Charles M. Burke was the Director of Army Safety and Commanding General, U.S. Army Safety Center 1998-1999 (article from Flightfax March 1999).

One of the tests of leadership is the ability to recognize a problem before it becomes an emergency. --Arnold Glasow

UAS Class A – C Mishap Table

	FY 11 UAS Mishaps					FY 12 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	2		1	3	W/GE				
MQ-5	3		1	4	Hunter	1	1	1	3
RQ-7	1	11	30	42	Shadow		6	7	13
RQ-11					Raven				
RQ-16A			3	3	T- Hawk				
MQ-18A									
SUAV			1	1	SUAV			4	4
Aerostat	6	9		15	Aerostat		1		1
Total Year	12	20	36	68	Year to Date	1	8	12	21

As of 6 Mar 12

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in February 2012.

Utility helicopters

UH-60

-L series. A hole in the intermediate gearbox cover was found on post flight following dust landing training. (Class C)

-L Series. Aircraft settled into soft terrain on the right side during environmental training, damaging VHF antenna and undercarriage. (Class C)

Attack helicopters

AH-64D

-Lead aircraft crashed en route to base following mission completion. Tailboom separated from aircraft upon impact. Both crewmembers sustained survivable injuries. (Class A)

-Crew received a No. 2 Engine OUT indication at a hover, followed by high-side failure including NR overspeed. Aircraft landed without further incident. (Class B)

-Bird strike occurred during ferry mission. Aircraft sustained damage to one main rotor blade, resulting in separation of a one-foot section. (Class C)

Observation helicopters

OH-58D

-Crew experienced a partial engine failure during a maintenance test flight and landed. Inspection revealed that the engine compressor had ingested a mirror that was apparently left in the plenum chamber. (Class C)

Cargo helicopters

CH-47

-F series. Post-flight inspection revealed ramp damage. Suspect ramp contacted a rock during an NVG landing to an HLZ. (Class C)

Fixed wing aircraft

EO-5C

-Aircraft contacted the runway with the landing gear in the stowed position during a demonstrated emergency procedure, resulting in damage to the undercarriage. (Class A)

Aerostat

-Aerostat blimp was struck by lightning and crashed outside the FOB. System was destroyed to include payload. (Class B)

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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Number 12 April 2012

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Online Report of Army Aircraft Mishaps

This issue is our half-year review of Fiscal Year 2012 aircraft accidents. The stats for the first half of the year begin on page 2. BLUF: We could be on a difficult glide slope.

Investigation board observations from a recent accident continue to spotlight consistent deficiencies, causing an undesirable accident trend for this year:

- The crew was complacent in the execution of a simple mission. The crew allowed the aircraft to enter into and continue an uncorrected rapid rate descent until it was too late to recover.
- ACT-E: There was a systemic problem with the unit not conducting the annual sustainment training. The board suspected the unit's lack of ACT-E sustainment training contributed to the accident.
- The mission briefing officer (MBO) signed he had verified that a performance planning card had been completed, the reading file for crewmembers was current, OGE was available, survival radios were on hand, and ALSE was current for crewmembers. The MBO took the PC's word that these things were correct. Discrepancies were found in each of these areas. The MBO has the responsibility to ensure crewmembers comply with the mission briefing checklist.

Our most pressing issue continues to be the 94% result of human error, of which there are many causes. In the last three issues of Flightfax, we've covered topics of which indiscipline and poor quality mission briefings are primarily to blame for the human error accidents reported thus far in FY12. No doubt, these trends are reversible, but we need to get on it NOW before more catastrophic accidents happen. Reversing this year's trend will require Aviation commanders, Leaders and trainers to place special emphasis on the following three critical issues.

First, Aviation Leaders must reinforce a command climate of accountability. Violations of regulations and procedures must never be tolerated, no matter how well liked an aviator may be within the unit or chain of command. Second, all Leaders should review their unit's three-step mission approval process. Recent investigations show a breakdown in step two, specifically regarding mission planning and briefing, which requires personal communication and interaction to ensure understanding of all elements involved in the flight. Lastly, Leaders should review how they conduct training for mission briefing officers and final mission approval authorities. Mission briefing officers are the eyes and ears who ensure the commander's risk management program is followed to the letter, so Leaders must take the time for periodical over-the-shoulder reviews to ensure mission briefers are adequately meeting their responsibilities.

Army Safe is Army Strong!

BG William T. Wolf, Commander, USACR/Safety Center

Preliminary Report on 1st Half FY12 aircraft accidents

In the **manned aircraft** category, Army aviation experienced 10 Class A - C aircraft accidents this fiscal year. These accidents resulted in five fatalities. Ten of the accidents were Class A's, seven were Class B's, and 44 were Class C's. For comparison, the first half of FY11 had 52 Class A – C aircraft accidents - five Class A's, six Class B's, and 41 Class C's with 4 fatalities.

For the first half of FY12, all 10 of the Class A mishaps and six of the seven Class B mishaps were the result of human error (94%). Nine of the 17 Class A and B mishaps occurred at night. Materiel failure or suspected materiel failure was contributing in one of the Class B's (engine high-side failure) and six of the 44 Class C's. There were two Class C bird strikes reported. Eleven of the 17 Class A and B mishaps occurred in OEF.

Dust landings were contributing factors in two Class A's and four Class C aircraft mishaps. Additionally, there were three (one Class A, two Class C) UH-60 ground taxi mishaps, three aerostat tether strikes (two Class B, one Class C), and two Class A mishaps resulting from operating main rotors striking personnel while conducting passenger on/off load operations.

Breakdown by aircraft type:

	Class A	Class B	Class C
UH/MH-60	3	0	15
AH-64	3	3	5
CH/MH-47	2	1	7
OH-58D	1	0	8
LUH-72	0	0	1
TH-67/OH-58A/C	0	2	3
AH/MH-6	0	1	2
UH-1H	0	0	0
C-12	0	0	3
EO-5C	1	0	0
Total	10	7	44

Synopsis of selected Class A accidents (OCT – MAR 12) are listed on the next page. (N/NVD) denotes night/night vision device mission:

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Manned Class A

-HH-60M (NVG). While conducting patient evacuation during a two-wheel pinnacle landing, an aircrew medic came in contact with the operating aircraft main rotor system. The Soldier suffered a fatal head injury.

-CH-47D (NVG). The aircraft landed hard in dust conditions, sustaining damage to the landing gear, airframe and main rotor.

-UH-60L. The aircraft tail rotor struck a concrete barrier during ground taxi to parking. The tail rotor assembly was severed.

-OH-58D (NVG). Two OH-58Ds on separate NVG RL progression training flights in the local training area collided in mid-air, resulting in four fatalities.

-AH-64D (NVS). A break in the drive train occurred, resulting in loss of tail rotor authority. The aircraft contacted the ground and rolled onto its left side.

-UH-60L (NVG). The aircraft was conducting a pinnacle, single-wheel landing for exfil of passengers when a local national interpreter was struck in the head by the main rotor blades resulting in severe injury.

-CH-47F (NVG). The aircraft crashed on short final during environmental training after the forward main rotor system contacted rising terrain. Crash caused extensive damage.

-EO-5C. The aircraft landed with gear up during emergency procedure training.

-AH-64D. During post-mission flight demonstration maneuver, the aircraft contacted the ground and was destroyed in subsequent crash sequence. Two injuries.

-AH-64D. During an aborted take-off maneuver, the aircraft descended and impacted the ground. The main rotor system contacted the canopy, injuring the front-seat pilot. The aircraft was destroyed.

In the **unmanned aircraft systems** for the first half FY12, we experienced 24 Class A–C incidents with two Class A's, seven Class B's, and 15 Class C's. The Class A's included one MQ-5B Hunter and one MQ-1 Warrior. FY11 had 34 mishaps for the same time period. FY12 Class B's consisted of five RQ-7B Shadows, one MQ-5B Hunter, and one Aerostat balloon that was struck by lightning. Of the 15 UAS Class C category mishaps, there were – nine RQ-7s, two MQ-1s, one Silver Fox, and three Puma's. Of the 24 total UAS Class A-C mishaps, 14 were RQ-7B Shadows. The predominant cause factor for Shadow mishaps was engine malfunction.

Synopsis of selected accidents (OCT – MAR 12):

UAS Class A

-MQ-5B. The nose wheel collapsed during landing and the UA swerved and came to rest off the runway with damage.

-MQ-1C. The UA exhibited low oil temp and pressure indications accompanied by manifold temperature spikes. The crew lost link as system was returning to base. Radar coverage was subsequently lost and UA not yet recovered.

Gun Pilot Rules for Survival

CW5 Gregory R. Turberville
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL

Army Aviation has one of the best safety and standards-based training and execution records of any military program. From an aircrew member's first day in accession through his/her last flight on active duty, they are constantly trained to be disciplined, vigilant, responsible for their actions, and abide by established regulations. Each rule, regulation, limitation, emergency procedure (EP), cockpit and mission task is rehearsed, enforced and re-enforced countless times over the course of an aviator's career. All the rehearsals, attention to detail and adherence to standards have proven effective in mitigating countless incidents and provided salvation in otherwise risky situations.

Noting this, I've developed a personal set of rules that I've shared with units and crews in training over the past several years. My rules are intended to enhance or close the gap for the programs already in use within the aviation community. One of the challenges we have is that the human element regarding judgment, maturity or decision-making is often removed with the way we memorize and rehearse elements, such as EPs and limits within our own specific mission design series (MDS). The task is purely rote and mechanical with little development of the process prior to, during and following events or tasks.

We see individual aviators who can memorize and recall tasks, specifics and numbers with perfection and others who struggle with the basics. Yet within this range of performance, each individual still must maintain an essential element of "what if?" and consider the subsequent effects of each cockpit/crew/mission decision whether in extremely dynamic combat situations or even the most mundane monotonous routine.

Having said this, here are "Turbo's ****Pilot Rules of Survival" (**** insert appropriate airframe MDS; e.g., gun pilot, scout, lift, assault, med, etc.). These rules may sound simple and elementary, but again in my experience, they've proven to be effective guidance.

1. Maintain or Regain Situational Awareness (SA). The primary duty of the pilot in command is the safe operation of the aircraft while performing the mission. Always maintain SA, or if lost, regaining SA becomes priority over all else. Rule #1 has application in all things aviation. This could be within your own cockpit (tasks or distractions) or beyond the canopy (hostile actions, DVE, traffic, obstacles, etc.). The moment an aviator or aircrew loses SA, it directly affects the safety or success of the mission. We see it constantly in training where a trainee will become distracted with an error or misstep in a task standard and allow this error to create a cumulative distraction, negatively affecting all subsequent actions. The community has experienced numerous accidents where, despite the ongoing emergency or task, loss of SA occurred and was the ultimate cause of the catastrophe, not the EP itself. Think about EPs preceded with the term "when conditions permit." How often have we seen disaster for lack of SA on this term alone? Prioritize, fly the aircraft, crew coordinate, understand the airspace and weather patterns at your location, and crosscheck instruments (altitude, airspeed, torque, TGT) and other crewmembers.

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2. Maintain or Regain Nr (rotor rpm). This should be a no-brainer, yet it is surprising how many can state the limit of an EP for rotor RPM maintenance, but fail to react correctly (if at all) with control inputs to maintain or recover Nr. To state it simply, the only thing on an Army rotary-wing aircraft that flies is the rotor system. Everything else (including the crew) is along for the ride and cannot produce adequate lift to overcome gravity. Aircrews or ****pilots who do not contribute adequate attention to maintaining or regaining Nr, which has fallen outside the limits adequate for producing total lift, exceeding gross weight or environmental conditions, will fall victim to gravity and potential ground impact.

3. Never Stop Flying the Aircraft. Throughout the course of aviation history are countless catastrophic examples where a crew essentially stopped flying the aircraft whether due to hopeless consideration in a crash sequence or failure to properly coordinate crew actions. "I've got it!" Got what? Oh, you mean you have the controls? See Rule #1. Think about the many crews that have crashed a totally airworthy aircraft following a missed instrument approach? Again, see Rule #1. Conversely, think of the times an aircraft and passengers have been saved because the crew never gave up. U.S. Airways Flight 1549 going into the Hudson River comes to mind. Despite the odds facing Captain Chesney B. "Sully" Sullenberger, he did not give up flying his aircraft all the way to the scene of the crash that, as you know, proved to be the singular most important step in the entire event. Never stop flying the aircraft, even on the ground, until all rotor and engine noises have ceased. And don't shut down any instruments or sensors until all rotors have stopped.

4. Don't do Stupid S _ _ t. This one can be summed up in one of two categories, either a disregard for known or published standards or policy or operating in a moment absent of critical consideration or judgment. If you, a crewmember, or element of your formation hints at willful violations of known standards, such as "showing off" (here's a photo opportunity, watch this, or watch me, etc.), then it could constitute being categorized as stupid s_ _ t. Do not fall victim to illusions of grandeur. No amount of experience can overcome the fatal or public humiliation of a failed experiment beyond the bounds of good judgment or skill. Best case, it reflects negatively on you and the unit; worse case, it could get someone killed or injured in addition to reflecting negatively on you and the unit. Unfortunately, there are vast examples to cite in violation of this rule. The best aviators and units I know are those who exhibit standards-based conduct as a means of impressing others, not those who attempt Hollywood moments. A former commander frequently summed it up adequately, "Do not inadvertently become the main effort." When in doubt, just **DON'T DO STUPID S _ _ T**.

5. Always Shoot Back. This particular rule isn't always exactly as it sounds. This, of course, applies primarily in a hostile environment. And while it could potentially be in contravention to weapons control status or rules of engagement, the point isn't to immediately shoot to kill or destroy. The initial purpose of including this rule is a means of putting the potential threat in a "time-out." In previous deployments, my aircraft or formation came under enemy fire on frequent occasions. Of these, the exact point of origin was often, if not impossible, to ascertain, particularly without immediate visual contact or audible alert from ground elements. So as a method of buying time to escape the engagement zone, consider making noise using organic weapons systems (the M240 machine gun, .50 cal, Mk 4 Folding-Fin Aerial Rocket or

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the 30mm chain gun). These have a similar effect on enemy forces, as does the sound of cocking a pump shotgun in a home invasion scenario. This alone sometimes is all you need to break contact and preserve combat power as the situation is developed or bypassed. The flash-bang report your organic weapons system conveys can be an impressive and effective complement to your aircraft survivability equipment. The enemy will not know whether you are directing fire at him, thus buying you the time to increase SA or distance from the shooter.

OK, so there you have it, Turbo's Five Gun Pilot (scout pilot, lift pilot, assault pilot, med pilot, CAC pilot, etc.) Rules of Survival. Over the years, I've edited slightly, adding or deleting depending on the audience or operating environment. Nevertheless, these five principles have remained. Breaking it all down, these rules ultimately support a positive balance in the aerodynamic capital account. Compromise of any could result in a mishap; adherence to all are critical to both mission accomplishment, aircrew safety and a sound unit of excellence.

TURBO'S 5 GUN PILOT RULES OF SURVIVAL

1. **Maintain or Regain Situational Awareness.**
2. **Maintain or Regain Rotor RPM.**
3. **NEVER Stop Flying the Aircraft.**
4. **Do Not Do Stupid S_ _T!**
5. **Always [Be Prepared to] Shoot Back.**

AMCOM Safety & Maintenance Messages

https://asmprd.redstone.army.mil/

Broken Wing Awards

The Army Aviation Broken Wing Award recognizes aircrew members who demonstrate a high degree of professional skill while recovering an aircraft from an in-flight failure or malfunction, requiring an emergency landing. Requirements for the award are in DA PAM 385-10, Para 6-3f.

CW2 Fransesco M. Foschetti
C Company, 1-10 ARB, TF Phoenix, Afghanistan

During final approach to Bagram Airfield, one of the AH-64D's tail rotor paddles broke at the root and separated from the aircraft. This imbalanced condition caused the tail rotor assembly to separate completely from the aircraft. Upon realization of the situation, CW2 Foschetti immediately took the controls to gain control of the aircraft. He manipulated the aircraft in an attempt to gain airspeed and minimize erratic yaw movements and an uncommanded descent. As he attempted to gain airspeed, he noticed a two-story building located in the vicinity of the intended landing zone. CW2 Foschetti determined the aircraft would be unable to gain sufficient airspeed to continue flight and elected to land short of the building. As his aircraft approached the ground, CW2 Foschetti put it into a nose high attitude to slow the aircraft. Prior to touchdown, the aircraft began to spin, CW2 Foschetti applied right cyclic, allowing the aircraft to set down in the most advantageous attitude. CW2 Foschetti's composure under pressure and superior airmanship prevented what could have been a catastrophic accident and loss of life.

CW2 Gabriel A. Torney
Task Force Brawler, Forward Operating Base Shank, Afghanistan

While flying on a mission in support of a QRF exfiltration, CW2 Torney's OH-58D was engaged by enemy fire. At the time, he was scanning the area with his M4 positioned out the cockpit door. He was struck by shrapnel from a round that passed through the chin bubble and center console. The shrapnel penetrated his forearm and face, blurring his vision. Additionally, a round passed through his right leg, dislocating his knee, and lodged in his left leg. Simultaneously, a round struck the pilot on the controls rendering him unconscious. The aircraft pitched up 90 degrees and began to roll over onto its side. CW2 Torney immediately recognized the extreme situation and assumed the flight controls. He was able to recover the aircraft from the maneuver, notify the flight lead, and fly the aircraft to a secure MEDEVAC LZ all while under duress and with limited vision. CW2 Torney's composure under pressure, response to an emergency situation, and superior airmanship prevented the loss of the aircraft.

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https://safety.army.mil/atf/

Class A – C Mishap Tables

	Manned Aircraft Class A – C Mishap Table									
	Month	FY 11					FY 12			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities
1st Qtr	October	0	1	3			2	1	6	1
	November	0	2	14			1	1	5	0
	December	2	1	4	4		2	2	8	4
2nd Qtr	January	0	0	8			2	0	9	0
	February	0	2	2			2	1	5	0
	March	2	1	5			1	2	11	0
3rd Qtr	April	2	1	11						
	May	2	2	2	1					
	June	3	1	3	2					
4th Qtr	July	2	2	9	2					
	August	2	2	9	2					
	September	0	1	5	0					
	Total for Year	15	16	75	11	Year to Date	10	7	44	5

As of 5 Apr 12

UAS Class A – C Mishap Table									
	FY 11 UAS Mishaps					FY 12 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	2		1	3	W/GE	1			1
MQ-5	3		1	4	Hunter	1	1	2	4
RQ-7	1	11	30	42	Shadow		5	9	14
RQ-11					Raven				
RQ-16A			3	3	T- Hawk				
MQ-18A									
SUAV			1	1	SUAV			4	4
Aerostat	6	9		15	Aerostat		1		1
Total Year	12	20	36	68	Year to Date	2	7	15	24

As of 5 Apr 12

Mishap Review: Medic Struck by MRB

During the conduct of a patient evacuation under NVGs, with the HH-60M holding a two-wheel pinnacle landing, the flight medic entered the main rotor disk area and was struck by the operating aircraft's main rotor blade. The Soldier suffered a fatal head injury.

History of flight

The accident aircraft was an HH-60M assigned to a MEDEVAC company in support of OEF. The crew's duty day began at 0700 hours when they reported to the TOC for mission/weather briefings. During the day, the aircraft repositioned from its home base to a forward operating base (FOB) in support of a combat operation being conducted. The aircraft returned to home base at 1500 hours. Shortly thereafter, the aircraft launched in support of a MEDEVAC request. The aircraft arrived at the FOB to await final clearance to proceed with the pickup. After nearly a 4-hour delay, the crew was given approval to proceed to an OP to pickup three urgent patients. They arrived at the designated LZ approximately 2000 hours.

During the approach and high/low recon, it was decided the terrain in the LZ would only support a two-wheel landing, with the LZ having a greater than 10 degree upslope. Winds were estimated off the nose at 19 knots, gusting to greater than 30 knots. After landing, the pilots maintained the aircraft in a level position with the main landing gear on the ground and forward cyclic applied. The forward cyclic, coupled with the greater than 10 degree slope of the LZ, put the tip cap of the rotor disk less than five feet from the ground. The shape of the LZ did not permit a left-side departure from the HH-60M because of excessive slope and multiple wire, picket, and boulder obstacles. On the right side of the aircraft, a narrow corridor lead to a HESCO wall in the vicinity of where the patients were collected and waiting evacuation. This channelizing terrain forced a very narrow path from the right side of the aircraft to the patient location. Additionally, exiting at the 3 o'clock position was inhibited by obstacles and rising terrain. The first time the flight medic exited and reentered the rotor disk, he used the 2 o'clock position and came back with two urgent patients. The flight medic then exited the aircraft to retrieve the third patient at the 2 o'clock position, but upon return, reentered the rotor disk area at the 12 to 1 o'clock position. The blade clearance to the front of the aircraft was 4 to 5 feet when it made contact with the flight medic's Army Combat Helmet (ACH), resulting in fatal injuries.

The accident board determined the aircrew failed to maintain positive two-way communication with the flight medic as he exited and reentered the rotor disk. The flight medic did not receive clearance from the cockpit before entering the rotor disk area. As a result, the crew could not verify that the flight medic knew the rotor disk was extremely low at the front of the aircraft. The inability to conduct positive two-way communication between the flight medic and the pilots prevented appropriate mitigation procedures to be implemented to avoid the low rotor blades. The board recommended that units develop a standardized system that requires flight medics to gain positive two-way communication and approval from the PC prior to entrance into the rotor disk area.

All information contained in this report is for accident prevention use only.
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Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report
https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required

Power to Prevent Mishaps (reprinted from 4Nov81 Flightfax)

In the compass, magnetic force serves to guide us: in the telephone, radio, and television set, to communicate; in ignition coils and magnetos, to spark our gasoline engines; in generators, to light our cities; in electric motors, to operate our appliances. The list goes on and on. Yet, despite daily reliance on this invisible force, we are seldom conscious of its existence. There is also a type of magnetism that can prevent aircraft mishaps. It is different from that produced by the flow of electric current. Nevertheless, it is magnetism just the same. It is personal influence.

While the force exerted by personal influence cannot be measured in units of newtons or dynes, the results it produces serve as positive proof of its existence. And don't underestimate its power. It is one of the most effective safety tools available. Unfortunately, misused, it can cause mishaps just as readily as it can prevent them.

Each person radiates this magnetic power during all his waking hours. It can't be turned off. So it is applied in a positive manner to improve safety or in a negative way to thwart it. Personal magnetism is transmitted in different ways: by example and instruction; by a positive or negative attitude; by request or directive coupled with some form of supervision; and even by complete indifference to a given situation. Often physical presence is sufficient to exert a powerful influence on others. Have you ever been part of a group telling shady stories when a minister unexpectedly walked in? What happened to those shady stories? Personal influence, in one form or another, is an ever-present force that can be used constructively or destructively. Its proper application is essential to safety in Army aviation.

Some years ago, the commander of one aviation unit insinuated it would "look good" if down time for scheduled PE inspections could be reduced. Obligingly, maintenance supervisors adopted a policy of returning aircraft to the flight line as soon as PE inspections were completed and signed off – even though long lists of discrepancies uncovered had not yet been cleared. These were left for flight line mechanics to correct. On paper, down time for scheduled inspections was substantially reduced. However, the end result was an increase in aircraft rejections by pilots as well as a rise in number of both in-flight problems and precautionary landings.

A somewhat similar situation arose when the commander of another aviation unit demanded a higher overall aircraft availability rate. The mechanics obliged him by taking every available shortcut they could devise. When excessive magneto drop could be corrected by opening the points, no further effort was made to determine and eliminate the true cause of the problem. If a landing gear oleo strut was low, it was inflated to the proper extension without ensuring the piston seals were serviceable and hydraulic fluid had not been lost. Likewise, mechanics use torque wrenches if they were handy; otherwise, they relied on the sense of 'feel" – except when the item being torqued happened to be a critical one. This kind of hurry-up maintenance increased aircraft availability for only a short time. As could have been predicted, the end result was an increase in number of pilot write-ups, aborted missions, and unscheduled maintenance.

Continued on next page

Yet, these aren't isolated instances. Each year there are problems of a similar nature. How many emergencies and mishaps have occurred because a mechanic failed to install a cotter pin? A connection was improperly tightened? A hydraulic line was inadequately secured? An inspector was lax? An MWO was not complied with? Bad habits are not taught in the classroom. Students aren't shown how to force a part in place; they aren't allowed to service an aircraft until it is properly grounded; nor are mechanics encouraged to perform maintenance without referring to appropriate technical manuals.

And the mechanic is not to be singled out. Pilots and other aviation personnel are equally vulnerable to temptations that drastically affect safety. More than 20 years ago, one student pilot decided to put on a "special" show for his girlfriend's benefit. After performing a series of aerobatic maneuvers over her house, he came in low, rolled his aircraft inverted – and promptly nosed into the ground. Some years later, another pilot decided to put on a one-man performance for his family who were spending the day at the beach. During a sharp pull-up and tight turn following a near-ground level pass, the aircraft stalled out and crashed before the eyes of the pilot's horrified wife and children.

During the same time period, another pilot lifted off in IMC on a VFR flight plan. Severe turbulence, thunderstorms and possible tornadoes were forecast. He crashed shortly after takeoff.

Before each of these missions, others knew of the pilot's intent. Yet, no one made any effort to prevent any of these flights or even advise against them. Could this silence have been interpreted as consent? One thing is certain: Analysis of these and other mishaps clearly establishes the human element as the predominant mishap cause factor.

Granted, a fuel pump shaft can shear and cause fuel starvation. This has happened. But what about the mechanic who plugs a disconnect fuel line with a candy wrapper, and then forgets to remove it when he reconnects the line? When the engine is started, fuel pressure partially dislodges the plug, permitting full flow. Then at some point during flight, the wrapper blocks the line, causing engine failure and a mishap. This also has happened.

Failure of pilots to perform proper preflight inspections has caused numerous mishaps – some fatal. So has failure to either positively secure or remove all loose items in helicopter scheduled to be flown with doors off.

And what about such common hazards as wires? Flying low level when it is not required by the mission, failure to perform ground or air reconnaissance before landing at unfamiliar sites, and failure to mark wire locations are just a few causes of wire strike mishaps. In one case, an aircraft on a low-level training mission struck wires and crashed. The pilot did not have a hazards map in his possession; had not received a thorough mission briefing; and was unsure as the exact location of his landing zone, the altitude at which he would be flying, or the precise route he would follow. Any wonder the aircraft struck wires?

Where do such unsafe practices come from? Since bad habits are not taught, how do they develop? Is it left up to each individual to figure out how to violate regulations; disregard TMs, checklists, and procedures; and take unnecessary risks? Or does he get help from others? In far too many instances, human error can be traced to direct or indirect personal command influence.

Continued on next page

Blast From The Past continued from previous page

A simple “they’re rated” paired two inexperienced pilots for an administrative flight. The price? One aircraft. The same type of result was attained by a “He’s-instrument-rated-so-put-him-on.” An “I-can-catch-up-on-my-sleep-later” attitude cost a pilot his life.

The veteran pilot who likes to display his ability to perform low-level maneuvers, disregard checklists and procedures, violate regulations, and take unnecessary risks is going to entice some new pilot to do likewise. Where the veteran pilot may get by on skill, the novice most probably will not. Eventually, the veteran will likely fall victim to a situation he helped create.

A few years ago, a training plane from a military installation made headlines when it smashed into the side of a bridge while supposedly in the landing pattern. Could the subsequent discovery that other pilots frequently tested their skill by flying under the bridge have had any bearing on this mishap?

Can flying be 100 percent safe under all situations? Not any more than crossing the street or driving to work. In a combat environment, risk becomes an integral part of every mission. Marginal weather cannot be allowed to stop a flight necessary to evacuate wounded, or to supply reinforcements and equipment to soldiers cut off from their unit by the enemy.

Valor, coupled with training, experience, and ingenuity, is a major factor in winning battles and saving lives. But valor should never replace common sense. We must always bear in mind that the new aviator, particularly the younger person, is endowed with an overabundance of vitality, curiosity, and an adventurous spirit. There is nothing he can’t do - particularly if he is encouraged to do it, has seen it done, or is left to his design while he gains experience.

Influence should begin at the top. The commander who is conscientious follows prescribed procedures, abides by regulations, and exercises sound judgment sets, by example, the course for his subordinates to follow. If he is lax; if he is guilty of breaking or bending regulations; if he does not select pilots to meet mission requirements; if he does not concern himself with conditions around his airfield; if he does not insist on each individual doing his job efficiently and in a professional manner, then he has lost his sense of direction. In time, those following him will lead others down the same path.

By actions and words, by refusal to lend the stamp of approval to improper methods or procedures, by the example set, commanders have the power to prevent mishaps through personal influence.

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in March 2012.

Utility helicopters

UH-60

-L series. Aircraft was in hot refuel when a clip from the grounding cable separated and contacted a main rotor blade. (Class C)

-L Series. Failure of the No. 1 input module occurred during a high-speed shaft balance check. (Class C)

-L Series. During landing at a training site, a VS-17 landing marker was ingested into the main rotor system, resulting in damage to two blades. (Class C)

-L Series. Post-flight inspection revealed damage to all four main rotor blades due to contact with the BFT antenna during night training. Damage is suspected to have occurred during a roll-on landing. (Class C)

-L Series. Crewmember sustained lacerations to one finger during M134 firing when he flight glove caught his flight glove in the feeder de-linker. (Class C)

-A Series. Damage to the undercarriage occurred when the aircraft landed on rocks in snow-covered terrain during NVG training. (Class C)

-A Series. During NVG transport mission two UH-60s meshed main rotor blades while ground taxiing, following pax drop-off. (Class C)

Attack helicopters

AH-64D

-Aircraft contacted and severed a PGSS aerostat tether as crew was flying security over the COP under FLIR. Sister ship observed the strike although the aircraft crew detected nothing. Damage to the No. 2 MRB tip cap found on post-flight confirmed contact. (Class B)

-Crew was at a 25- to 40-foot hover when they experienced loss of lift during a pedal turn. Aircraft impacted the ground and the main rotor system contacted the canopy, injuring the front-seat pilot. Aircraft was destroyed. (Class A)

-No. 1 engine cowling opened in flight on MTF. (Class C)

-L2 panel separated in flight. (Class C)

Observation helicopters

OH-58

-D series. Aircraft experienced an NP exceedance (124%/8 sec) while in FADEC manual mode at 100% RPM during engine run-up. (Class C)

-C series. Aircraft main rotor system made contact with the ground during primary contact phase training. Main rotor system and transmission separated in the crash sequence. IP and student pilot sustained minor injuries. (Class B)

-A series. Aircraft experienced an N2 spike (113%) during a demonstrated autorotation at 200 feet AGL. (Class C)

Unmanned Aircraft Systems

MQ-1

-System exhibited low oil temp and pressure indications accompanied by manifold temperature spikes. Crew lost link as system was returning to base. (Class A)

U.S. ARMY COMBAT READINESS/SAFETY CENTER

Report of Army aircraft mishaps published by the U.S. Army Combat Readiness/Safety Center, Fort Rucker, AL 36322-5363. DSN 558-2660. Information is for accident prevention purposes only. Specifically prohibited for use for punitive purposes or matters of liability, litigation, or competition.

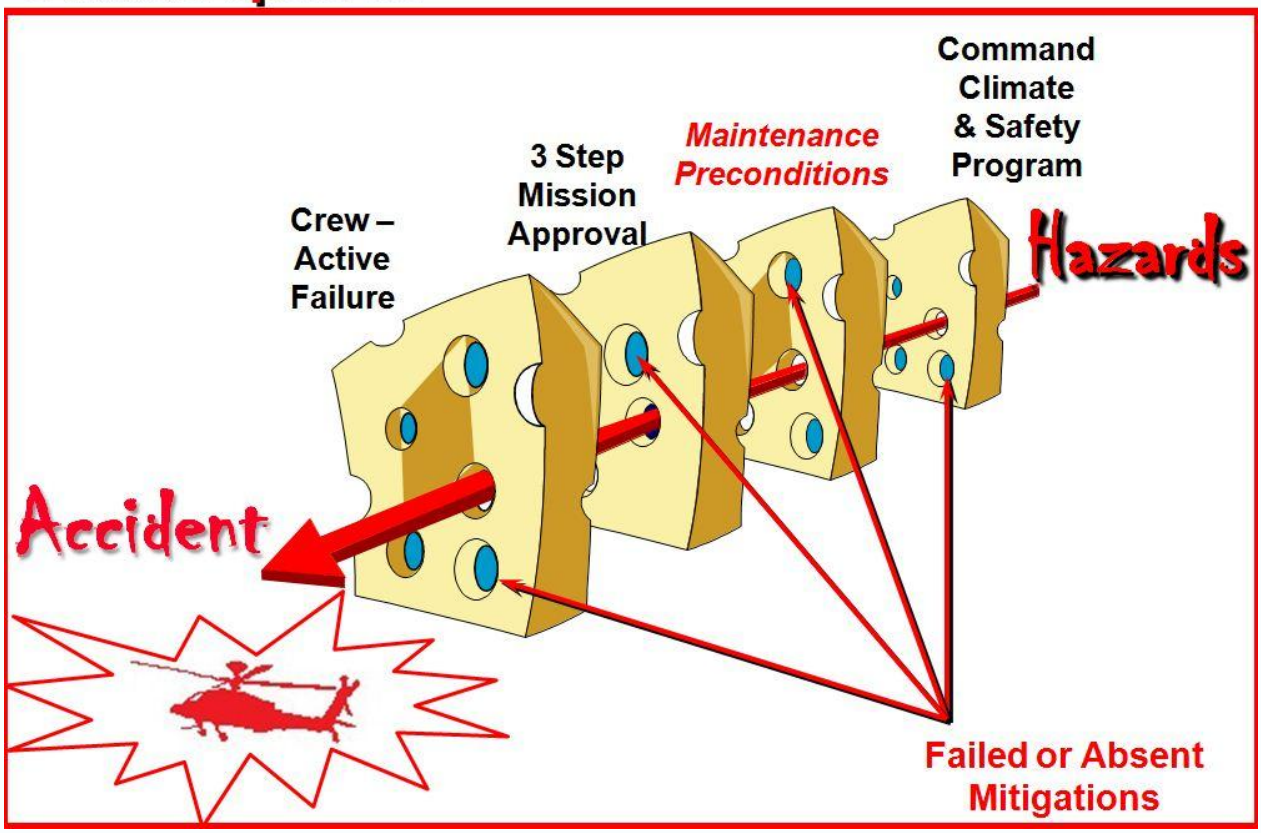
Number 13 May 2012

Flightfax®

Online Report of Army Aircraft Mishaps

The online version of Flightfax is one year old this month. Yet, we have little to celebrate. Year to date for fiscal year 2012, we have had 12 Class A accidents and 9 fatalities. For the same time period in 2011, we had 6 Class A's with 4 fatalities. Clearly, as an enterprise, we are missing opportunities in preventing accidents. In the previous three months of Flightfax, we've thoroughly outlined Command Climate & Safety Program, 3-Step Mission Approval, and Crew failures. This month, we highlight Maintenance.

Don't Miss an Opportunity to Prevent Catastrophe …



The figure above illustrates a model of human error and how it contributes to the breakdown of safe flight operations (reference Reason, 2000; Human Error: Models and Management, Swiss Cheese Model of System Accidents as found at http://www.ncbi.nlm.nih.gov/pmc/articles/pmc1117770/). In the "Swiss Cheese Model," failures can be either active or latent.

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An active failure is an unsafe act that presents an immediate adverse effect. These acts are usually made by aircrew members or maintainers. An example includes a pilot raising the collective instead of lowering it during a compressor stall. Another example is using wrong-sized bolts on a windscreen replacement. Active failures represent deviations from effective mitigations, and are the "holes" in the system that allow hazards to pass and become accidents.

Similar to safe behavior and practices, unsafe acts and practices are also set up by preconditions within the aviation unit. Preconditions for unsafe acts may be such things as a loss of situational awareness by the pilot, poor crew coordination, or poor maintenance on the aircraft. These preconditions, however, are singularly established by poor supervisory practices; for example, inadequate training, poor crew selection, or improper maintenance management.

We all know that Aviation is a team effort. Let's not forget that everyone on the team is a starter for each and every mission. There are no second-string teammates! Our maintainers – both on the flight line and hard at work in the back shops – are as important as the pilots sitting in the cockpit. Often enough, the operational mission and environment in which our aircrews operate present plenty of hazards which challenge their skills. In an effort to assist you in improving your maintenance "special teams," we've included two articles from previous editions of Flightfax. The first outlines human factors in aviation maintenance from November 2003. The second, our Blast from the Past article from 1991, highlights good maintenance can make a difference, and "an Army pilot is not better than the aircraft he is flying, and the aircraft is no better than the person who services it."

Aviation maintenance is not just a mission – well conducted and managed, it is an integral part of accident prevention. Don't miss an opportunity to prevent an accident, because second best could mean *dead last*.

Until next month, fly safe!

LTC Christopher Prather, USACR/SC Aviation Director
email: christopher.prather@us.army.mil

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Human Factors in Aviation Maintenance reprinted from November 2003 Flightfax

Human error is cited as a major cause of aviation mishaps. When it comes to human error, the blame has traditionally been laid on flight crews rather than on maintainers. Although human factors-related maintenance failures are not always evident, the National Transportation Safety Board (NTSB) and the U.S. Army Safety Center (USASC) routinely investigate maintainers' performance.

The human factors that can affect aviation maintenance include: (1) environmental factors; (2) individual human factors; and (3) human-factors training for maintenance personnel. Let's look at these in detail.

Environmental human factors

The aviation mechanic works in a variety of environments. Maintainers work on aircraft not only in hangars, but also on flight lines in all types of weather at any time of the day or night. In the case of military aviation, mechanics may even have to work in a chemical environment which could drastically affect their performance. Categorized more broadly, these environmental factors can be broken into noise and weather conditions.

- Noise. The noise an aviation mechanic may encounter varies considerably, but is universally loud. It's not unusual for the noise on the airport ramp or apron area to exceed 85dB, loud enough to cause hearing damage if exposure is prolonged. Turbine engine, rotor blade, and transmission noise can contribute to distraction, stress, and fatigue. If not closely supervised, a distracted mechanic could be killed or injured, or could severely damage an aircraft.

- Weather conditions. Environmental temperatures vary depending on the time of year, region of the world, and whether the workplace is climate controlled. The physical effects of working in conditions that are too hot or too cold can substantially decrease a mechanic's performance.

When working in extreme temperatures, a mechanic may rush through the task and overlook an important step. Supervisors should do everything possible to provide adequate shelter from inclement weather so that mechanics can work effectively. If this is impossible, mechanics should take breaks to either warm up or cool down. Hangars with climate control are the ideal working environment as long as the doors remain closed.

Individual human factors

The leader or supervisor must be able to differentiate between errors and violations when considering a mechanic's performance. Individual factors such as physical fitness, fatigue, and stressors must be taken into account when considering what might lead a person to make errors or violations. The leader or supervisor should consider these factors seriously before assigning a mechanic to work on a multi-million dollar aircraft.

- Physical fitness. A physically fit mechanic has more energy and tends to be more productive than a deconditioned mechanic who may not be able to do what is required for a particular task. Fitness and health can have a significant effect upon a mechanic's physical and cognitive job performance.

Several conditions can affect health and fitness, and diminish a mechanic's ability to perform proper maintenance. These include physical illnesses, mental illnesses, and injuries and can range from a winter cold or flu to a sprained or broken ankle.

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- Fatigue. Another factor affecting maintenance errors is fatigue. One cannot overemphasize the importance of getting a good night's sleep to do a good job the next day. Unlike their civilian counterparts, military aviation mechanics have many other duties in addition to the task of maintaining an aircraft. It's not unusual for a military mechanic to work a 10- to 12-hour workday. Habitually long work days can cause confusion and fatigue, increasing the chance of human error. To prevent fatigue-related accidents, leaders and supervisors must understand how fatigue and the body's sleep and wake cycles affect each other.

- Stress. Everyone experiences stress in one form or another. Aviation mechanics are stressed by the demands place upon them. Problems develop when mechanics are unable to control their reactions to job demands. This is why it's important for supervisors to recognize the symptoms of stress in their employees. Money problems, marriage conflicts, a new baby, or death of a family member can all increase stress and worsen the problem. Although it is impossible to eliminate human error, learning to effectively manage stress can reduce human errors.

Some ways to manage stress include relaxation techniques, counseling, a good sleep and a healthy diet. Making resources available and encouraging mechanics within your organization to learn to cope with stress can decrease human error.

Human factors training

Effective organizations realize that leaders need to understand human factors training so they can recognize the role that good or bad planning has on the performance of maintenance. The vitality of a human factors program depends upon proper planning in hiring qualified, alert individuals, and maintaining tools, equipment, materiel, maintenance data, and facilities. This can be achieved by incorporating organizational safety, qualified trainers, and error management into the human factors training program.

- Organizational safety. Human factors play a huge role in the quality of maintenance training. Statistics show that 18 percent of all accidents are due to maintenance factors. To reduce errors and make aviation maintenance more reliable, human factors training and research must be an ongoing effort. The following are steps organizations can take to do this:

- Provide and share knowledge with maintenance personnel.
- Develop skills.
- Positively influence attitude.
- Positively influence behavior.
- Practice daily what is taught and learned.

- Trainer. An effectively human factors training program begins with a good trainer thoroughly knowing the subject. Some guidelines to look for when choosing a trainer are formal education on the subject, training to teach the subject, and at least 3 years experience with a maintenance organization. The trainer must be able to motivate people, not just pass on knowledge.

The training program should include initial and sustainment training to keep employees current in human factors, target areas where training is needed, and evaluate the training program's effectiveness. The best training is tailored to each organization and presented by an

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instructor from within the organization. This way the trainer will know the areas within the organization needing the most focus.

- Error management. This concept focuses on eliminating errors and can be broken down further into error management and error containment. By monitoring and documenting incidents and accidents, organizations can compile information helpful in predicting and preventing these errors in the future.

On June 10, 1990, the left windscreen on a British Airways Flight 5390 blew out shortly after takeoff. Although the pilot was sucked halfway out the hole, other crewmembers held onto him until the co-pilot could land the airplane. In this incident, the windscreen had been replaced using the wrong size bolts. The shift maintenance manager was so short staffed that he replaced the windshield himself. He used the bolts that held the old screen in place for comparison as he looked for new bolts the same size. He ended up using bolts that were longer and thinner than the ones he needed. He also failed to notice that the countersink was too low. He signed off the job himself without any type of pressure check or duplicate check. Eighty-four of the ninety bolts holding the new windscreen were too small.

The employees in this incident were considered qualified, competent, and reliable. This situation could have been avoided had the employees practiced error management. With today's technology, there is little room for error and human-factors training is vital to reducing the aviation accident/incident rate.

--The author, Scott E. Cornelius, 1SG U.S. Army retired, wrote this article while attending Embry-Riddle Aeronautical University, Fort Rucker, AL. It appeared in the November 2003 issue of Flightfax.

"In flying I have learned that carelessness and overconfidence are usually far more dangerous than deliberately accepted risks."

- Wilbur Wright, September 1900

Class A – C Mishap Tables

	Manned Aircraft Class A – C Mishap Table									
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	November	0	2	14			1	1	9	0
	December	2	1	4	4		2	2	5	4
2nd Qtr	January	0	0	8			2	0	9	0
	February	0	2	2			2	1	6	0
	March	2	1	5			1	2	10	0
3rd Qtr	April	2	1	11			2	1	5	4
	May	2	2	2	1					
	June	3	1	3	2					
4th Qtr	July	2	2	9	2					
	August	2	2	9	2					
	September	0	1	5	0					
	Total for Year	15	16	75	11	Year to Date	12	9	50	9

As of 11 May 12

UAS Class A – C Mishap Table									
	FY 11 UAS Mishaps					FY 12 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	2		1	3	W/GE	1			1
MQ-5	3		1	4	Hunter	1	1	2	4
RQ-7	1	11	30	42	Shadow		6	9	15
RQ-11					Raven				
RQ-16A			3	3	T- Hawk				
MQ-18A									
SUAV			1	1	SUAV			4	4
Aerostat	6	9		15	Aerostat		3		3
Total Year	12	20	36	68	Year to Date	2	10	15	27

As of 11 May 12

Mishap Review: AH-64D Loss of TR Thrust

While responding to support troops in contact, the AH-64D crew experienced a loss of tail rotor thrust when the aft hanger bearing coupler sheared at the #5 tail rotor shaft. The crew was forced to land to an unimproved field. After touchdown, the aircraft rolled onto its left side.

History of flight

The accident aircraft was an AH-64D assigned to an Aerial Weapons Team (AWT) with a mission of on-call support to troops-in-contact (TIC) or other support as tasked by brigade. The crew's show time was 1400 hours, followed by mission and crew briefs and aircraft preflight and run-up. The AWT launched at 1600 hours to conduct a recon mission that lasted 1.6 hours. During the flight, the crew noticed an unusual intermittent vibration suspected by the crew to be associated with the 30mm. Upon return, the PC discussed the vibration with maintenance personnel. Maintenance indicated that any repairs would occur upon conclusion of the day's mission due to minimal manning on the night shift.

At 2000 hours, the AWT launched in support of a TIC. En route to the FARP, the accident aircraft had a Gearbox Vibration caution message. The crew decided to shut down at the FARP to troubleshoot the problem. The PC was instructed to conduct a ground run after seeking assistance from the TOC and production control. During the ground run, the caution message did not illuminate. A request for a one-time flight back to home base was approved by the battle captain and the aircraft departed at approximately 2300 hours. One minute after departure from the FARP, the intermittent Gearbox Vibration caution message again illuminated. The assumption was made that this was due to a faulty sensor and the aircraft continued its one-time flight to home base. Approximately 25 minutes into the flight, the intermittent vibration became constant, a loud pop was heard with a 25-degree right yaw and no response to pedal input. The pilot on the controls, flying with the Pilot Night Vision System (PNVS) in the back seat, attempted to arrest the yaw by increasing airspeed to 132 knots and adjusting the cyclic and collective. The crew was unable to arrest the yaw and elected to land with minimal forward airspeed (due to unknown landing conditions) to an open field, controlling the yaw with reduction of the power control levers. The reduction of

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power, combined with the increase in collective to cushion the landing, caused the rotor to droop enough to kick the main generators offline and remove power from the PNVS. With no PNVS, the crew leveled the aircraft and impacted the ground with all three landing gears, in a right yaw and no ground speed. The right sideslip angle and yaw rate caused the aircraft to roll on its left side. The aircraft received substantial damage. The crew received no injuries.

Crewmember experience

The PC, sitting in the front seat, had more than 4000 hours total flight time, with 1700 in the AH-64D (1300 as a PC) and 750 NVD hours and 1300 hours combat time. The PI, flying in the back seat, had 525 hours total time, 440 AH-64D hours with 130 NVS hours and 248 hours combat.

Commentary

The accident board determined that the #5 tail rotor driveshaft vibrated and caused the aft hanger bearing coupling to shear due to improper maintenance. One week prior to the incident, the intermediate gearbox and #5 tail rotor drive shaft were removed to complete other maintenance tasks. During reinstallation of the drive shaft, the hanger bearing bolts were installed without appropriate torque. The repair occurred over a two day period, requiring two maintenance hand-offs between the day and night shifts. The day shift installed the hanger bolts, but left the torque requirements to the night shift. The task was signed off and TI'ed with inadequate torque applied. Prior to the accident day, the aircraft had completed a dynamic drive MOC as well as a short flight that was aborted due to poor weather. The aircraft was equipped with a modernized signal processing unit (MSPU), which recorded a caution for vibration in the aft hanger bearing and driveshaft area during the MOC and each subsequent flight. The MSPU data was only required to be downloaded every 14 days or 25 flight hours. The board recommended that MSPU data be reviewed following dynamic drive MOCs. Additionally, the board determined the battle captain failed to follow proper procedures in approving the one-time maintenance recovery flight without notifying the commander, and the aircrew failed to diagnose and properly respond to an emergency condition when the gearbox vibration caution message illuminated (land as soon as possible).

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Do no disseminate outside DOD without prior approval from the USACRC.
Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report
https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required

Mishap Review: AH-64D Test Flight

During the conduct of a MTF, at an altitude of 200 feet AGL and airspeed below ETL, the aircraft developed a high rate of descent until ground impact. The crash resulted in serious injuries to one crewmember and substantial damage to the aircraft.

History of flight

The accident aircraft was an AH-64D requiring an in-flight operational test of the Common Missile Warning System (CMWS). The crew's show time was 0600 hours. At approximately 1015 hours the flight was approved by the task force commander. Weather was VFR with winds out of the northeast at 17 knots.

At 1145 the crew cranked, completed run-up checks to include an MOC on the APU power take-off clutch, and repositioned to complete a HIT check. Following the HIT check the accident aircraft was cleared to perform a high hover in center sod to conduct the CMWS operational check. The crew initiated a climb to a high hover with forward airspeed into a 18-20 knot headwind. During the initial phase of the flight the operational check failed. The pilot on the controls then executed a slow right pedal and cyclic turn to return to parking. As the aircraft entered a downwind condition, an undetected and uncommanded descent of approximated 200 feet per minute occurred. Half-way through the turn the aircraft had descended to 100 feet AGL. The pilot on the controls recognized the descent and increased power but the aircraft continued to descend at an increased descent rate of 400 feet per minute. In a full downwind condition, the aircraft decelerated through ETL with insufficient power to arrest the rate of descent. At 50 feet AGL, the descent had increased to 850 feet per minute. Just prior to impact the aircraft was nearing a descent rate of 3000 feet per minute.

The aircraft contacted the ground in a 10 degrees nose low attitude and 20 knots forward groundspeed resulting in significant damage. Additionally, the main rotor contacted the forward crew station resulting in serious injuries to the pilot.

Crewmember experience

The PC/MTP, sitting in the back seat, had more than 1400 hours total flight time, with 1300 in the AH-64D (750 as a PC) and 700 hours combat time. The PI, flying in the front seat, had 1700 hours total time, 1500 hours in the AH-64D (680 PC) and 780 hours combat time. He was also a qualified maintenance test pilot.

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Commentary

The accident board determined the crew failed to identify the initial rate of descent developed during the downwind pedal turn. This, and the slow application of available aircraft power, resulted in the aircraft developing a high rate of descent from which the crew was unable to recover.

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ARMY PRELIMINARY LOSS REPORT 12077

UH-60L CRASH CLAIMS FOUR SOLDIERS' LIVES

Four 25th Combat Aviation Brigade, USFOR-A, Soldiers were killed in a UH-60L Blackhawk crash that occurred on 19 April 2011, at approximately 2130 local in Afghanistan. The two CW2 pilots and two crew members, both Specialists, were on board the aircraft when it crashed. No one survived the crash and the aircraft was a total loss. A Centralized Accident Investigation (CAI) team from the US Army Combat Readiness/Safety Center is investigating.

This is the **9th** Class A **Flight** fatality in FY12 compared to **4** for the same time frame in FY11. This PLR does not identify specific root causes of this incident as the investigation is ongoing. Further details will be available at a later date on RMIS (RMIS Login Required).

Preliminary Loss Reports (PLR) are ***For Official Use Only*** and are to provide leaders with awareness of Army loss as we experience it and to point out potential trends that affect our combat readiness.

Our Army depends on you to use these PLRs to help Soldiers understand the impact of decisions made on and off duty.

The U.S. ARMY COMBAT READINESS/SAFETY CENTER is interested in your comments; please click here to provide feedback on the Preliminary Loss Reports (PLR). FAQs and additional resources can be found on the USACR/Safety Center website at https://safety.army.mil

Good Maintenance Can Make the Difference. 2 Jan 91 Flightfax

An Army pilot is no better than the aircraft he is flying, and the aircraft is no better than the person who services it.

There are only two real causes of maintenance induced accidents: Someone either didn't do the job or didn't do the job correctly. With possibly a few exceptions, maintenance errors are preventable and inexcusable. There is no reason why they cannot be virtually eliminated. Good maintenance is trained personnel following correct procedures *all the time*. When authorized procedures are not followed, the stage is set for accidents.

It's easy to blame the pilots. It's easy to see why crew error gets a lot of attention because, statistically, human error by pilots is the largest single cause of aviation accidents. But even where a pilot makes a mistake that leads to an accident, we sometimes find maintenance was also a factor. For example, in the following case, an IP failed to follow the proper emergency procedures when he lost power on the No. 1 engine of a UH-60. As a result, rotor rpm immediately began to decay and continued downward to the point that further flight was impossible, and the aircraft crashed.

The IP had continued to operate the aircraft as the fuel decreased below a restriction imposed by a logbook entry. Specifically, the entry restricted flight when indicated fuel on the No. 1 system was below 400 pounds. As a result, he placed the aircraft in a condition where fuel starvation on No. 1 engine could happen.

When the low fuel pressure light came on during approach for landing, the IP failed to immediately place the engine fuel system selector switch to cross-feed as specified in the operator's manual. And, apprehensive that he might lose the remaining engine too, the IP failed to properly divide his attention between aircraft control and monitoring flight instruments that would have told him he was losing rotor rpm.

This appears to be a clear-cut case of pilot error, but there's more to the story than that. True, the No. 1 engine failed because of fuel starvation, but the output line for the No. 1 engine submerged fuel boost pump was not connected. This allowed air to enter the fuel system when the free line was exposed to air in the fuel cell.

At an undetermined time, and for an undetermined reason, the line had been disconnected. When the fault was first documented, unit maintenance personnel did not take adequate steps to troubleshoot the problem and take corrective action.

Sometimes it's just plain carelessness. Too many times, the maintenance error that causes an accident is as simple as leaving something where it doesn't belong, and sooner or later it finds its way into an area where it does mischief. The variety of these objects seems endless: bolts, washers, tools, shop towels, even soda cans have been found under drive shafts, jamming flight controls, blocking air ducts, and on and on. In the case of a UH-1 Class C, it was a DD Form 1577-2 condition tag that was discovered in the engine inlet area behind the 6 o'clock strut and against the variable inlet guide vanes. The aircraft had been equipped with an improved particle separator, and the tag must have been left inside the particle separator

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during previous maintenance.

This aircrew was luckier than some. They were hovering over an airfield, after returning from a training flight, when the aircraft's engine experienced a catastrophic compressor stall. The aircraft lost power, yawed, and settled. The pilot initiated engine failure procedures and landed without further damage to the aircraft.

Just because it's on the aircraft doesn't mean it's right. The fact that something is installed on an aircraft doesn't always mean that it is the right part or that it is installed correctly. Following is an example of what can happen as a result.

While performing maintenance test flight at about 10,000 feet AGL, the crew of a UH-1 heard a report from the rear of the aircraft. There were no abnormal instrument indications and control responses were normal. The pilot performed emergency procedures, landed, and shut down the aircraft. After checking for damage, the crew chief informed the pilot that the oil cooler fan turbine had disintegrated, and there was extensive sheet metal damage to the fan compartment.

The oil cooler fan had failed due to an overspeed caused by installation of an improper reducer fitting that increased the fan-driven airflow beyond design limits. The oil cooler fan and shroud assembly were installed and inspected 134 hours previously, but the installation inspection was not performed in accordance with the technical manual, which clearly states the orifice diameter cannot be larger than .255-inch. The installed fitting orifice had a diameter of .680-inch.

What it takes to have good maintenance.

- Awareness on the part of supervisors about the training, experience, and abilities of every person under their supervision.

- Qualified technical inspectors.

- Up-to-date technical manuals available in each unit in sufficient quantities to be in the hands of mechanics. It's true that after a mechanic works on an aircraft for a while, he remembers torques and even assembly procedures, but manuals change. Mechanics *must* use the book every time.

- Scheduling of flights to ensure preventive maintenance inspections are performed when due.

- Submission of DA Form 2028 or DA Form 2028-2 when required. Errors may appear in publications from time to time or some important item may be omitted. The quicker errors are known, the quicker they will be corrected.

- Constant command emphasis on all the above points.

We're all in this together. In the best aviation units, there is no attitude of "us and them" among people who fly aircraft and those who maintain them. There is instead an atmosphere of mutual respect that breeds confidence and trust between crews. In this kind of unit, when an aircraft leaves the ground, the aircrew knows that it is mission capable, and the maintenance crew knows they have done their part to ensure the mission is accomplished.

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Mechanic's Code

As a maintenance technician, I recognize my obligations –

To the United States Army, which trusts that I am technically qualified for the tasks expected of me.

To the aircrews and passengers, who trust their lives and safety to my mechanical skills.

To my organization, which expects me to be a professional mechanic as well as a professional soldier.

To my fellow mechanics, who as team members must depend upon me for a task completed.

To myself, for the personal satisfaction of a professional job well done.

To discharge these responsibilities –

I will perform maintenance of the highest quality to assure the safety of every flight.

I will always be sure of my work or, when in doubt, consult my supervisor.

I will strive to improve my professional skill by attention to duty and self-education.

I will not allow personal desires or considerations to affect my performance of duty.

I will never attempt to perform duty when my mental or physical condition might lead to maintenance error.

I will keep my tools and equipment in first-class condition to ensure a job worthy of the professional mechanic that I am.

I pledge adherence to these principles to reflect credit to myself, my fellow workers, and my profession.

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in April 2012.

Utility helicopters

UH-60

-L series. Aircraft crashed during the conduct of a MEDEVAC mission. Four fatalities. (Class A)

-M Series. Main rotor contacted a tree during the approach to an LZ. One main rotor blade replaced. (Class C)

Mi-8

-Rotor RPM drooped on climb-out. Aircraft landed hard sustaining damage. (Class B)

Observation helicopters

MH-6M

-Aircraft touched down hard during multi-ship landing. Post-flight inspection revealed damage to the FLIR and fuselage. (Class C)

Cargo helicopters

CH-47

-D series. Forward rotor system contacted terrain during an NVG upslope landing. (Class A)

-F Series. Aircraft experienced a No. 2 engine overtemp/torque during sling-load landing. Engine replacement required. (Class C)

MH-47G

-Crew experienced a rotor system over-speed indication during descent. Post-flight inspection confirmed condition. (Class C)

Unmanned Aircraft Systems

RQ-7B

-Ground Control Station lost link with the system during return flight. UA subsequently descended and crashed into a mountainside. (Class B)

A160

-Vehicle landed hard after failure of the transmission. UA and mission package damaged. (Class A)

Aerostat

-While being lowered due to approaching weather, the aerostat was thrust downward to ground impact by a reported 87 MPH wind gust. (Class B)

-Aerostat tether broke while aloft at 1500 feet as a result of a wind gust that exceeded forecast winds aloft. Aerostat was not located/recovered after drifting away. (Class B)

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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Number 14 June 2012

Flightfax®

Online Report of Army Aircraft Mishaps

Indiscipline and failure to conduct quality mission briefings continue as a consistent trend for human error accidents reported in FY12. Our professional Army aviators are the basic element in the command line of aircraft mishap prevention. Superbly trained pilots in command (PC), with total dedication to air discipline with respect to standards, rules and regulations, are more effective than any other known remedy to prevent aviation accidents. Aircrews are the best mitigation factor for preventing human error accidents.

In an era of unprecedented OPTEMPO, our Class A accidents over the last few years have remained at historical and equally unprecedented low rates. Leaders cannot — and should not — be in every cockpit of every flight. This is why we have PCs. Effective PCs use their authority for operating, servicing, and securing the aircraft they pilot, but they do not operate without the participation of other crewmembers. For all of those flights conducted safely, these missions have been successfully managed by an effective PC who ensured safe execution.

In an effort to assist aviation Leaders and Soldiers in breaking the accident chain of human error, this edition of Flightfax re-emphasizes the importance of individual responsibilities of PCs, as well as selecting and training PCs, giving them the appropriate experience to make decisions necessary for mission success and survival of the crew.

The recent accidents highlighted in this issue point to what constitutes an effective PC program. Pilots in command are most effective in conducting missions when they've had recent experience flying instruments or hood if executing a mission in marginal weather conditions, proficient and current in NVGs, and they fully understand written procedures and/or SOPs. Further, from the crew to their Leaders, there exists an understanding that there is no "short" or "easy" mission.

While every aviation Leader understands acceptable risks, we offer this edition as a reminder to help you enhance your existing good practices. First and foremost, pilots must never forget the responsibilities they assume when designated pilot in command. A PC must be knowledgeable and proficient, and that is a responsibility which is shared at the individual, collective, and leadership levels.

Army Safe is Army Strong!

BG William T. Wolf, Commander, USACR/Safety Center

DES Perspective on Army Aviation Trends

COL Dave Fee
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL

A trend is a change in condition, output, process, direction or form of behavior that develops among a large population over time. Army Aviation is a large enough population to develop its own trends. The Directorate of Evaluation and Standardization (DES) is privileged to have the opportunity to fly, train, teach, mentor and learn from almost every formation in Army Aviation. In our role as assessors of standardization and training for the commanding general, USAACE, DES also gets the opportunity to see Army Aviation trends. DES has definitely observed trends from 10 years of war.

The number one positive trend DES has observed is our aircrew members are mission-focused and ready to fight our nation's wars. We have the honor of assessing Combat Aviation Brigades and aircrews who fly and fight in some of the most inhospitable and austere environments on the planet. The overall assessment of our visits is Army Aviation has great teams ready to fight our nation's wars.

But not everything is ideal. The reason standardization and training is so vital to Army Aviation is the fact that the smallest of mistakes can and has cost the lives of our very best officers and Soldiers. A few of the trends observed are worrisome and could be potentially dangerous. This article will focus on three negative trends observed by DES. The first negative trend DES has observed is the erosion of basic aviator knowledge, training and, sometimes, professionalism. Next is the lack of focus on continuation training, especially in certain critical skills. Last is our observation that many units are reluctant to fully accept and use Heads-up Displays (HUD).

(1) The erosion of basic aviator knowledge and training is often noticed at the very beginning of our visit. We commonly administer a written exam that tests basic aircrew knowledge. Our team has recorded a pass rate of about 80%, or a 20% fail rate. The majority of failures are on emergency procedures (EP) and aircraft limitations. Besides EPs and limits, many aircrew members score poorly on instruments, airspace and their own unit's standard operation procedures questions. The overall problem is one in five aircrew members don't pass, and the typical unit average of those who pass hovers around 80%. Not surprisingly, unit instructor pilots score very well. Units always have several young officers and crew chiefs who receive very high grades on every test. For our non-rated crewmembers, units without an assigned enlisted senior instructor at the battalion level tend to do poorly. Maintenance officers, especially in maintenance companies, have not scored well. An argument could be made that basic knowledge must not be important if we are fighting and winning wars. The truth is many great leaders and instructors with the requisite knowledge trained our crews in the past. It is this high quality training that led to

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our current success. If we allow our focus and desire to maintain the highest standards to wane, we will eventually create a knowledge vacuum where our younger aircrew members will be unable to train our future warfighters.

Our basic solution is a greater focus on fundamental aviation training. As units gain greater dwell time between rotations to Afghanistan, we must take our incredible lessons learned, refocus on aircrew knowledge and aviation training to enable aircrews to fly and fight even better. We want the focus of training to be on gunnery, environmental training, mission planning, sling and hoist operations but tied to those basic aviation skills that enable our crews to correlate ideas and improve airmanship and safety.

Remember, the erosion of the basics is an overall trend. We also see hundreds of super stars that set the standard few have ever achieved. Yet, we also observe leaders in the wrong boots, crew chiefs not receiving flight pay, CW4s who cannot achieve a 70% on a written exam, Soldiers in substandard personal equipment and leaders not meeting their Aircrew Training Program (ATP) requirements. We must all work on stopping these problems.

(2) The lack of focus on continuation training is the next negative trend DES has observed. The ATP is the commander's program for training combat-ready rated and non-rated crewmembers. Army Aviation, in preparation for war, becomes focused on progression training and the demonstration of proficiency of battle-rostered crews. Once the crew is trained, we shift to collective and continuation training. Gunnery, high altitude training and several major collective training events ensure unit and crew readiness prior to deployment. Once these initial training events are complete, units must institute programs to ensure continuation training is conducted throughout the ATP year.

The vital need to focus on mission accomplishment throughout the war has caused, even forced, units to slowly lose focus on the importance of continuation training. The tempo of training, equipping, preparing and fighting the current conflicts has taken time and energy away for assessing and training throughout the year. Solutions can be simple. Small level training conducted by unit leaders, pilots in command and instructor pilots will keep skills honed. Constant efforts to assess training levels by leaders will prevent complacency and lack of focus. Tried and true methods of training such as instrument approaches at the end of a mission; test fires shot as quick, simple, team engagements; table talk discussion of power management will keep skills honed. These methods all require constant reinforcement and leader effort.

Every unit fires Table VIII Gunnery before deployment on aircrews, crew chiefs and door gunners. After arriving in theater, the crews have the opportunity to fire relatively often on test fires, and sometimes even against the enemy. But more rarely are these events turned into training and assessment opportunities. Often engagements against the enemy are not carefully reviewed by master gunners and debriefed to improve proficiency

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and accuracy during subsequent engagements. Continuation training needs to continue year round and at every opportunity, even when deployed.

Environmental and high altitude (power management) training becomes part of a single, often culminating event during pre-deployment training. Our aircrews are asked to absorb and master these skills in a very short period of time. Soon after High Altitude Mountain Environmental Training Strategy (HAMETS) is complete, the training and lessons learned begin to fade. Some units develop excellent programs to ensure high altitude training continues throughout the ATP year, some do not. The same lack of focus on continuation training is often observed with instrument training. We cannot train year round. We must focus on the mission. Our crews are a pivotal part of the mission in Afghanistan. But whenever Army Aviation has the chance, we need to fly an instrument approach at the end of a mission or turn a test fire into a quick training scenario with a short debrief.

(3) The last observation, or trend, is the reluctance of units to fully utilize HUDs. Use of a HUD is the norm for Apache units. Standardization pilots at Fort Rucker and across the Army made the Helmet Display Unit (HDU) the norm during the fielding of the AH-64, and the Apache community has not looked back. Now, UH-60 and CH-47 units are receiving many improvements to their HUDs. These two communities have reached the point where the HUD should be worn on every night flight. The improvements on the CH-47F and UH-60M will soon allow Day, Night and NVG use of the HUD. We must start making the use of HUD mandatory at night. Once the Day HUDs are fielded, units need to wear their HUDs in all modes of flight. The argument that a scan under the NVGs and inside the cockpit is a better method needs to stop. We must learn to fly outside the aircraft, especially during environmentally challenging approaches. During several of our most recent accidents, including an AH-64 accident, the HUDs/HDUs were not worn. Their use could have prevented the severity of the incident, or possibly prevented the accident. Commanders need to continue to push the Army for better HUDs, but mandate the use of the ones we already have.

The leaders of DES are honored to have the opportunity to fly, train, teach, assess and learn from almost every formation in Army Aviation. We see thousands of great aircrews, but want to make Army Aviation even better. We need to refocus our efforts on basic aviation skills and correlate them to bigger understanding in gunnery, instrument and environmental training. We must continue to train and assess throughout the ATP year. Finally, we must use our incredible equipment to the best of their capabilities. HUD is an essential tool to adding situational awareness, keeping eyes outside the cockpit and, hopefully, preventing a future accident. Changing these three trends would make the very best, mission-focused aircrew members even better. Above the best!

--COL Dave Fee, Director DES, may be contacted at (334) 255-2603, DSN 558.

Mishap Review: NVG Multi-ship AASLT

While conducting a hasty air assault under NVG conditions, the CH-47D forward rotor blades contacted rising terrain during an upslope landing. The front rotor disk became unbalanced and desynchronized the rotor system causing significant aircraft damage and four minor injuries.

History of flight

The accident aircraft was part of a nightly two-ship stand-by mission dedicated to tactical operations. The night of the accident, the tactical mission crews began their duty day at 1900L. At 2100L, they were given a mission to conduct an infil and exfil in mountainous terrain 15 miles from their home base. The two CH-47Ds were assigned two AH-64Ds as escort aircraft. The mission brief was conducted at 2230 hours and was determined to be a high risk mission due to red illumination (less than 30 degrees on the horizon) and non-standard Helicopter Landing Zones (NSHLZ). The brigade commander was on site and approved the mission. Following the mission brief, crew briefs were conducted in the company CP followed by aircraft prep and run-ups. The weather forecast was for clear conditions and unlimited visibility. The illumination cycle for the flight at the time of infil was 68% with moon angle low in the sky at 30 degrees.

The flight departed at 2345L with the accident aircraft in the lead position. Upon arrival at the LZ, the PC in the left seat, determined the site would not support both aircraft and decided to continue forward to leave the original LZ open for Chalk 2. The PI, in the right seat and on the controls, proceeded forward identifying a suitable area requiring an upslope landing. At 2358L, during the landing sequence, the Common Missile Warning System (CMWS) dispensed flares and the front rotor struck the terrain. The aircraft rolled to the right with the aft rotor striking the ground. The aircraft rolled back to the left and came to rest upright. The aircraft was extensively damaged and four personnel received minor injuries.

Crewmember experience

The PC, sitting in the left seat, had more than 3000 hours total flight time, 1300 in the

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CH-47D with 950 as an IP/SP. The PI more than 1500 hours total time with 266 in the CH-47D and qualified as a PC in UH-60s and CH-47Ds. The FE, located at the right cabin door had more than 3900 hours, the CE on the ramp had 300 hours and the door gunner in the left cabin window had 89 hours total.

Commentary

The accident board determined that during the upslope landing in the LZ, the pilot on the controls unintentionally activated the CMWS causing numerous flares to deploy creating a distraction during the NVG operation. The PI reacted by displacing the cyclic control forward, resulting in the forward rotor disk contacting the ground. The rotor system became unbalanced and desynchronized, causing significant aircraft damage and four minor injuries. The pressing of the flare dispenser control switch was the result of a negative habit transfer between the UH-60 trim and CH-47D CMWS cyclic switch positions. Additionally, the board noted the crew failed to safe the CMWS IAW the Aircrew Procedures Guide. During the landing sequence, the passengers removed their restraints prior to the completion of the landing without direction from a member of the crew. As a result, they suffered minor injuries when they were tossed about in the cargo area during the crash sequence.

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Manned Aircraft Class A – C Mishap Table

	Month	FY 11 Class A Mishaps	FY 11 Class B Mishaps	FY 11 Class C Mishaps	FY 11 Army Fatalities		FY 12 Class A Mishaps	FY 12 Class B Mishaps	FY 12 Class C Mishaps	FY 12 Army Fatalities
1st Qtr	October	0	1	4			2	2	6	1
	November	0	2	14			1	1	9	0
	December	2	1	5	4		2	2	5	4
2nd Qtr	January	0	1	8			2	0	9	0
	February	1	1	2			2	1	6	0
	March	2	1	7			1	2	10	0
3rd Qtr	April	2	1	12			2	1	4	4
	May	2	1	5	1		1	0	2	0
	June	3	1	4	2				1	
4th Qtr	July	1	3	14	2					
	August	2	2	10	2					
	September	0	0	5	0					
	Total for Year	15	15	90	11	Year to Date	13	9	52	9

As of 13 Jun 12

Mishap Review: UH-60 MEDEVAC Chase

Shortly after takeoff on a night MEDEVAC chase mission, the crew of the UH-60L initiated a gradual left- hand turn. The left roll progressed past 90ºand the nose pitched down. The crew was unable to regain control of the aircraft. It struck the ground, fatally injuring all crewmembers.

History of flight

A flight of two UH-60's departed the Forward Operating Base (FOB) at approximately 2125L in support of a 9-line MEDEVAC request. The lead aircraft was the MEDEVAC aircraft and the second (accident) aircraft was a UH-60L performing MEDEVAC chase duties. Approximately one minute after takeoff, with an estimated four miles of visibility, both aircraft lost visual reference with the ground due to low illumination and contrast. The lead aircraft, familiar with the area, looked to a river terrain feature for a contrasting visual reference. Locating the contrasting terrain feature, the lead aircraft regained visual reference with the ground and at the suggestion of the chase aircraft, the crew decided to return to the FOB. The crew of the chase aircraft, unfamiliar with the area, never regained visual reference with the ground. The pilot on the controls initiated a shallow left-hand turn, allowed the aircraft bank angle to progress beyond 90 degrees and the nose to pitch down. The pilot not on the controls recognized the unusual attitude too late for the crew to recover the aircraft. The aircraft struck the ground in a nose low, steep left bank, fatally injuring the four crewmembers. A post-crash fire consumed the wreckage.

Crewmember experience

The PC, sitting in the left seat, had 1000 hours total flight time, 900 in the UH-60 with 239 hours NVG. The PI had 400 hours total time with 323 in the UH-60 and 100 hours NVGs. The CE, occupying the left window, had 1000 hours total time with 146 NVG and the door gunner in the right window 100 hours total time and 36 hours NVG.

Commentary

The accident board determined that under conditions of degraded visibility, low illumination and low contrast terrain, the pilot in command (PC) became spatially disoriented when he unknowingly initiated a gradual left turn that progressively steepened until the aircraft was in a 110 degree left bank with a nose low descent at

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an altitude where a successful recovery was not possible. The aircraft impacted the ground, fatally injured the four crew members and destroyed the aircraft. The PC's lack of recent experience flying instruments and hood as well as limited NVG flight time in the previous few months were considered factors in the accident. Additionally, a lack of crew coordination in areas of communicating positively and offering assistance were noted. The aircrew was accustomed to flying during greater illumination. Therefore, flying during zero illumination over an area of low contrast and definition caused a breakdown in the aircrew's performance which led to the aircrew not positively communicating about the flight conditions or a plan of action to address the conditions. The board also suspected the TTP of flying 10 or more rotor discs separation in the encountered flight conditions made it difficult for the accident PC to maintain visual contact with the lead aircraft, and took his attention away from the flight instruments and basic aircraft control, contributing to his spatial disorientation.

All information contained in this report is for accident prevention use only.
Do no disseminate outside DOD without prior approval from the USACRC.
Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report
https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required

UAS Class A – C Mishap Table

	FY 11 UAS Mishaps					FY 12 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	2		1	3	W/GE	1			1
MQ-5	3		1	4	Hunter	1		1	2
RQ-7	1	14	38	53	Shadow		6	12	18
RQ-11					Raven			1	1
MAV			3	3					
YMQ-18						1			1
SUAV			1	1	SUAV			4	4
Aerostat	6	9		15	Aerostat		3		3
Total Year	12	23	44	79	Year to Date	3	9	18	30

As of 13 Jun 12

Blast From The Past

Articles from the archives of past Flightfax issues

So you're a PIC! *Reprinted from Flightfax dated 25 March 1981*

By designating you pilot-in-command, your commander or his authorized representative, has deemed you to be knowledgeable and proficient in the operation of a specific type of aircraft, and capable of shouldering the responsibilities associated with any mission he may assign to you. In effect, he is expressing his confidence in your abilities and placing his trust in you. Unfortunately, PICs sometimes unwittingly betray that trust. The reasons for such betrayal are as varied as they are numerous. And the fault does not lie **only** with the PIC. Often it must be shared with his commander or some other superior.

Consider, for example, the PIC of a UH-1 participating in terrain flight. At an altitude of about 100 feet AGL, the copilot, who was on the controls, made a steep right turn of approximately 75 degrees. The aircraft rapidly lost altitude and struck some trees that were 75 to 85 feet tall. The crew then made a precautionary landing in a nearby clearing and shut down the aircraft.

Investigation revealed that the copilot had placed the aircraft in an excessively steep turn at a low altitude, causing the aircraft to settle rapidly and strike the trees. Additionally, his making a right turn at low altitude from the left seat position probably contributed to his misjudgment of the amount of bank he should have applied in the turn. It was also determined that certain standards and procedures outlined in the ATM, FM 1-1, and the unit SOP were not being followed. For example, although the crew had two area maps available, they had not plotted the actual route of flight on either. So they were not following a preplanned route with all obstacle hazards identified. Further, crew coordination as outlined in the unit SOP was not being followed. The two pilots were not communicating with each other as to obstacles and other terrain hazards. This was evidenced when the copilot made a steep right turn while flying the aircraft from the left seat. First of all, he was not told to make the turn by the PIC who was functioning as the navigator; and secondly, he did not request that the navigator, seated in the right seat, clear him for the turn. In reviewing this mishap, you might wonder why the PIC failed to take any positive action during the flight -- why he failed to be in charge. Could it be that the PIC took no corrective measures nor attempted to caution the copilot as to his handling of the aircraft because the copilot happened to be his platoon leader and the air mission commander?

In another instance, the PIC of a UH-1 may have been the victim of peer pressure when he attempted a maneuver that ended in tragedy. The aircraft involved in this mishap was one of four returning from a mission over rugged, mountainous terrain. The first leg of their return flight was completed. However, while the aircraft were on the ground, weather conditions deteriorated to an extent that instrument takeoffs would have to be made if flight was to be resumed without delay. Although the pilot of the ill-fated aircraft met the qualifications necessary to be designated a PIC, he was relatively inexperienced as compared with other PICs in his unit. Further, instrument takeoffs had been his chief

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weakness during flight training. Yet, while reluctant to try the instrument takeoff over mountainous terrain, he didn't want to delay the flight. At this point, no decision had been made as to whether the flight should be continued or cancelled. The AMC, who was also the PIC of one of the four aircraft, had the option of postponing the flight or replacing the relatively inexperienced PIC with another. However, either decision would cause a delay. So he consulted with the PIC of one of the remaining aircraft. This individual was highly experienced and the senior IP in the unit. After studying the situation and discussing takeoff procedures with the inexperienced PIC, he expressed assurance that an instrument takeoff would pose no problem. As a result, the inexperienced PIC waived his prerogative to stay on the ground and chose to attempt the takeoff. In the process, his aircraft lost altitude and hit a large tree located on a lower ridge. Both pilots were killed and the aircraft destroyed.

In both of the above examples, "pressure" appears to have played a prominent role in the decisions made by the PICs involved. In the first instance, the PIC chose to take no action; in the second, the PIC chose the wrong action. But "pressure" is not a prerequisite for making wrong decisions. The desire to take part in a particular mission, coupled with overconfidence, can similarly produce a lethal combination.

A pilot may be highly experienced and confident in himself. Yet, the selection of a qualified but less experienced pilot as PIC may sometimes be a better choice for a particular mission assignment. In one such case, the pilot selected for a combined reconnaissance and training mission over mountainous terrain was a highly experienced UH-1 IP. Because of his past performance, he was held in high regard by his commander. In addition, he had confidence in his own abilities. The choice appeared to be a logical and good one. With a copilot, crew chief, and five passengers on board, the PIC flew the UH-1 to the assigned landing area where he tried to terminate his approach to a hover at about 15 feet AGL. However, the pressure altitude was more than 8,500 feet. During the hover attempt, the aircraft began to rotate about the mast to the right. This rotation continued even after full left pedal was applied. As rpm started to bleed off, the PIC tried to follow the turn with the cyclic and fly the aircraft downhill. Unfortunately, two large trees stood in his flight path. To avoid them, he lowered collective and tried to land the aircraft on the uneven terrain below. The aircraft hit the ground, rolled to the right, and came to rest almost inverted. All occupants, however, were able to exit without difficulty. Investigation revealed that under the existing conditions of aircraft gross weight, OAT, and pressure altitude, the aircraft was not capable of hovering out of ground effect. The power required for the aircraft to hover under the prevailing conditions was determined to be 44 psi indicated torque. Yet, the maximum power available was only 39.5 psi. In effect, the PIC failed to adequately plan his flight. He did not determine the power required to hover in the landing area, and he failed to adequately consider aircraft performance in establishing standard loads. The reason he failed to properly plan was deemed to be the result of overconfidence in himself and his equipment. Although he was a highly experienced IP, he had participated in only 2 hours of mountain flying during the preceding 2 year period.

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But even when a pilot is fully qualified and current for the mission he is to fly, overconfidence alone can precipitate a mishap. And it doesn't matter whether the pilot is overconfident in himself or in his equipment. For example, an aviation section operations officer assigned himself to fly a UH-1 on a training flight. Actually, the aircraft selected was about 1.5 hours away from a scheduled inspection, and the operations officer wanted to get the inspection completed so the aircraft would be available for a forthcoming mission. With a crew chief aboard, the pilot flew the aircraft at terrain flight altitudes. While flying over a lake, the aircraft hit wires about 40 to 50 feet above the surface and crashed into water that was 12 to 15 feet deep. The crew chief managed to escape but the pilot was killed. It was determined that the pilot performed a course of action prohibited by his unit SOP and FAR 91.79 when he flew his aircraft at terrain flight altitudes off post in a manner that endangered the lives and property of people on the ground. Further, the pilot had proceeded at terrain flight altitudes without appropriate preflight planning, route map reconnaissance, hazards identification, or required crew complement. In violation of his unit SOP, he had performed flight without a copilot aboard, and had failed to indicate on his flight plan the area in which training was to take place. It is also significant to note that the pilot had been previously reprimanded for violating the policy of flying without a copilot. After all the evidence was examined, it was concluded that the pilot's actions resulted from overconfidence in his abilities.

In another example, the PIC of a UH-1 made an approach to a tactical landing site in mountainous terrain. Six occupants were aboard the aircraft which was on a resupply mission. While on final approach at about 25 feet AGL, the aircraft began descending at an excessive rate and the PIC initiated a go-around. As he applied power and entered a right turn, the aircraft hit several trees, causing the 90-degree gearbox and tail boom to separate from the aircraft. The main rotor blades then hit the ground and the main rotor separated from the aircraft. The aircraft then crashed and rolled inverted. The crew and passengers exited the aircraft shortly before a post crash fire destroyed it. Four occupants sustained minimal injuries and two sustained minor injuries. The PIC inadequately performed preflight planning. Although the aircraft was loaded to maximum capacity, the PIC did not compute weight and balance as required by both AR 95-16 and AR 95-1. The PIC also failed to compute power requirements in accordance with the performance charts in the operator's manual. As a result, the aircraft was overgross and exceeded the center-of-gravity limitations. When the aircraft began to fall through on approach to a confined area at approximately 20 knots and 150 feet AGL, the pilot turned downwind (with winds at 12 knots gusting to 20 knots) towards climbing terrain in a go-around attempt. Although the aircraft was not climbing because of the downwind turn combined with the overgross and out-of-c.g. conditions, the PIC maintained 40 psi of torque when 50 psi was available. As a result, the aircraft hit trees, then the ground, after which it caught fire and was destroyed. Inadequate pilot judgment and overconfidence in equipment were prime factors in causing this mishap.

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It becomes apparent that overconfidence, whether in one's self or one's equipment, can prove to be a definite threat to safety. Even when below the conscious level, overconfidence can induce the most experienced pilot to disregard regulations, inadequately plan flights and fail to follow proper procedures. Recently, a perfectly "healthy" aircraft was destroyed simply because the PIC neglected to coordinate with his crew as to their specific responsibilities during flight. Even though no real emergency arose, a lack of communication between the PIC and his copilot resulted in antics that are reminiscent of the "Keystone Cops" or some other more modern specialists in situation comedy. Unfortunately, there is no humor to be found in the destruction of a $618,000 aircraft even though the occupants managed to escape virtually unscathed.

It happened like this: The PIC of a UH-1 was assigned a service mission to fly to an airfield, pick up five passengers, and return. After all preliminaries had been completed, the PIC embarked on the mission with copilot and crew chief on board. The flight to the airfield was uneventful. Following refueling, passengers and crew boarded the aircraft for the return flight. After climbing to an altitude of approximately 4,000 feet MSL, the PIC chose to cruise with the N2 set at about 6400 rpm to allegedly conserve fuel. Why he felt this action necessary is not clear. The aircraft had just refueled and the mission required flight of less than 1 hour to complete. Nevertheless, this was the PIC's decision – a decision that would later spark events which, in turn, would lead to the mishap.

As the aircraft neared the airfield, a layer of clouds hid the ground below. When the aircraft was about 10 miles from the airfield, the PIC initiated a GCA and the aircraft entered the layer of clouds at about 1,800 feet MSL. At about 900 feet MSL – while still in the clouds – the crew got an audio/visual indication of low engine and rotor rpm. A check of the instruments showed N2 had decreased to 6000 rpm and rotor was down to 300 (needles joined). Promptly, the PIC began to remedy what he thought was a simple beeped down N2 condition. With the throttle in the full on position, he lowered collective. Meanwhile, the copilot misinterpreted the indication as a low side governor failure. Without telling the PIC, he switched the governor to the emergency position. This produced a severe overspeed that demanded immediate remedial action. The PIC responded by adding collective and rolling off throttle in an attempt to compensate for the overspeed. However, while these events were taking place, the copilot reconsidered his decision to position the governor switch to emergency and decided that maybe he should not have done that. So he returned it to the auto position – again without telling the PIC. In the resulting confusion, engine and rotor rpm decreased, finally stabilizing at 6000 and 300 rpm respectively. The PIC lowered the collective and began a turn to a forced landing area. Approximately 20 to 30 feet AGL, he decelerated but did not apply power until ground contact was made. The aircraft then bounced into the air, struck the ground a second time, bounced in the air again, and finally settled to the ground in an upright position. All occupants escaped with minimal injuries, but the aircraft was destroyed. And all the while, the aircraft was healthy and responding to all control inputs exactly as it was supposed to.

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Even from the few mishap briefs related, you can see that the human element plays a predominant role in most mishaps. Unfortunately, the human element is the most difficult one to control. We can beef up a piece of structure we find to be weak, but we cannot make decisions for another or regulate his actions. If a pilot is bent on breaking the "rules," there is little we can do to prevent him from violating ARs and SOPs. At best, we can only reprimand him or resort to more strenuous punitive measures as the situation may demand. But even these actions can only be taken after the fact. So any effective solution to this problem requires the cooperation and active participation of both commanders and PICs. First and foremost, the pilot must never forget the responsibilities he assumes when he is designated PIC. Not only is his own safety affected, but also that of any other occupants who may be aboard his aircraft. And depending on the nature of his mission, additional lives may be at stake if the flight cannot be successfully completed.

Obviously, the need for professionalism is not merely desirable but mandatory. The PIC must be thorough in the performance of all his duties. These responsibilities include flight planning, preflighting the aircraft, performing engine operational and cockpit checks, and briefing crewmembers as well as any passengers. And it goes without saying that ARs and SOPs must be obeyed. Finally, there are those questions only the PIC can accurately answer. These concern his physical and emotional well being. Is he in good health? Rested? And what about his capabilities? Sure, he has met the qualifications required of a PIC. But what about the specific mission he is to fly? Is he current and proficient in all areas of flight operations associated with the mission? In the final analysis, the PIC must be willing to exercise his prerogative not to embark on a flight he feels will exceed his capabilities. Similarly, the unit commander must be careful to exercise his best judgment when appointing PICs. Failure to do so can relegate Army aviation to the Vietnam era when the designation "aircraft commander" was in vogue. This title somehow carried with it the assumption that the individual on whom it was bestowed was fully qualified and capable of performing all tasks and operations associated with any mission he might be assigned to fly in a particular type of aircraft. All too often, ACs embarked on missions that demanded performance beyond their abilities. And all too often, the results were catastrophic. The following excerpt taken from a recent mishap report sums it up best:

"AR95-1 states the commander will designate a pilot-in-command before each flight or series of flights. Blanket pilot-in-command designation, by type aircraft, conveys an expression of confidence by the commander that the individual is fully qualified and capable of performing any mission with any crew configuration in the specified aircraft. This conveyance of confidence could have the psychological effect of motivating aviators to unknowingly exceed the limits of their ability. Blanket designations also have a tendency to downgrade the supervisor's role and negate the emphasis that should be placed on the selection of pilots-in-command. Such selection should only be made after an analysis of the nature of the particular mission, its difficulty and complexity, has ascertained the experience level requirements the crew must meet."

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in May 2012.

Utility helicopters

UH-60

-L series. Aircraft crashed conducting a pinnacle landing. Two injuries. (Class A)

Fixed wing aircraft

C-12

-R series. Aircraft experienced a severe updraft/microburst during ILS landing. During recovery, both engines sustained overspeed conditions. (Class C)

-U series. Crew experienced hail while vectoring around storm activity. Post-flight inspection revealed skin damage to the nose and leading edge of both wings. (Class C)

Unmanned Aircraft Systems

RQ-7B

-System failed to climb to prescribed altitude upon launch. Recovery chute deployed when UA descended below 400 ft AGL. Vehicle recovered with damage. (Class C)

-Engine failed just prior to touchdown for landing. UA veered off the runway and sustained damage to the arresting gear and stake. (Class C)

Readers - Get an inside look into the latest technology in Army Aviation, including the Apache Block III and manned-unmanned teaming. View the Game Changer video at:

http://www.pentagonchannel.mil/recon

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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Flightfax®

Online Report of Army Aircraft Mishaps

"In flying, I have learned that carelessness and overconfidence are usually far more dangerous than deliberately accepted risks." — Wilbur Wright

This month's Flightfax is somewhat thinner than some previous months' editions. This isn't a result of lack of desire to put together Flightfax, nor is it a result of the USACR/SC Aviation Directorate staff's "beach" time. It is a direct reflection of your amazing efforts during the third quarter in reversing the trends of the first two quarters of the fiscal year. With only six Selected Aircraft Mishap Briefs for this month, the positive downward trend in reportable mishaps continues, although we can – and will – do better.

It is encouraging to see your efforts in the last month in utilizing the three-step mission approval process and providing effective "over the shoulder" support to your crews. In accomplishing complex, dangerous missions, Aviation Leaders are required to deliberately accept risks. However, as the opening quote reminds us, we cannot accept carelessness and overconfidence of our crews as they are executing the mission.

With this in mind, last month's Flightfax spotlighted the importance of pilot in command training, selection and assignment to missions, and the significant difference that dedicated PCs bring to successful and safe mission execution. This month's Blast from the Past, "No Place for Shyness," from October 1981, reminds us of the entire crew's responsibilities in safe mission execution. From pilots, to crew chief and flight engineers, to standardization officers, safety officers, platoon leaders, and commanders, when "I knew something like this was going to happen" was said, it is often those who speak up and make sure they have gotten the message across who can change that statement to "we prevented that from happening."

We know that we can reduce risk adhering to the three-step mission approval process. This allows us to be more informed before accepting risk, reducing the likelihood of aircrews being careless, overconfident, or complacent during mission execution. By continuing this positive pattern through the 4th quarter of this fiscal year, we can continue to reduce the downward trend from the first two quarters.

Until next month, fly safe!

LTC Christopher Prather, USACR/SC Aviation Director
email: christopher.prather@us.army.mil

Checklists Are Not an Option

CW5 Michael McKenny, Chief of Standards
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL

Utilization and adherence to standardized procedures contained in aircrew and maintenance checklists are part of the very foundation of the safety and standardization program for all crewmembers operating Army aircraft. Use of Department of the Army-approved checklists is paramount in reducing errors caused by lack of experience, forgetfulness and chaos. Without a checklist, all crewmembers are susceptible to errors despite their number of hours flown or years of aviation experience.

Prior to WWII, aircraft operator and crewmember checklists were nonexistent. A handful of checklists were created by individuals and used by exception. It was not until the Boeing Aircraft Company showcasing their Model 299, later to become the B-17 Flying Fortress, crashed on takeoff with Army Air Corp pilots at the controls. The cause of the mishap was due to the elevator control locks not being removed prior to flight (human error). Fielding of the first B-17's required the creation of an aircraft checklist due to the complexity of the aircraft and the amount of memorization required by the pilots. Today, Army Regulations 95-1 and 95-23 mandate the use of a Department of the Army-approved operator and crewmember checklist for manned and unmanned aircraft.

Recent deployment trends have resulted in units or individuals modifying or disregarding the use of the approved DA checklist. Units exposed to the "Fog of War" and constant combat missions such as; MEDEVAC, CAS, QRF and ISR are the most susceptible to its members modifying existing checklist procedures in order to accommodate the mission. In one example, a unit disregarded the checklist run-up procedures in order to save minutes while responding to a Troops In Contact (TIC) mission. Bypassing the checklist procedures resulted in the aircraft's navigation system performing in a degraded mode and the pilots flying without an attitude source and an inaccurate navigation solution. Although they may have shaved minutes off their response time, they elevated the risk of becoming spatially disoriented and flying to the wrong engagement area in an aircraft without accurate navigation, heading and attitude references.

During Operation Iraqi Freedom, there were numerous incidents when UAS units lacked checklist discipline. In one particular case, mission preflight checks were conducted from memory and completed in 7 minutes versus the normal 30 to 45

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minutes, and entire sections of the checklist were skipped by both the operator in the shelter and the crew chief. Consequently, this UAV experienced an engine failure as a result of inadequate engine oil, and the other UAV launched with the external power cable connected to the aircraft.

While airborne, AR 95-1 permits crewmembers to accomplish checklist items when time does not permit the use of the checklist or when its use might cause a safety hazard. Recognizing workload requirements during emergencies, critical procedural items are underlined and expected to be performed from memory. These procedures are trained through repetition in order to reduce errors when a checklist is not used. The regulation does not allow for the checklist to be modified, or disregarded at the discretion of the crewmember.

An example of an unauthorized modification to a checklist was during a DES assessment flight where it was revealed that a unit routinely deviated from the checklist by pulling the circuit breaker for the windshield wipers in a UH-72 aircraft. Their rationalization was that inexperienced PIs were inadvertently engaging the windshield wiper while selecting the landing light, causing the windshield to be excessively scratched. Unrecognized by the unit, the risk level to the crew had been elevated since the wiper system was not immediately available to the crew in the event of an unexpected rain or snow shower. The thought of pushing in the circuit breaker might be overlooked and the pilot unable to view obstacles.

Although the reasoning in all the examples given sound somewhat justified, it opens the door to unit members subscribing to the “good idea club” and devising procedures that are not standardized and, most importantly, against Army regulations. There is an established process for all Army publications to be changed. The DA Form 2028, Recommended Changes to Publications and Blank Forms is the Army’s method of correcting errors or submitting changes to Army operator’s manuals and checklists and the instructions are posted in the front of every operator’s manual and checklist.

Adherence to U.S. Army regulations for the use of aircrew and maintenance checklists is paramount to the U.S. Army safety and standardization programs. Operating today’s complex aircraft and systems require that operators comply with standardized and approved procedures. Experienced crewmembers acknowledge that crewmembers are not immune to forgetting critical flight items when a checklist is not followed. All U.S. Army Aviation professionals recognize the value of following standardized and approved procedures and compliance with Army regulations.

--CW5 Michael McKenny is the DES Chief of Standardization and may be contacted at (334) 255-1582, DSN 558.

Everybody Knew – Flightfax September 1997

As Army aviators, we've all heard it, and most of us have said it at one time or another: "I knew something like this was going to happen!" These words are almost always uttered after a breach of flight discipline results in an accident.

When an Army aviator routinely takes unnecessary risks, somebody in the unit knows about it. That was true in the following case, which happened several years ago. However, accidents from similar causes continue to this day.

The accident didn't just happen on the day the OH-58 crashed into a lake. It really began long before then. It had its roots in the kind of flying the PC had been doing for the past year – and maybe even longer. In the 12 months before the accident, four operational hazard reports (OHRs) had been filed against him in addition to at least two verbal reports about his flying.

So, a lot of people knew.

Other aviators knew

Several aviators had reported the PC for his "cowboy" style of flying. They called him a "hot dog," and some of them refused to fly with him. OHRs mentioned seeing him accelerate down a runway at 60 to 70 knots during takeoff from an airfield that was below VFR minimums. Two pilots reported him for placing his helicopter in an extremely nose-low attitude during takeoff. Another aviator – the pilot of the lead aircraft in a flight of five OH-58s – had to execute a go-around to avoid this PC's aircraft when it taxied onto the runway in front of him. The PC then brought his aircraft to a hover as the third aircraft in the flight terminated its approach, endangering the landing aircraft.

The crew chiefs knew

Some of the enlisted crewmembers in the unit enjoyed the "thrill" of flying with this PC. They liked his aggressive style of flying; they found other aviators boring by comparison.

The standardization officer, the safety officer, and the platoon leader knew

Not only were they aware of the OHRs and other reports about the PC's flying, they had heard rumors about still other incidents. They had discussed the problem among themselves, and after the second verbal OHR (the last of a total of six), they went to the acting unit commander and requested that the PC be grounded.

The unit commander knew

Although he knew about the OHRs, written and verbal, and rumors about the PC's flying habits, the commander apparently looked at each of the reports as a separate incident and never considered them as an indication of a pattern. When his staff recommended that the PC be grounded, the commander decided that verbal counseling was the better route to take, although he had grounded aviators in the past for one reason or another. He had flown with the PC several times, and each time it was a "by-the-book" flight.

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The accident

The mission was cross-country training. The aircraft took off around 0900, and the flight proceeded normally. After two stops for fuel and to eat lunch, the crew removed the doors from the OH-58 and again took off. The PC was at the controls from the left seat. As the aircraft neared a large lake, he brought the helicopter to within 5 feet of the water and began flying along the long axis of the lake at 90 to 100 knots. After about 3 minutes, the aircraft hit the water with explosive force and immediately sank.

History of flight

The copilot had been at the controls during the early stages of the mission, handling not only the flying but also the navigation and the radios. When he began falling behind the aircraft, the PC took over the controls and the radio, leaving the copilot to handle navigation.

When they took off after lunch, the PC was still at the controls and the copilot was navigating. The PC initially descended to about 30 feet AGL, although that was below the 400-foot restriction for the OH-58. The PC continued to allow the aircraft to descend as it approached the lake. He told the copilot to navigate a direct route back to the airfield and to handle the radio calls. The copilot was looking at his map when the aircraft hit the water.

The copilot managed to surface and grab hold of a piece of floating debris. Two boats reached the crash site, and the crew of one pulled the copilot from the water while the other began searching for the PC. It was several days later before Navy divers recovered the PC's body from the bottom of the lake. He was still strapped in his seat.

Why?

Why did this PC continue to fly the way he did even after he had been reported and counseled? Why did his friends delay in reporting his unsafe behavior? Why didn't the crew chiefs realize that a "thrill" could cost them their lives? Why didn't the unit commander see the reports on this aviator for what they were: not isolated incidents, but signs pointing almost inevitably to an accident?

Why didn't somebody stop this aviator before he killed himself? After the accident, he was described as "high risk." But he was also described as intelligent, bright and an aviator who loved to fly. While his fellow aviators recognized his technical proficiency in the cockpit, everybody knew he was headed for trouble. Acting on that knowledge might have saved his life.

SPEAK UP! You may know about aircrews or aircrew members who may not have four to six OHRs filed on them but are beginning to become overconfident. Sometimes it's enough to just say something like, "Is that type of flying really necessary?" or, more pointedly, "I think you're getting too aggressive. No joke." As Barney Fife always said, "Nip it in the bud!"

Tough Caring

This accident graphically illustrates what can happen when there is a lack of "tough caring." Tough caring is people caring enough about their own professional performance and the performance of other members of their unit to police themselves and their fellow Soldiers. Tough caring is also Leaders caring enough to fix accountability, tighten supervision, set standards for performance and parameters for operations and require that all operations be conducted within those parameters.

Mishap Review: Route Reconnaissance

Approximately two and one-half minutes after receiving an Engine Chip Lower message, the OH-58D's engine failed. The aircraft entered autorotation and landed hard to an unimproved area causing significant aircraft damage and two major injuries.

History of flight

The accident aircraft was part of a Scout Weapons Team consisting of two OH-58D aircraft with a mission to conduct aerial route reconnaissance and security of named areas of interest (NAIs). The crews began their duty day at 0600L and received their mission brief at 0630. Team briefs were conducted at 0700 followed by individual crew briefs, pre-flight and run-ups. The weather forecast was for clear conditions and no restrictions to visibility. Winds were variable at 02 knots with a temp of 36 C.

The flight departed at 0900L with the accident aircraft in the lead position, flying approximately 200 feet AGL and the trail aircraft flying at 300 feet AGL. The first part of the mission proceeded as briefed. The flight returned an hour and a half later to re-fuel and departed at 1040 to resume the operation. At approximately 1047L, lead announced to trail that he had received a Chips Engine Lower message on his MFD. The decision was made to return to home base. At 1049L at 150 feet AGL and 90 knots airspeed, the engine failed. The crew executed an autorotation to a soft soiled plowed field surrounded by 6- to 8-inch berms. During the landing sequence, the aircraft struck a berm resulting in separation of the forward cross tubes and a left fuselage roll after contacting the ground. The aircraft was extensively damaged and the crew sustained serious injuries.

Crewmember experience

The PC, sitting in the right seat, had more than 3800 hours total flight time, 3600 in the OH-58D with 975 as an SP/IP. The PI had over 750 hours total flight time with 680 in the OH-58D.

Commentary

The accident board determined the accident aircraft engine sustained an in-flight engine failure. There was insufficient information to determine the type of failure and the engine was sent for tear-down analysis.

All information contained in this report is for accident prevention use only.
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Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report
https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required.

Preliminary Loss Reports (PLR)

ARMY PRELIMINARY LOSS REPORT 12101

AVIATION MISHAP CLAIMS ONE SOLDIER'S LIFE

An activated Missouri Army National Guard Soldier was killed in an aviation related mishap that occurred on 2 July 2012 at approximately 1100 local in Guatemala. The 34-year-old SSG was videoing/photographing a UH-60 MEDEVAC hoist operation when he was struck in the head by a tree branch that was separated by the rotor wash. He was evacuated to a medical center for treatment where he was pronounced deceased. Local News Article

This is the **10th** Class A **Aviation Mishap** fatality in FY12 compared to **7** for the same time frame in FY11. This PLR does not identify specific root causes of this incident as the investigation is ongoing. Further details will be available at a later date on RMIS (RMIS Login Required).

Preliminary Loss Reports (PLR) are ***For Official Use Only*** and are to provide leaders with awareness of Army loss as we experience it and to point out potential trends that affect our combat readiness.

Our Army depends on you to use these PLRs to help Soldiers understand the impact of decisions made on and off duty.

The **U.S. ARMY COMBAT READINESS/SAFETY CENTER** is interested in your comments; please click here to provide feedback on the PLR. FAQs and additional resources can be found on the USACR/Safety Center website at https://safety.army.mil

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UAS Class A – C Mishap Table

	FY 11 UAS Mishaps					FY 12 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	2		1	3	W/GE	2			2
MQ-5	3		1	4	Hunter	1		1	2
RQ-7	1	14	38	53	Shadow		6	15	21
RQ-11					Raven			1	1
MAV			3	3					
YMQ-18						1			1
SUAV			1	1	SUAV			4	4
Aerostat	6	9		15	Aerostat	1	4		5
Total Year	12	23	44	79	Year to Date	5	10	21	36

As of 17 Jul 12

No Place for Shyness

If there is an emergency in the aircraft or you see someone committing an unsafe act, are you going to remain silent? And if you do speak up, will you make sure you have gotten your message across?

AR 95-1 gives the pilot in command (PC) authority for all aspects of technical operation of the aircraft. But there is no room in the aircraft for servility, and true loyalty and crew coordination means speaking up at the first sign of trouble regardless of whether it's the pilot, copilot, crew chief or a passenger.

Consider the following. A UH-1 crew was on an emergency medical evacuation mission. The copilot was on the controls and flying at 1,400 feet and 110 knots. Suddenly, an unusual vibration was felt. About 2 to 3 seconds later, a second vibration was felt, the rpm warning light came on and the low rpm audio sounded. The copilot lowered collective and scanned the engine instruments. They were normal. As power was applied to level the aircraft, the copilot realized he had a tail rotor problem. At this time, the pilot took control and the copilot told him of the tail rotor problem. For some unknown reason, the copilot's warning did not register. So rather than autorotate, the pilot contacted GCA and advised that he was making a power-on precautionary landing to a large field. Still unaware of a control problem – and with no further word from the copilot – the pilot began a series of "S" turns to lose altitude and align the aircraft for final approach. Reaching 200 feet AGL, the pilot decelerated to about 50 knots. To maintain the approach angle, he applied power and the aircraft yawed to the right. Application of left pedal failed to correct the yaw and the pilot realized he had lost all tail rotor thrust. The aircraft then spun right, hit some trees, and crashed.

When the pilot contacted GCA for the power-on precautionary landing, the copilot should have realized the pilot had not gotten his message concerning the tail rotor problem. Knowing the problem and the proper emergency procedures, the copilot should have spoken up.

Another crew took off on a night VFR round robin training mission. After flying for about 20 miles, the pilot turned back to fly around the local area because of deteriorating weather. While en route to the local area, he entered clouds at 3,000 feet MSL and descended to 2,000 feet to avoid IMC. Reaching the airfield, he made a wide downwind leg to land, encountered light scud, went on instruments and made a 180-degree descending turn back toward VMC. At this time he experienced vertigo, but rather than tell the copilot and ask for assistance, he allowed the aircraft to reach 500 feet before realizing his altitude. The copilot, who had been looking for smudge pots on the airfield, did not know the pilot was in trouble, and suddenly realized how low they were and told the pilot to pull pitch. The pilot pulled pitch but too late to prevent the crash. There is a strong possibility that the copilot could have saved the aircraft if the pilot had just spoken up when he first experienced vertigo.

In another instance, a pilot landed at a drop zone to pick up some parachute club jumpers. After takeoff and climb to altitude, the jumpmaster released a wind drift indicator, determined the wind velocity was too great for parachuting, and aborted the paradrop. As

Continued on next page

Blast From The Past II continued from previous page

the aircraft descended through 1200 feet AGL, a parachutist's reserve chute deployed out the door and the aircraft yawed sharply to the right, pitched down and rolled right. Unaware that the parachute had deployed, the pilot interpreted the emergency as tail rotor failure and autorotated. He decelerated the aircraft at 60-75 feet. However, downwind conditions, load, and the deployed chute limited the effectiveness of collective pitch and the aircraft landed hard, with the main rotor blade severing the tail boom. Neither the crew chief nor the jumpmaster told the pilots what had happened. The jumpmaster was concentrating on the jumpers and trying to fasten his seatbelt for landing. The crew chief had seen the copilot look toward the right rear and assumed he realized the problem. Furthermore, the crew chief was reluctant to say anything over the intercom as he felt it would be distracting to the aviators. Although there is no established procedure for this type emergency, the aviators should have been told what was happening within the aircraft.

True, the decision of the PC is not subject to the approval or disapproval of other crewmembers or passengers. But pretending that all is well or is going to be well may kill you! An in-flight emergency is no time for shyness … on anyone's part. Speak up loud and clear when you see something wrong – and make sure you're understood.

– Article reprinted from Flightfax 14 Oct 81

Manned Aircraft Class A – C Mishap Table

	Month	FY 11					FY 12			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities
1st Qtr	October	0	1	4			2	2	6	1
	November	0	2	14			1	1	10	0
	December	2	1	5	4		2	2	5	4
2nd Qtr	January	0	1	8			2	0	9	0
	February	1	1	2			2	1	6	0
	March	2	1	7			1	2	10	0
3rd Qtr	April	2	1	12			2	1	4	4
	May	2	1	5	1		1	0	2	0
	June	3	1	4	2		1	0	2	0
4th Qtr	July	1	3	14	2		2	1		1
	August	2	2	10	2					
	September	0	0	5	0					
	Total for Year	15	15	90	11	Year to Date	16	10	54	10

As of 18 Jul 12

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Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in June 2012.

Utility helicopters

UH-60

-A series. Aircraft was being positioned for parking during increasing wind/gusting conditions when one MRB made contact with the ground. (Class C)

Observation helicopters

AH-6M

-Aircraft experienced a rotor over-speed (114.1%) during a ground maintenance run-up. (Class C)

OH-58D

-During mission, a Chips Engine Low message illuminated followed by complete engine failure. Upon ground contact following auto rotation, the aircraft overturned. Both pilots sustained injuries and the aircraft was destroyed. (Class A)

Unmanned Aircraft Systems

RQ-7B

-System experienced an engine failure during a training iteration. Recovery chute was deployed and the UA was recovered with damage. (Class C)

-System engine degraded to “IDLE” during launch and the UA descended to ground impact with damage. (Class C)

Aerostat

-PGSS site personnel reported a “dust devil” wind gust that ripped out the mooring station anchor cables and overturned the platform. (Class B)

“Thank you, Paula!”

We at the U.S. Army Combat Readiness/Safety Center would like to take a few lines of Flightfax to show our appreciation to a dedicated employee. Mrs. Paula Allman has been the senior aviation writer-editor of Knowledge magazine and the managing editor of Flightfax since July 2002. She developed a tremendous relationship with the field and other DA agencies and catapulted Flightfax and Knowledge to a higher standard. Paula also became the reviewing editor for the newly revised Flightfax Online this past year. This month, she retires from Civil Service. For Paula’s 32 years of service to the U.S. Army, U.S. Army Combat Readiness/Safety Center, and especially Flightfax, we say, “Thank you, Paula. No one can replace you.” ☺

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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Number 16 August 2012

Flightfax®

Online Report of Army Aircraft Mishaps

Deployment Trends and Training Mitigations

Of the 19 Class A aviation manned mishaps that have occurred in fiscal year 2012, 14 (74%) have been in support of Operation Enduring Freedom. Deployed units are without question conducting commendable work. Combat is inherently dangerous and unpredictable events occur, yet still Aviation Leaders need to identify hazards and take immediate action to reduce that risk. In this Flightfax, we are taking a closer look at OEF and OIF/OND accident trends to share lessons learned resulting from accident investigations, and provide some thoughts on mitigation strategies for all Aviation units that prepare to conduct contingency operations.

From 2002-2012, 72 of 264 (27%) Army Class A accidents occurred in support of OEF, while 74 of 264 (28%) occurred in support of OIF/OND. These 10 year trends are in sharp contrast to the 14 OEF Class A accidents of 19 Class A Accidents for the Army (74% occurring in OEF) for FY12. In review of the accident case files and considering the three causal categories (Human Error, Materiel, Environment), 13 of the 14 OEF accidents were attributed to human error, and one to materiel failure.

Flightfax has presented articles on Human Factors and Error to assist Aviation leaders in seeing and mitigating human error causes, and will continue to provide articles in future editions. For this edition, we'll focus on the 9 of 13 human error cases where disorientation due to loss of visibility and/or visual cues were contributing factors. In August 2011, PEO Aviation released a report on recommendations on terrain awareness aspects of rotorcraft mishaps in degraded visual environments (DVE). Degraded Visual Environment is defined in the Initial Capabilities Document on Aircraft Survivability (dated 23 February 2011) as reduced visibility of potentially varying degree, wherein situational awareness and aircraft control cannot be maintained as comprehensively as they are in normal visual meteorological conditions and can potentially be lost. The report's first recommendation for mitigation was to place higher emphasis on aircrew training both in-flight and in simulators, focusing on training to standards, piloting in accordance with Aircrew Training Manuals, adhering to policies, and training as the Army fights. Continuation training should include additional training for Instrument Meteorological Conditions / Inadvertent Instrument Meteorological Conditions (IMC/IIMC) and use of the Heads-up Display (HUD).

Clearly, the accident rate since last year, when the report was released, would indicate that this training recommendation is just as important, if not more so, today. While Initial Flight Training, Real-Time SA to the Aircrew, Objective Design and Considerations, and Aircraft Modernization initiatives remain high priority and being diligently worked throughout the Aviation Enterprise, Aircrew Member Training can be an immediate mitigation for Aviation leaders in the field. The 2011 report highlighted that crewmember training and proficiency is essential to reducing accidents. At the onset of the 2003 offensive into Iraq, a noticeable increase of accidents occurred during the mobilization and initial invasion. The aircrews were expected to maneuver the aircraft at or near the maximum gross weight limits with decreasing power margins and often

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in a severely limited visibility environment. The landing sites were in unimproved areas, much like OEF continues to be. The characteristics of these areas are often associated with fine powder or loose sand resulting in complete loss of all visual cues during landing. The obscured and rugged surface condition can easily result in damage or destruction of the aircraft. Factors that may contribute to these accidents may be linked to inadequate aircrew training for flight operations in new environments. Since 2003, accident rates are indicating a downward trend (with a slight increase for FY12), but still above the pre-2003 rate.

The decrease in accident rates in these austere and high-OPTEMPO environments may be attributed in part to increased proficiency of the aircrew members due to multiple rotations into theater and continuous exposure to the environment. This indicates that aircrew member training may be an effective mitigation. Specific training recommendations include:

1) Continuation Flight Training. Recent experience and currency of flight crews affect their ability to safely operate the aircraft in a limited visibility environment. This was a factor in three of the accidents in OEF in FY12. Many garrison and home stations do not have brownout training landing sites. Further, often the aircraft is not flown at or near maximum gross weight during training operations or in simulators. Unfortunately, frequently these training conditions cannot be fully replicated in the actual aircraft until deployment. With this in mind, units should evaluate the use of simulation devices to provide interim training if training cannot be conducted in the aircraft.

2) IMC/IIMC Training. A consistent trend of mishaps attributed to flight into and within IMC and low contrast/low illumination conditions, with many being under night vision devices (9 of 14 accidents in OEF FY12). Flight crews often fail to properly execute the IIMC task correctly and commit to instrument flight; they attempt in vain to stay in visual contact with terrain or other aircraft in the flight. This is a consistent theme with the history of aviation, and as the focus changes to address new threat and missions, basic skills and tasks can easily be overlooked and individual proficiency diminished. Continual emphasis should be placed on established IIMC avoidance and instrument recovery procedures. We've seen this year that special emphasis should be placed on unusual attitude recovery and crew coordination training so that crews are better prepared to detect and subsequently recover from unusual attitude especially when conditions increase the probability and likelihood of occurrence that could lead to a loss of aircraft SA.

3) Day and Night Heads Up Displays (HUD) Training and Standardized Procedures. The use of HUD is not mandatory for flight operations in the cargo and lift communities. This year's accident data strongly indicates that a majority of limited visibility accidents occurred during night operations during use of night vision devices. The mandatory use of HUD should be considered in units if feasible, since HUD provides heading, velocity, drift, altitude and attitude indications for the aircraft. While the HUD in the cargo and lift aircraft has some latency, consider that having some heading, velocity, drift, altitude, and attitude indications is far superior to having none, enabling focus to remain outside the aircraft and now relying solely on cross scans to detect changes when crew focus is riveted on trying to find other aircraft in the formation or searching for terrain features. Getting at the mitigation for reduced visibility of potentially varying degree - wherein situational awareness and aircraft control cannot be maintained as comprehensively as they are in normal visual meteorological conditions and can potentially be lost – is multi-faceted in the aviation enterprise and variable according to aircraft type and mission. Solution effectiveness across the fleet and in Task Forces is difficult, and requires Aviation Enterprise support. However,

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commanders and leaders preparing their crews for unforgiving deployed environments can provide immediate mitigation in a renewed emphasis on training. Training should focus on adherence to established policy and guidance, along with additional training opportunities to evaluate pilot judgment, decision making, piloting techniques, and maneuver execution specifically in these environments.

Until next month, fly safe!

LTC Christopher Prather USACR/SC Aviation Director
email: christopher.prather@us.army.mil

	Total Army			Afghanistan			Iraq		
FY	Class A	Class B	Fatal	Class A	Class B	Fatal	Class A	Class B	Fatal
2002	28	15	19	5	2				
2003	29	18	35	6	1	5	13	7	4
2004	24	18	12	2	2	1	17	6	6
2005	30	20	40	5	1	19	9	6	6
2006	23	17	36	6	0	13	7	6	17
2007	29	14	39	6	0	8	8	6	22
2008	19	16	17	2	2	2	9	7	9
2009	25	24	13	7	10	1	6	5	3
2010	23	13	28	12	5	18	4	1	5
2011	15	15	15	7	9	3		1	
2012	19	12	11	14	7	5	1		
Total	264	182	265	72	39	75	74	45	72

	Total Army Class A by Aircraft Type				Afghanistan Class A by Aircraft Type				Iraq Class A by Aircraft Type			
FY	UH-60	CH-47	AH-64	OH-58D	UH-60	CH-47	AH-64	OH-58D	UH-60	CH-47	AH-64	OH-58D
2002	5	7	9	5	1	2	2					
2003	10	5	10	3	1	4	1		4	1	6	2
2004	5	2	8	9	1		1		3	1	4	9
2005	8	3	14	3		2	2	1	1	1	5	2
2006	10	3	5	1	2	2	2		6		1	
2007	8	3	9	5		2	4		3	1	2	2
2008	5	5		5		1		1	2	3		2
2009	10	1	2	9	1	1	1	3	5			1
2010	8	5	3	4	4	4	1	2	1			2
2011	2	3	3	5	2	2	2	1				
2012	7	4	3	2	5	4	3	1	1			
Total	78	41	66	51	17	24	19	9	26	7	18	20

Note 1. Of the 72 Class A accidents that occurred in Afghanistan FY02 to present, 33 occurred during the day, 37 under NVD, and 2 were night unaided mishaps. 55 were attributed to Human Error, 13 Materiel Failure, with 4 unknown.

Note 2. In FY12, of the 19 Class A aviation manned mishaps that have occurred, 14 (74%) have been in Afghanistan. 13 of the 14 were human error with 1 materiel failure. 9 mishaps were NVD and 5 were day. Operations in unimproved HLZs (8) posed the greatest risk with dust contributing to 3 mishaps, uneven terrain/slope contributed to 4 mishaps, and 1 pinnacle operation mishap. Power management/ excessive maneuvering was related to 3 mishaps; 1 spatial disorientation due to low illum/contrast; 1 drive shaft failure due to improper maintenance; and 1 engine failure have occurred to date.

Helmet Display Unit: "To wear or not to wear? That is the question."

CW4 Thomas Nowlin, Attack Branch
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL

Discussion is occasionally generated on the topic of wearing the Helmet Display Unit (HDU) in the AH-64. In light of recent incidents in the field, this discussion has returned to the source, and requires some clarification. There are two different camps on the subject of wearing the HDU. There are some who are proponents and some who are not. The intent of this article is to help clarify whether or not and under what conditions the crewmembers should or must wear the HDU. Since you obviously wear the HDU when flying NVS (night vision system) conditions and are restricted from wearing it underneath your NVG (night vision goggles), this article primarily discusses the use of the HDU during day or night unaided conditions.

Let's first begin with a little bit of history on the subject. Prior to the fielding of the AH-64D there was no requirement to wear the HDU during day or night unaided flight conditions in the AH-64A. Some pilots chose to wear the HDU, while others elected not to. Based on extensive research and investigation into the causal factors of Apache accidents, the decision to "mandate" the use of the HDU during all flight conditions was made when fielding the AH-64D. However, some leeway was given to the PC so that he/she could decide to not utilize it based on extenuating/un-safe conditions. Those of us who were around for the transition from the AH-64A to the AH-64D probably remember the emotions running high when the requirement appeared in the AH-64D Aircrew Training Manual (ATM). Most AH-64A crewmembers were not fans of having to wear the HDU at all times. I can remember, as a young aviator at the time, asking my instructors, "Why wouldn't you want to wear this thing? It's the best thing ever." Having a few years and flight hours under my belt at this point in my career, I feel I can now approach this topic with the utmost objectivity.

Let's now talk a bit about what the requirement actually is. The only manual or document that places any requirement on wear of the HDU is TC 1-251. Let's look at what it says. On page 4-2, Paragraph 4-1c.(5)(g) "Pilot on the controls (P*) and pilot not on the controls (P) fitted with a bore-sighted helmet display unit (HDU). (The PC may approve instances when wearing an HDU during task performance is not desired.)" This statement is under Common Conditions in Chapter 4. Additionally, in 27 different individual 1000 series tasks, under the Conditions for the task it states, "with the pilot on the controls (P*) fitted with a bore-sighted helmet display unit (HDU)." This equates to 34% of all 1000 series tasks and 77% of all 1000 series PERFORMANCE tasks. Common conditions, like common standards, apply to all tasks unless otherwise specified in the individual task.

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The intent being that the HDU is “fitted” over the eye and in use, not just attached to the helmet. The common standard states that the PC may approve instances when wearing the HDU is not desired. When is that? Various studies in aviation on the use of heads up displays (HUD), have identified pros and cons on their use. The pros are obvious in that the P* does not have to look in the aircraft for flight critical information. He/she is allowed to maintain visual contact with the environment outside of the aircraft while still receiving critical flight information. Some cons are fixation on a particular piece of symbology , attention capture or tunneling, which is the unwanted tendency of the P* to pay too much attention to the presentation in the HDU and missing events in their field of vision outside of the aircraft, and lastly symbology obscuring critical objects in the outside scene. In all of the studies the conclusion was that the pros drastically outweigh the cons and that with training all of the cons could be easily overcome.

With every regulation there is intent behind the writing. Let’s dive into intent. The intent behind allowing the PC the option to approve when not to wear the HDU is to give the crew some flexibility for when the HDU may be causing a hindrance. Some examples of such instances would be: during IMC conditions when the primary references are inside the aircraft via the MPDs and there are no outside references due to inclement weather, when wearing NVGs, and when the CPG is using other displays for targeting. Instances such as your belief that pilot’s have become too dependent on the HDU and have lost the ability to be able to “just fly the aircraft” would not be considered very valid instances. Unfortunately, those who want to skirt the regulation for little reason other than laziness and indiscipline threaten the flexibility that the intent allows us to maintain. We are still losing aircraft and crewmembers to controlled flight into terrain in instances where the systems provided by the aircraft are not being used to their fullest extent, the HDU being one of these systems.

The intent of the common condition and standards in the ATM is to allow crewmembers some flexibility on when to use the systems provided by the aircraft, and when not to use them because they pose a safety hazard. The pilot-in-command remains the ultimate decision maker in that process. This is definitely one of those instances where a little common sense goes a long way! If we continue to have crewmembers making ill advised decisions on such matters, then we become forced to write regulations that do not allow aircrew flexibility. The HDU should be fitted, bore-sighted, utilized, trained and evaluated in all modes of flight and removed only at the PIC discretion for the safety of the crew or the use of another system.

--CW4 Thomas Nowlin, DES Attack Branch, may be contacted at (334) 255-1582, DSN 558.

Mishap Review: NVG Troop Extraction

While conducting a NVG troop extraction under zero illumination conditions, the CH-47D landed hard to an unimproved dusty HLZ causing significant aircraft damage and minor injuries to the crew.

History of flight

The mission was a NVG two-ship extraction of ground forces from an HLZ approximately 38 miles from home base. The two CH-47Ds were assigned an aerial weapons team (AWT) of two AH-64Ds as escort. The crews began their duty day at 1800L. Preflight's were conducted at 1830 with a Go/No-Go brief at 1900L. The mission was determined to be high risk due to low illumination, mission complexity , and crew experience. Risk mitigations included availability of IR illumination rockets and the requirement that the PC be on the controls for the HLZ landing. The mission was briefed to, and approved by, the DCG-O. The weather forecast was for clear conditions and unlimited visibility with winds 290/05 knots. Temperature was +12 C and PA of +5900 feet. The illumination for the flight was 0%.

The flight departed at 2000L with the accident aircraft in the lead position. En route to the pickup point, the aircrews received a new HLZ location from the ground unit when it was determined the original site would not support both aircraft. Upon arrival at the designated HLZ at 2030L, the flight conducted an approach and executed a go-around due to slope conditions. The AMC requested a new HLZ. A site was located by the AWT and the ground unit relocated to the new pickup point. At 2050L, after making an initial pass and determining the site was suitable, the flight attempted to land. Chalk one executed a go-around due to dust. Chalk two landed at the HLZ and departed with their pax. After allowing the dust to settle following chalk two's departure, chalk one attempted another approach resulting in another go-around. Chalk one then requested the ground unit move to another landing site with less dust. An alternate site was located by the AWT and the ground unit occupied. At 2120, while on approach to the new HLZ, the aircraft landed hard resulting in extensive aircraft damage and minor injuries to four crewmembers.

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Crewmember experience

The PC had more than 1770 hours total flight time, 1289 as a PC, with 233 NG. The PI had 648 hours total time with 81 NG hours. The FE, right side cabin entrance door, had more than 1400 hours, 523 NG, the CE, located at the ramp, had 99 hours, 33 NG and the door gunner, left side cabin door gun position, had 64 hours total with 10 hours NG.

Commentary

The accident board determined that during the approach to the LZ, the PC allowed the rate of descent and ground speed to become excessive for the conditions resulting in the aircraft touching down with an estimated 400-800 fpm rate of descent and 22-26 knots ground speed onto the hard packed, up sloping, and terraced LZ. Additionally, the PI, not on the controls, failed to notify, announce, or otherwise inform the PC of the excessive rate of descent and airspeed condition during the approach. As a result, the aircraft impacted the ground causing damage to the aft landing gear, aft cabin section, and aft pylon section.

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Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report
https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required

RESULTS OF THE ARMY ROTORCRAFT TERRAIN AWARENESS AND WARNING SYSTEM (ARTAWS) WORKING GROUP dated 11 AUGUST 2011 can be found on the USACR/Safety Center Aviation Directorate website:

https://safety.army.mil/LinkClick.aspx?fileticket=BxAJ-QsmMos%3d&tabid=2305

Class A – C Mishap Tables

Manned Aircraft Class A – C Mishap Table										
	Month	FY 11					FY 12			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Army Fatalities
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	November	0	2	14			1	0	10	0
	December	2	1	5	4		2	2	6	4
2nd Qtr	January	0	1	8			2	0	11	0
	February	1	1	2			2	1	6	0
	March	2	1	7			1	2	11	0
3rd Qtr	April	2	1	12			2	1	5	4
	May	2	1	5	1		1	0	3	0
	June	3	1	4	2		1	0	2	0
4th Qtr	July	1	3	14	2		4	3	9	1
	August	2	2	10	2		1	1	2	0
	September	0	0	8	0					
	Total for Year	15	15	93	11	Year to Date	19	12	74	10

As of 16 Aug 12

UAS Class A – C Mishap Table									
	FY 11 UAS Mishaps					FY 12 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	2		1	3	W/GE	4	1		5
MQ-5	3		1	4	Hunter	1		2	3
RQ-7	1	14	38	53	Shadow		5	18	23
RQ-11					Raven			1	1
MAV			3	3					
YMQ-18						1			1
SUAV			1	1	SUAV			5	5
Aerostat	6	9		15	Aerostat	1	4		5
Total Year	12	23	44	79	Year to Date	7	10	26	43

As of 16 Aug 12

What commanders can do for accident prevention

Commanders have the responsibility of assuring the safety of all personnel and equipment under their command. This responsibility goes with the territory whether commanders are aviation rated or not. To succeed, commanders must have a complete knowledge of the capabilities of their personnel. Accident files contain many instances of junior grade and warrant officers flying into accidents because someone of higher rank wanted some particular task accomplished under circumstances beyond the capabilities of the aircrews assigned to the mission. Young (and not so young) aviators are known to waive judgment and attempt to exceed their limitations or the limitations of their aircraft when this occurs.

You can provide clearly defined policies and objectives for aircraft accident prevention. By your attitude and example, you can generate the enthusiastic professional approach to flying necessary to accomplish your missions.

You can assure that training does not end for your aviation personnel simply because they have graduated from flying or other schools and have been rated or awarded aviation occupation specialties. Schools can only provide instructions in the fundamentals of skills and sufficient practice to provide a sound basis on which further training and experience can build greater proficiency. This training and experience **must** be provided at unit level.

It is a proven fact that no commander has the time to personally plan, implement, and carry out a full-time aircraft accident prevention program. Commanders must delegate certain authority to staff officers and supervisory personnel within their command. Many accidents are the result of inadequate direction and control in this chain of command. When such accidents occur, they indicate operational weaknesses, which require corrective action in the selection, training, and supervision of those to whom command authority is delegated.

You can continuously review your accident prevention program by assessing the following points:

- Do all personnel know our prevention efforts are enthusiastically supported by me, that all activities receive my personal interest, and that I closely monitor the results?

- Do all members of the command understand that education, continuous training, and close supervision are essential to our prevention efforts?

- Was my aviation safety officer selected on the basis of experience, ability, and education in the field of aviation safety?

- Does he report directly to me? Does he successfully accomplish assigned missions? Are his/her methods effective?

Continued on next page

Blast From The Past continued from previous page

- Do we have an effective system for exposing operational hazards? Are appropriate actions taken to eliminate hazards? Do all personnel understand and appreciate the advantages of hazard reports?

- Are prevention council meetings regularly scheduled to discuss potential problem areas? Do the appropriate staff officers fully participate?

-Are regularly scheduled safety meetings conducted for crewmembers and maintenance personnel? Do all attendees participate freely in these meetings?

Command attention to the following points will help to prevent accidents, particularly the repeaters, in all units.

- Remember that **any** aviator, under the proper combination of stressful circumstances, may commit errors leading to an aircraft accident. There is no pilot error "type." The safety-minded commander will be alert to changes in the behavior of his/her aviators as they react to the stresses of flying.
- Be firm with aviators whose accidents were caused by pure carelessness, inattention or willful misbehavior. Experience has shown that only positive corrective actions will prevent them from repeating.
- Closely supervise aviators who have just had pilot error accidents.
- Be very selective in appointing aviators with less than 150 to 200 hours pilot time since graduation from flight school as instructor pilots. Exercise extreme care in reinstating IP orders once they have been revoked.
- Carefully guide those pilots who are eager to excel, to succeed, and to accomplish missions at any cost. These can be desirable qualities, but, without proper guidance, this type of eagerness can adversely affect an aviator's judgment. It is also wise to question your own attitude in this regard.
- Supervise aviators with one or more Class C mishaps caused by pilot error as closely as if they had been Class As. The difference is often measured in inches or seconds. The mistakes involve are often identical.
- Carefully evaluate and supervise aviators who have had personal error accidents but will not admit to themselves or others that the fault was their own. Since they do not blame themselves, they do not learn a lesson and will continue in their erroneous ways.
- If an aviator's accident is suspected of involving lack of experience, proficiency, or currency, he will very likely repeat it if faced with the same situation without being given additional guidance, training, and practice.
- Be alert to the opinions of each pilot's ability, as expressed by other pilots. When one aviator says of another, "He is an accident waiting to happen," it is usually correct.
- Examine your own aviation accident prevention program.

Reprinted from Flightfax dated 4 Aug 1982

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in June 2012.

Utility helicopters

UH-60

-A series. Soldier on the ground was fatally injured when struck by a tree branch knocked loose by rotor wash. (Class A)

-A series. Pilot Trainee sustained an onboard injury (twisted knee) while securing the left-side gunner's window with the aircraft operating. (Class C)

-M series. While advancing PCLs both engines went into lockout resulting in over speeds. (Class B)

-M series. Preflight inspection revealed FLIR lens damage. Aircraft had conducted numerous dust landings the night prior. (Class C)

-L series. Rotor drooped departing refuel. Aircraft impacted ground barriers and sustained damage to the nose area. Three minor injuries. (Class B)

-L series. Aircraft sustained damage to the right side lower chin bubble and nose section of the airframe during NVG environmental training. (Class C)

Observation helicopters

OH-58D

-Aircraft experienced a mast over-torque condition (136%/2 sec) and Ng exceedance (108%) during an APART simulated engine failure. (Class C)

-Crew was conducting VMC approach to an HLZ when they reportedly encountered rotor-wash from an operating CH-47 aircraft. Ng over-speed occurred (108%/1.25 sec). Aircraft landed and shutdown without further incident. (Class C)

OH-58C

-Aircraft contacted the ground during and evaluation autorotation. Aircraft came to rest on its side. (Class A)

Attack helicopters

AH-64D

-Crew experienced uncommanded movement of the turret during ground taxi resulting in damage to the gun mount and turret. (Class C)

-Post flight inspection revealed a hole in the stabilator, reportedly as the result of a "zeus" fastener that had separated from the tail rotor panel during flight. (Class C)

Cargo helicopters

CH-47D

-Aircraft landing gear made contact with rocky terrain during a landing to an unimproved LZ. During emergency shutdown, the front main rotor tips made ground contact as well. Additionally, the aircraft sustained damage to a fuel cell. (Class B)

Mi-17

-Aircraft rotor drooped during approach to a pinnacle during a resupply mission. Aircraft sustained significant damage after overturning onto its right side and coming to rest inverted. (Class A)

Fixed Wing aircraft

UC35B

-Aircraft encountered a lightning strike during flight and sustained associated instrument failures. Aircraft was landed without further incident. (Class C)

Selected Aircraft Mishap Briefs cont.

Information based on Preliminary reports of aircraft mishaps reported in June 2012.

Unmanned Aircraft Systems

MQ-1C

-Crew received an Engine Low oil pressure indication and executed RTB procedures for landing. Engine failed as UA was in descent. UA touched down nose-low and the landing gear collapsed resulting in extensive damage to the airframe and payload sensors. (Class A)

-System was launched with normal indications for departure and climb-out, after which it entered an un-commanded descent and impacted approximately one mile from the runway. (Class A)

-System contacted mountainous terrain during a controlled descent to land. UA reported as destroyed. (Class A)

-Two UAS vehicles made contact while in operation on the active runway of an uncontrolled airfield. One vehicle was moving into position for take-off when it collided with a vehicle that had just touched down. (Class B)

MQ-5B

-Crew experienced 50-kt winds during climb out and elected to program the system to return for landing. The UA struck a T-wall barrier approximately 200 feet short of the runway during descent and sheared the landing gear. (Class C)

WARNING

"Combat situations do not negate aerodynamic principals nor aircraft limitations"

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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Number 17 September 2012

Flightfax®

Online Report of Army Aircraft Mishaps

"Telling people what to do to be safe is not as effective as helping them understand the basic limitations that affect all humans." - Craig Geis

To date in fiscal year 2012, 95 percent of the Class A accidents have been attributed to human error. The percentage keeps increasing this year, so perhaps parroting a percentage once again this month is ineffective. Perhaps a better way of effectively communicating this trend is by stating that our aircraft are not failing us – we are failing our aircraft. And we are failing ourselves.

In an effort to assist Aviation leaders and Aviators, Flightfax, including this edition, has this year focused five editions with human factors lead articles. As Mr. Geis points out "Why We Do What We Do" beginning on page 2, we are not attempting to tell you how to prevent accidents, since you already know how to do that. The resources we have been providing are intended to help our readers understand *how* human performance errors occur.

CW5 Papesca takes the approach of understanding *how* and *why* aviators have decided in some instances to fly a potentially unhealthy aircraft to the nearest Forward Operating Base when faced with a land as soon as possible situation. He goes on to cover how our Aviators perceive the situation when they make those decisions, and their personal assessment of the risk, and sometimes their erroneous assessment of probability of success. Naturally, hindsight is 20/20, so it is relatively easy to assess one of these decisions as "wrong" when the results are catastrophic. Understanding that we are all actually creatures of habit, CW5 Papesca reminds us of the "habits" (standards) that can be life-saving when our limbic system kicks in and executes immediate action.

Something Old, Something New. With that, this month's edition of Flightfax marks 40 years! During the week of 22-28 Sept 1972, the first Flightfax replaced the "Weekly Summary." It was then "designed for easier readability, Flightfax will carry the same mishap data as the old Weekly Summary, along with the facts about the week's flight activities …will further the cause of flight safety." Today, as a monthly newsletter, the original Flightfax intent has not changed. While Flightfax may fall into the "something old, something new" category, we certainly aim to keep it "something relevant." If you have any suggestions on how to keep it relevant for you, give us a shout.

PRELIMINARY ARMY AIRCRAFT MISHAP DATA

USAAAVS FLIGHTFAX

22-28 SEPTEMBER 1972

weekly summary

SOMETHING OLD, SOMETHING NEW

Presenting Oral Digh, Chief Adviser on Matters of Aviation, who expects you to GIVE A HOOT

LOSS OF COMBAT EFFECTIVENESS FROM THIS WEEK'S MISHAPS

FATALITIES: 2
INJURIED: 0
AIRCRAFT LOSSES: 1
ESTIMATED COSTS: $489,975

U.S. ARMY AGENCY FOR AVIATION SAFETY FORT RUCKER, AL 36362

Happy Birthday Flightfax!

Until next month, fly safe!

LTC Christopher Prather USACR/SC Aviation Director
email: christopher.prather@us.army.mil

Introduction to the Science of Human Factors: Why We Do What We Do

By Craig Geis

"It rarely matters what we tell an adult to do, it only matters what that person perceives the situation to be at that final moment when they make a decision, their personal assessment of risk, the probability of success, and the consequences of failure."-Craig E. Geis

Part One

This is the first of a four part series of articles. Throughout the series I am not going to tell you what to do to prevent accidents. You already know that. What I am going to do is help you better understand the science of human factors which simply stated is the study of the human capabilities and limitations that give rise to human performance errors.

The brain is fundamentally a lazy piece of meat – or a very efficient computer; depends on your perspective. Although the brain is always active to some degree, it doesn't waste energy. This is why there is a striking lack of imagination in most people's visualization of a beautiful sunset. It's an iconic image we are all familiar with, so the brain simply reactivates old memories of this sort of scene. Think of a sunset and you get an instant recall. But if you imagine something that you have never actually seen, like a sunset on the planet Pluto, the possibilities for creative thinking become much greater because the brain can no longer rely on connections shaped by past experience and it must think and imagine. Our brain wiring and our behavior are shaped by past experiences.

It doesn't matter if you fly a plane, drive a car, answer phones, or raise a family; the principles are exactly the same. If you follow this series of articles you will begin to look at human behavior in a whole new way.

You have all read enough articles on human factors to realize the general approach has been to "tell" people what to do in order to be safe and not succumb to human error. We are human, we are fallible, and we will make mistakes. What we need to understand is ***why*** we make them and then we can better choose ***what to do*** about it.

I know I shouldn't fly under certain weather conditions; I know not to talk on a cell phone and drive; I know I should use the maintenance manual when I work on an aircraft. I don't need someone to tell me that. Observable fact shows that this approach is not reducing or eliminating accidents and incidents. In fact every organizational safety program in one way or another "tells us what to do and what not to do." The recommendations are all good and come from years of lessons learned the hard way. But ***why*** isn't this working? Here's why:

Decisions come from the processes that go on in our brain, which we'll liken to a house.

In the basement we have the brain stem, which controls basic instincts such as reflexes, instinctive survival, and self-preservation. It controls those instinctive reactions indispensible to the preservation of life. It is also called the primitive or lizard brain. It operates on an unconscious level.

The main floor of the 'house' is the mid-brain, also known as the limbic system or our center of emotions. The limbic system operates by signaling the release of hormones and neurotransmitters in response to threats, and is also interconnected with the pleasure center which plays a major role in learning and the continuation of successful behavior patterns. The limbic system is tightly connected to the third brain and also operates on an unconscious level. It only takes 80 - milliseconds (instantaneous) for the limbic system to detect a threat, perform

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an assessment, and begin releasing stress hormones.

The upstairs is our cerebral cortex or thinking brain. It has many functions but the most important function occurs in the front part of the brain called the prefrontal cortex. In terms of human factors this area of the brain is involved in the process of acquiring knowledge by the use of reasoning, intuition, or perception and in the expression of personality and appropriate behavior. The signals that reach the limbic system in 80 milliseconds don't reach the prefrontal cortex for 250 milliseconds. This means the body responds before we are even consciously aware of what the threat is. This is an important concept to remember because in later articles we will look at what happens in an emergency situation when we are caught unprepared.

For example when we are unexpectedly startled by someone, the limbic system immediately reacts by releasing hormones to increase your heart rate, and your muscles react to provide defensive action before you even see who it is. Approximately 170 milliseconds later your prefrontal cortex (thinking brain) gets the signal and makes a determination as to whether the person is an actual threat. If the signals could reach both areas of the brain simultaneously and the individual was not a threat, then you would not be startled. The activity of the prefrontal cortex (thinking brain) is slow and energy intensive. The limbic system is fast and has evolved for immediate action.

We said earlier that our brain wiring and our behavior is shaped by past experiences. Wiring takes place from learning. Connections within the nervous system are made and our actions, behavior, and decisions are unconsciously guided to what has worked for us in the past. We are all actually creatures of habit.

Our behavior is then guided by both conscious and unconscious processes. Unconscious actions are generally the result of well established habit patterns that have been ingrained through repetition. Once these highly practiced procedures become automatic (vs. controlled) it results in an absence of conscious mental effort which is usually the desirable outcome of training. The advantage is that it allows for the fast, smooth execution of a task. It also frees up attention resources and working memory (thinking brain) so we can focus on more important or situationally critical things.

The disadvantage is that we have no conscious control of accuracy and timing and our behavior is often led or mislead by cues.

If you drive home the same way from work every day do you think about the turns you make? Are you really aware of all the buildings you pass, other cars, how many lights you stop at? Do you really think about performing routine tasks on a daily basis? No, that's the unconscious brain working for you. Life would be too complex if the brain had to consciously think about everything. With practice even extremely complex skills are turned into unconscious processes. Aerobatic pilots or high performance athletes executing very complex tasks don't think about them. In fact when they do, thinking interferes with the finely established habit patterns.

The unconscious brain doesn't have to look at everything to process it. It works quickly on a need-to-know basis. It scans quickly for key information and fills in what it need from what is stored in Long Term Memory. It is fast and efficient.

In the articles to follow we will look at different individual human factor principles. Please feel free to send comments or suggestions for future topics.

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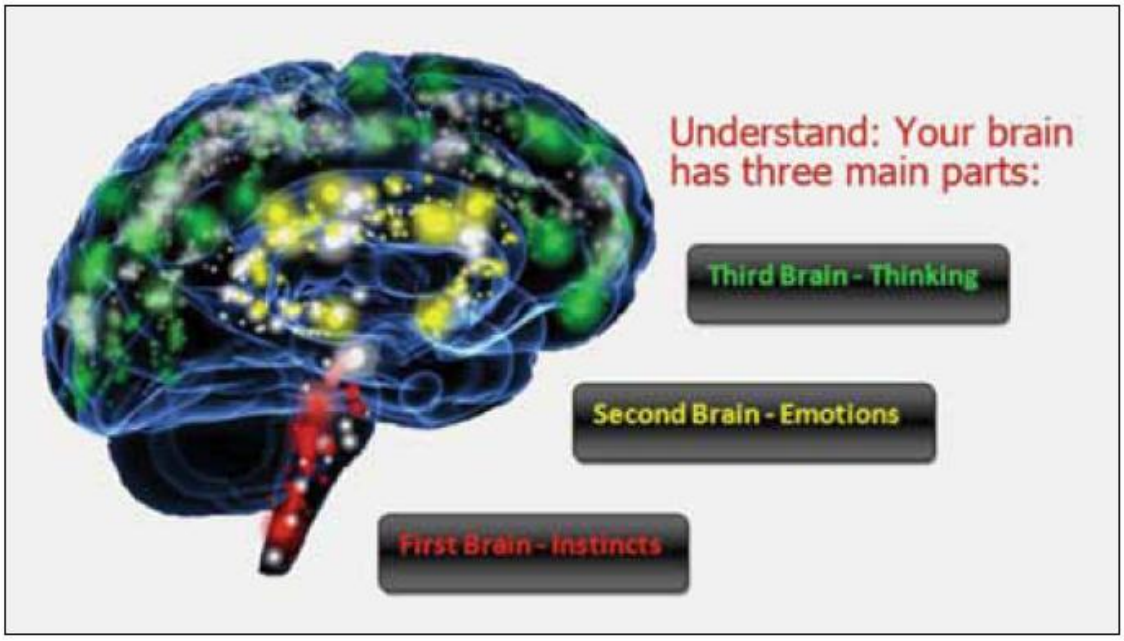
Key Points to remember:

1. Human Factors pertain to everyone regardless of our job or duties.
2. Telling people what to do to be safe is not as effective as helping them understand the basic limitations that affect all humans.
3. Past experience, success and failure, wire the connections in the brain and allow us to make most decisions smoothly and unconsciously.
4. The brain can be divided into three basic components: instincts, emotions, and thinking.
5. The unconscious, emotional part of the brain doesn't have to think to process information. It works fast on a need-to-know basis, and scans quickly for key information, then fills in the rest based on past experience. It is highly efficient.
6. The conscious, upper level of the brain is slow and methodical but is an excellent problem solver if time is available. It requires input from the emotional center to make sound decisions.
7. Most of our responses to situations occur before the thinking brain even knows what's going on and has a chance to "weigh in."
8. The key human factor limitation is that we do not monitor unconscious behavior and if a current situation is slightly different from previous times, our behavior may not be appropriate for the situation.

Craig Geis is Co-Founder of California Training Institute and formerly Geis-Alvarado Associates. He provides instruction for clients worldwide on the subject of Human Factors Threat & Error Management. Mr. Geis was a U.S. Army career pilot, developed the military's Team Resource Management training program to address human error and is a former instructor for the U.S. Military Academy at West Point, Embry Riddle Aeronautical University, University of Maryland, and University of San Francisco. Craig is a Certified Force Science Analyst, and in instructor for CA Police Officers Standards & training. He holds an MA in Psychology from Austin Peay State University, a BA in Management from C.W. Pst College in New York, and an MBA in Management from Georgia Southern College. Additional references and articles are available on the CTI web site at www.CTI-home.com. Phone (707) 968-5109 or email CraigGeis@CTI-home.com



Land As Soon as.....

CW5 Louis Papesca
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL
Scout Branch Chief

During combat operations conducted over the last 12 years aviators have had to make critical mission decisions when posed with aircraft emergencies in hostile areas just as they have done in previous conflicts. All Army aircraft checklists contain emergency procedures which prescribe landing in the event of an emergency based on the "urgency of the emergency" or "survival of the occupants" as the determining factor when deciding to land as soon as practicable or possible. Unfortunately there have been instances where aviators have decided to try and continue to fly a potentially unhealthy aircraft to the nearest Forward operating Base (FOB) when faced with a land as soon as practicable or land as possible situation resulting in a catastrophic loss in terms of personnel and equipment. Choosing to fly an aircraft for longer than the operating procedures intended may be the only answer in some instances but not the answer for all situations when faced with an emergency.

During combat operations the perceived or actual enemy threat is always an important factor in determining where to land an aircraft when faced with an emergency, but not the only factor. One could argue the entire combat area of operations is a hostile environment and aircraft should never be landed anywhere outside the "wire" unless the aircraft will not continue to fly. The results of this philosophy have simply not always proven to be successful and the actual answer is somewhat more complex.

All aircraft operating procedures allow for the pilot to determine suitability and determine ***where*** to land as well as determining ***when*** to land, as soon as possible or practicable. Words contained in the procedure allude to the urgency of the emergency such as "without delay" and "survival of the occupants" and should not be disregarded due to the actual or perceived enemy threat. The intent of all emergency procedures is to protect the aircraft and personnel from harm and apply whether in combat or not. The fact of the matter is the decision to place an aircraft in a potentially hostile situation may be less dangerous to the aircrew and aircraft than continuing flight when landing is prescribed. Prioritizing a perceived or real enemy threat over an actual emergency in the aircraft may not be the most conservative answer when faced with a life threatening situation. Generally with today's combat configuration of combat teams there is usually always a "wingman" which gives aircrews greater options when determining when and where to land in the event an emergency does occur. In these instances there should be little or no deviation from the prescribed emergency procedure for fear of reprisal from enemy threat.

During the Mission Approval/Briefing process Air Mission Commanders, Mission Approval Authorities and Mission Briefers should mitigate risk by including specific intent to aircrews when aircraft emergency situations are encountered. Risk approval authorities must be aware

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of the risk involved to their personnel and equipment when aircrews continue flight during an emergency which specifies for an aircraft to land at the "nearest" suitable area as soon as practicable or possible .

Downed aircraft procedures are an important part of unit standard operating procedures (SOPs) and aircrews should have confidence in their unit's ability to safely recover the aircraft and personnel in case of an emergency. The unit procedures must be followed in combat whether downed by the enemy or an emergency in which further flight is inadvisable. Although the threat of hostile forces is always a factor, the overriding factor in order to protect the aircraft and personnel onboard must be to execute the procedures prescribed in the operator's manual.

Although some aircrews have rolled the dice and survived by extending the time taken to execute an emergency procedure, many have not. The ones who risk the aircraft and the lives of those onboard and return to a FOB are lucky and we will never know the statistics of all those that make it versus those who don't. The only statistic we can measure is the number of aircraft losses and injuries or death to personnel.

Adherence to prescribed emergency procedures in aircraft operator's manuals is a fundamental skill. This skill is taught with great emphasis at the USAACE and continued in the CAB's through the ATM and operators manual in order for pilots to react timely and instinctively to protect aircraft and personnel during emergencies. Recent accident investigations have shown that aircrews are not following prescribed procedures resulting in aircraft losses and injury or death to personnel. Although the threat of hostile forces is always a factor in combat operations, Pilots in Command (PCs) must adhere to prescribed procedures in order to protect the aircraft and personnel onboard during all missions, whether in combat or not.

--CW5 Louis Papesca, SCOUT /ATTACK Branch Chief, may be contacted at (334) 255-1579, DSN 558.

UAS Class A – C Mishap Table

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Aerostat	6	9		15	Aerostat	1	4		5
Total Year	12	23	44	79	Year to Date	7	10	27	44

As of 13 Sep 12

Mishap Review: AH-64D Security Mission

Following completion of an attack weapons team security mission, chalk 1 attempted a return to target type maneuver as a demonstration for the supported ground unit. The aircraft developed a high rate of descent until ground impact. The crash resulted in serious injuries to one crewmember and destruction of the aircraft.

History of flight

The accident aircraft was a AH-64D operating as part of a two-ship attack weapons team (AWT). The team was designated to conduct a recon /security mission in support of coalition forces. The mission area encompassed mountainous terrain with MSL altitudes at 9000 – 10,000 feet. Brief sheets and risk assessments were completed the day prior to the mission with the overall risk calculated as LOW. The weather forecast called for clear skies, 5000 meters visibility with mist, and light winds out of the east. Temperature was -15C.

The AWT crews reported for duty at 0700L, received their weather and completed their team brief. Preflights and crew briefs were conducted at 0930L. At 1040 the flight of two AH-64D aircraft departed but returned to base after encountering poor weather conditions. Following improvements in the weather, the AWT again departed at 1255L. The AWT provided mission support for nearly four hours before forecast weather at their home station required a RTB. Prior to breaking station, the ground element requested a low fly-over at their outpost as a morale booster. Lead acknowledged the request and briefed his wingman of his intent to do a low pass followed by a hard climb and nose over as they departed the AO.

The PC initiated the maneuver with a 40 degree nose pitch-up at 105 KTAS and an altitude below 50 feet AGL. The aircraft climbed to approximately 350’ AGL, slowed to 22 KTAS at the apex of the maneuver while rolling into a steep left bank to accomplish the course reversal. Near the completion of the pitch-back maneuver, the aircraft impacted the ground in a nearly level attitude with 80 knots forward groundspeed. During the crash sequence the aircraft slid approximately 30’ became airborne again, lost its tail rotor, then rotated about the mast for 3 to 4 rotations before coming to rest in an upright position. One crewmember sustained serious injuries and the aircraft was destroyed.

Crewmember experience

The PC, sitting in the back seat, had more than 2100 hours total flight time, with 2000 in the AH-64D (1100 as a PC/MP) and 1600 hours combat time. The PI, flying in the front seat, had 700 hours total time, 650 hours in the AH-64D and 500 hours combat time.

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Commentary

The accident board determined the crew lost situational awareness with their operating environment (9000' MSL) and failed to take into account aircraft performance data for the conditions. The maneuver was initiated at an insufficient AGL altitude to safely recover due to temperature, density altitude, available power, and aircraft gross weight. All these factors contributed to the failure to recover from the descent. Additionally, the crew failed to coordinate and adhere to combat maneuvering standards prior to executing the maneuver.

All information contained in this report is for accident prevention use only.
Do no disseminate outside DOD without prior approval from the USACRC.
Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report
https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required

Manned Aircraft Class A – C Mishap Table

	Month	FY 11 Class A Mishaps	FY 11 Class B Mishaps	FY 11 Class C Mishaps	FY 11 Army Fatalities		FY 12 Class A Mishaps	FY 12 Class B Mishaps	FY 12 Class C Mishaps	FY 12 Army Fatalities
1st Qtr	October	0	1	4			2	2	6	1
	November	0	2	14			1	0	13	0
	December	2	1	5	4		2	2	6	4
2nd Qtr	January	0	1	8			2	0	11	0
	February	1	1	2			2	1	6	0
	March	2	1	7			1	2	11	0
3rd Qtr	April	2	1	12			2	1	5	4
	May	2	1	5	1		1	0	3	0
	June	3	1	4	2		1	0	2	0
4th Qtr	July	1	3	14	2		4	3	10	1
	August	2	2	10	2		2	5	6	0
	September	0	0	8	0				1	
	Total for Year	15	15	93	11	Year to Date	20	16	80	10

As of 17 Sep 12

September 17, 1908 – The first fatality involving powered flight occurred as a biplane piloted by Orville Wright fell from a height of 75 feet, killing Army Lt. Thomas E. Selfridge, his 26 year-old passenger. A crowd of nearly 2,000 spectators at Fort Myer, Virginia, observed the crash of the plane which was being tested for possible military use. Wright himself was seriously injured.

OH-58D Five Year Accident Trend Review

During the last five Fiscal Years, there have been 25 OH-58D Class A mishaps resulting in 19 fatalities. Additionally, there have been 6 recorded Class B and 75 Class C mishaps. A review of the mishaps reveals the following:

-18 (72%) of the 25 Class A mishaps were caused by human error. 7 (28%) had materiel failure as causal factors. Class B's consisted of 3 human error and 3 materiel failures. There were 75 reported Class C mishap with 62 (82%) human error, 10 materiel (13%), 2 bird strikes and 1 not reported.

Leading accident events (Class A)

▪ **Power management/Target fixation**. There were seven accidents associated with the aircraft running out of power for the conditions/maneuver being performed or appropriate power was applied too late to be effective. Two fatalities resulted from a mishap attributed to target fixation.

▪ **MTF autorotation check.** There were four mishaps resulting in four fatalities during maintenance test flights while conducting autorotation rotor rpm checks. In three cases the MP failed to properly perform the power recovery by not ensuring the throttle was at 100% prior to initiating recovery. In one instance, the MP failed to recognize a FADEC failure during the recovery. There was an additional MTF Class A resulting from an engine failure at altitude where the aircraft landed hard.

▪ **FADEC Failure.** Three mishaps (not including the MTF cited above) occurred as a result of a FADEC failure. There were three fatalities associated with these mishaps. Two mishaps occurred when the crew failed to follow the emergency procedure resulting in loss of engine control. In the other mishap, it was suspected the FADEC failure occurred while low level and resulted in a low power situation over trees.

▪ **Wire/tower strike.** Two wire strike mishaps and one tower strike resulted in six fatalities. Loss of situational awareness to known hazards, failure to scan and detect hazards to the flight path were contributors to the mishaps. One wire strike and one tower strike occurred under low illumination NVG flight.

▪ **NVG Mid-air.** One NVG mid-air collision resulting in four fatalities occurred during this time period. Failure to maintain airspace surveillance and obstacle avoidance were contributors to this mishap.

▪ **Additional.** Additionally, there were two drive-shaft failures; one engine failure; one hydraulic failure; one dust landing gone bad; and one electrical fire that resulted from aircrew baggage being stored in the electrical compartment which resulted in electrical arcing and a fire.

	OH-58D CLASS A – C Mishaps			
FY	Class A	Class B	Class C	Fatal
2008	5	3	19	2
2009	9	2	18	4
2010	4	0	11	4
2011	5	1	16	5
2012*	2	0	11	4
Total	25	6	75	19

* Year to date

This Flight is Boring…*Let's Spice It Up!* February 2005 Flightfax

Sure, many of our missions get a little monotonous and some seem downright boring. Go ahead, have a great time and perform some wild maneuvers…take the aircraft to its limits. The events surrounding a recent accident illustrate this alarming trend and reveal a lack of aircrew coordination and pre-mission planning.

Although this type of thinking may sound crazy to many of you, some of our aircrews are not only thinking this way but are actually following through and putting these thoughts into practice. Recent months have shown a trend of aircrews performing *unnecessary flight maneuvers*. This is the technical term for what is commonly called "hot dogging." We are not addressing bona fide evasive maneuvers to deal with hostile fire or evade potential threats. These maneuvers are not necessary and are far outside the flight tasks included in our aircrew training manuals.

The flight, consisting of two UH-60As, was flying at 115 KIAS and 50 to 60 feet AGL when the pilot in command (PC) of Chalk 2 unexpectedly initiated an aggressive 50 to 60 degree uncoordinated, decelerating left turn to look at some sand dunes to break up the monotony of a boring flight. The aircraft turned approximately 270 degrees and decelerated to 0 KIAS in 5 to 10 seconds. This maneuver resulted in a high bank angle and rapid deceleration, causing the aircraft to descend vertically and impact the ground. Both the PC and the pilot (PI) had over 2,000 flight hours each. There was no hostile fire or any other form of threat. The aircraft was severely damaged and the crew and passengers sustained minor injuries.

Wait a second; we're good at this…

Interviews conducted in the course of this investigation revealed the existence of an attitude that aggressive maneuvering is not only acceptable, but also preferable due to the combat environment. Several interviewees expressed admiration for the skill with which the pilots of the accident aircraft "flew the aircraft as it was meant to be flown," or took the aircraft past the "cushiony limits." Conversely, there were opinions critical of Vietnam-era pilots for flying too conservatively, as though every flight were an instrument flight or flying back home.

The investigation board determined this attitude toward overly aggressive flying stems from flight practices used by cavalier pilots widely acknowledged as the most experienced and capable in the unit. In general, reactions from interviewees ranged from tacit approval of aggressive flight to open admiration for it. The battalion standardization pilot (SP) had counseled the company SP (acting as the PI in the accident aircraft) on at least one occasion for his attitude regarding aggressive flying. The company commander, widely described as the best company commander in the battalion and perhaps the task force, seems to have been unaware of the degree to which this attitude was ingrained in some of the company's crewmembers. The unit platoon leaders seemed aware of the aggressive flying, but because of their inexperience, in comparison to pilots who were flying aggressively, they failed to recognize it as inappropriate.

Continued on next page

Think about it…

Think about what this crew did. Is this what aircrews are trained to do? Is it OK because the unit is in combat? Let's look at two lessons we can learn from this accident: the importance of aircrew coordination and pre-mission planning.

Aircrew coordination

The PC took the controls just prior to initiating the left turn that resulted in the accident without clearly alerting the crew of his maneuver. Performing evasive maneuvers is often a necessity, but every effort should be made by the pilot flying the aircraft to communicate his intentions before or during the maneuver. During interviews following the accident, none of the other crewmembers were entirely clear about why they were turning. During the turn, G forces and wind coming in the right door of the aircraft interfered with the intercommunications system (ICS) to the degree that none of the other crewmembers were clear about what the PC was trying to communicate over the ICS, though all agreed it was something about power. There was so much wind coming in the right cockpit door that the PI said his ICS microphone was rendered useless.

Since the rest of the crew did not understand the degree of or purpose for the maneuver, effective aircrew coordination was impossible. Adding to the confusion, one of the crew chiefs thought the PI was the PC of the accident aircraft. A review of flight records revealed that none of the crewmembers had received mandatory aircrew coordination refresher training. Receipt of the required training is no guarantee that the accident could have been prevented; however, it does indicate the unit placed insufficient emphasis on aircrew coordination.

Pre-mission planning

Aviation operations require extreme situational awareness and a full understanding of how to effectively employ your crew and aircraft. Pre-mission planning sets the conditions for a successful mission. Is your unit, more importantly your aircrew, really dedicating enough time and effort to pre-mission planning? Have you and your crew studied the expected threat? Do you know your aircraft's limitations given the expected environmental conditions (PPC)? Remember, you and your crew should be well prepared for the majority of missions you are required to perform. The crews must study the expected threat, known man-made hazards to flight, unit standard operating procedures, operational rules and requirements, and become intimately familiar with their areas of operation. Complete knowledge of these subjects, coupled with a clear and executable mission statement, constitutes satisfactory pre-mission planning. By identifying the accidental hazards (man-made hazards including wires, towers, etc., and environmental conditions) and the tactical risk (expected threat and operational requirements), proper pre-mission planning allows crews to implement Composite Risk Management (For more information on Composite Risk Management, see the DASAF's Corner in the December 2004 issue of Flightfax, as well as MAJ Ron Jackson's article in January 2005.)

So what does aircrew coordination and pre-mission planning have to do with aggressive flying?

Simply put, aircrew coordination and pre-mission planning injects discipline and flexibility

Continued on next page

into our aviation operations. When you and your crew properly coordinate your actions and conduct detailed planning, you will see there is no time or need to perform "hot dog" maneuvers but you will be ready to respond to threats as the situation dictates. If you don't believe this, talk to the "old" guys in your unit and ask them about successful missions where things went well even when the weather didn't cooperate or the threat didn't work as planned. The common denominators will always be aircrew coordination and pre-mission planning.

Conclusions

It is your responsibility to prepare yourself and your crew for missions. This preparation includes a clear understanding of crew duties and responsibilities as described in aircrew coordination standards and proper pre-mission planning. Yes, combat operations are different from peacetime training missions but no SP, IP, PI, or any other crewmember has the right to endanger property or lives by disregarding aircrew coordination or ignoring pre-mission planning requirements.

-- February 2005 Flightfax, then MAJ Steven Van Riper, Chief of Attack/Scout Branch, Accident Investigation Division, U.S. Army Combat Readiness Center

NOTICE: Change to Flightfax Subscription Procedures

Some changes have occurred in subscribing to the Flightfax newsletter. Up to this point subscriptions were manually entered into contact lists and Flightfax was manually emailed out to you from a member of the Aviation Directorate. A new program has been installed allowing automatic mailing lists to be generated as well as distribution of new issues. An automatic unsubscribe feature is also incorporated.

Subscribers will sign up on the Aviation Directorate website (https://safety.army.mil/atf/) to receive Flightfax each month by email. You must sign in using your CAC/PIV. Your AKO email address will be automatically entered when you select the subscribe button. An email acknowledging your subscription with the latest Flightfax issue attached will be sent to your AKO email address.

AKO email address is the standard. For those individuals without CAC access and/or an AKO email address (sister services, other agencies, etc) the manual contact lists will still be available. Those case-by-case individuals must contact the Aviation Directorate to be subscribed.

Transition glitches. For those individuals who subscribed prior to 6 Sept 2012, you are under the old contacts subscription process. Please re-subscribe under the new system. You have not been dis-enrolled but you may receive two newsletters. Reply to the first mailing stating you are receiving two copies and you will be manually deleted from the old contacts list. Thanks ahead of time for your patience.

Subscribe to Flightfax via the Aviation Directorate Website: https://safety.army.mil/atf/

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in August 2012.

Utility helicopters

UH-60

-A Series. Aircraft experienced violent shaking in flight. Post-flight inspection revealed yellow main rotor blade had disintegrated in flight. (Class B)

MH-60

-M Series. The right-hand stabilator wing contacted the tail rotor during engine run-up for maintenance. (Class B)

-M series. Tail rotor made contact with a hangar during ground taxi to park at a municipal airport. Both T/R paddles sustained damage as well as the exterior hangar. (Class B)

-K Series. Aircraft sustained main rotor blade damage as the result of contact with the C-130 aerial refuel drogue. All 4 tip caps and one blade required replacement. (Class C)

Attack helicopters

AH-64D

-During take-off, No.2 engine anti-ice valve failed with subsequent power loss. Crew conducted an emergency landing to an unimproved area during which the right front landing gear, airframe, and weapons pylon sustained damage. (Class B)

Observation helicopters

OH-58C

-C Series. Crew was conducting Basic War-fighter Skills training when the aircraft contacted the ground, left skid-first. The main rotor system subsequently made ground contact resulting in structural damage and damage to the main and tail rotor systems. (Class C)

MH-6M

-Aircraft experienced an over-torque condition (116.7%/1.1 sec) during a training simulation. (Class C)

Cargo helicopters

CH-47

-D series. During dust landing training, aircraft contacted terrain and rolled on its side. (Class A)

-D series. Aircraft landed hard during an exfil under NVGs. Aircraft came to rest on its left side. (Class A)

-D series. Slingload was inadvertently jettisoned as crew was in the process of decoupling the “BARO-HOLD” system during descent. Load was recovered. (Class C)

MH-47G

-Crew reportedly experienced aircraft vibrations and flight control anomalies during flight training. Post flight inspection revealed damage to the aft RED and YELLOW blades. (Class C)

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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Flightfax®

Online Report of Army Aircraft Mishaps

"Any job done professionally is inherently safe."

-Edward E. Waldron II

In this edition we provide the FY12 preliminary report of Aviation mishaps. The good news is that Aviation fatalities for FY12 were at a decade low, improving on last year's fatality rate with a drop from 11 deaths to 10. The positive trend continues when considering total Class A-C mishaps; the total 118 Class A-C mishaps in FY12 is a decrease from 123 in the previous year.

Last year, we reported for FY11 an increase in Class C with the corresponding drop in Class A and B mishaps. This may be a strong indicator of healthy learning organizations applying lessons learned from lesser incidents. With an FY12 increase to 21 Class A accidents from the 15 in FY11, we may be learning much harder lessons.

The causes of FY12 accidents will be no surprise for anyone who has been reading Flightfax throughout FY12. Human error was the cause factor in 83% of the Class A and B mishaps.

"Analysis of mishaps in the last fiscal year showed that the causes were neither new nor unique. Commanders and aviators just found new ways to repeat the same old mistakes and caused so-called 'new' mishaps. In almost every case, the errors causing the mishaps were the results of the people involved, failing to do their jobs by the book." This quote, from this month's Blast From the Past, absolutely applies to FY12's stats – yet were delivered in the aircraft accident report for FY81. It is now thirty-one years later, and even the analysis and summary are nothing new. The best way to prevent human error mishaps is active intervention by observers. Accidents don't occur in a vacuum – someone knows when Aviation Soldiers are engaging in high-risk behavior. If it is not a leader, it is a fellow Soldier or buddy. Fate isn't responsible when a Soldier dies in an accident; we're the ones responsible if we didn't do everything we could to prevent it from happening.

As this edition of Flightfax enters us into another fiscal year of Aviation mishap reporting, last year's stats remind us one of the most effective prevention tools for Aviators is professionalism. When professionalism fails, there are always signs. Know the Signs. Act on the signs. And prevent the accident from happening.

Until next month, fly safe!

LTC Christopher Prather USACR/SC Aviation Director
email: christopher.prather@us.army.mil

Preliminary Report on FY12 Aircraft Mishaps

In the **manned aircraft** category, Army Aviation experienced 118 Class A-C aircraft mishaps in FY12. This is a decrease from the 123 Class A-C aircraft mishaps in FY11. This also reflects, however, an increase in Class A mishaps (15 in FY11); despite this increase from FY11, we are still on a downward trend from FY09 (25 FY09, 23 FY10).

	2011	2012
CLASS A	15	21
CLASS B	15	15
CLASS C	93	82
TOTAL	123	118
FATALITIES	11	10

CLASS A an B Summary: There were 36 Class A and B mishaps, 15 of which occurred at night. Human Error was the cause factor in 30 (83%) of the 36 mishaps. Materiel failure or suspected materiel failure was contributing in 5 (14%) of the 36 mishaps. Two were listed as unknown or not yet reported.

The Flight category Class A mishap rate for FY12 was 1.68 (1.68 class A mishaps per 100,000 hours of flight time). For FY 11, the rate was 1.10.

Operational Assessment Concerns:

Human Error: 4 Class A and 6 Class C aircraft mishaps occurred during dust landings, with 5 additional Class C events occurring during environmental training. Power management/aggressive maneuvering contributed to 5 Class A or B incidents. One NVG Class A (4 fatalities) occurred due to spatial disorientation with low illumination and lack of terrain contrast as contributing factors. Additionally, there was one NVG mid-air collision (4 fatalities), two UH-60 ground taxi mishaps, two aerostat tether strikes, and two personnel struck by the main rotor blades during ground operations (1 fatality). There was one fatality when a soldier was struck by rotor wash-induced falling debris.

Materiel Failures: Materiel failures included three engine malfunctions, and one suspected main rotor blade de-bonding.

2012 Breakdown by Aircraft Type:

	Class A	Class B	Class C
UH/MH-60	7	6	30
AH-64	3	4	7
CH/MH-47	5	1	16
OH-58D	2	0	11
LUH-72	0	0	1
TH-67/OH-58A/C	1	2	5
AH/MH-6	0	1	6
Mi-8/17	1	1	0
C-12/UC-35	1	0	6
EO-5C	1	0	0

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Synopsis of selected accidents (APR – SEP 12) ** denotes night mission:

Manned Class A

** CH-47D. During an NVG up-slope landing in the vicinity of the landing zone, the Common Missile Warning System (CMWS) was unintentionally activated, causing numerous flares to deploy. The PI reacted by displacing the cyclic control forward, driving the forward rotor disk into the ground. The rotor system became unbalanced and desynchronized, causing significant aircraft damage and four minor injuries.

** UH-60L. During NVG MEDEVAC chase mission with zero illumination and low contrast terrain, aircraft crashed due to spatial disorientation resulting in four fatalities.

- UH-60L. Aircraft crashed conducting a passenger drop-off in a non-standard HLZ. Class A damage reported.

- OH-58D. Mission was aborted following illumination of an Engine chip light. During RTB the engine failed. Aircraft crashed on landing with both pilots sustaining injuries.

- UH-60A. Flight Related. Soldier was fatally injured while photographing hoist training. Soldier was struck in the head by a tree branch knocked loose by the aircraft's rotor wash.

** HH-60L. On MEDEVAC mission, aircraft contacted rising terrain. Post-crash fire ensued. Crew was able to egress the wreckage with one injury requiring hospitalization.

- Mi-17V1. Aircraft crashed upon entering a non-recoverable state of flight at the end of a pinnacle approach, while under a limited power condition.

- OH-58C. Aircraft contacted the ground during an autorotation. Aircraft came to rest on its side. Class A damage reported.

-CH-47D. Aircraft entered dynamic rollover during dust landing.

** CH-47D. Aircraft landed hard during exfil landing under NVGs. Aircraft came to rest on its left side with post-crash fire.

- RC-12P. Left main landing gear collapsed on landing. Class A damage reported.

In the **unmanned aircraft systems**, there were 46 Class A–C incidents with 9 Class A's, 10 Class B's, and 27 Class C's. The Class A's included two Aerostat balloons, five MQ-1s, one MQ-5B, and one YMQ-18. The RQ-7Bs comprised 24 of the 37 Class B and C mishaps with cause factors relating to engine failures, landing problems, and lost link.

Synopsis of selected accidents (APR – SEP):

UAS Class A

-YMQ-18A. Vehicle crashed following loss of power.

- Aerostat. During lowering, PTDS broke free. Recovered with damage.

- MQ-1C. Engine failed, resulting in hard landing on the runway.

- MQ-1C. Vehicle crashed following uncommanded descent during climbout.

- MQ-1C. Vehicle struck mountain during descent. Suspect lost link.

- Aerostat. Balloon descended into concertina during high winds.

- MQ-1C. Vehicle registered high oil temp followed by engine failure.

Crew Coordination

CW5 Dwight L. Greenland
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL
Scout Branch Chief

So there I was, a newly assigned WO1 participating in my first Air Assault mission. All the training and drilling endured over the last fifteen months of flight school and RL progression within the unit prepared me for this very moment. I was a finely honed product of the best rotary wing training in the world ready for my first mission. My mission that day was to monitor the standby load meter. I tackled my mission with the zeal of any new aviator, eyes glued to the gauge watching for any fluctuation of that small needle. The last thing I wanted was to let down my pilot in command, the steely eyed CW4 instructor pilot with a sour temperament and a combat patch from some division that was deactivated decades ago. My role as a crewmember in the aircraft was clear: I was to take no action which may interfere with the pilot in command's duty to single-handedly execute the mission. Any small amount of assistance I could contribute to the mission would not be recognized until I had silently provided weight and balance conformance to enough missions to be considered worthy of actually touching something inside the aircraft other than my armor protected seat. I was, after all, brand new to the unit, how could I possibly contribute to the safe operation of an aircraft and execution of the mission?

My story of progression and integration into crew coordination was the norm for the time, echoed by generations of colored hats trained at Ft Rucker. Fortunately for us, Army leaders correlated the high accident rates due to communication failures and workload priority failures and developed a plan. Aviation Crew Coordination Training began in earnest in the early 90's. Aircrew Training Manuals implemented specific portions of procedures dedicated to communicating between crew members. An entire chapter in each ATM dedicated to Crew Coordination first familiarized all aviators with the definition of, "The action and interaction of crew members for the safe, timely, and efficient completion of all assigned tasks." Instructor pilots attended mandatory Crew Coordination Instructor Training, and evaluation procedures and techniques were developed. IERW classes contained blocks of instruction on Crew Coordination to implement skills from the very beginning of flight training.

Evolution of Crew Coordination concepts lead to the development of the current system of Air Crew Coordination Training – Enhanced, ACT-E. Topics of ACT-E combine to form a relationship of Aircrew Coordination Principles, Quantities, and Objectives. Qualities combine to form the Principles, which when combined produce Objectives. As the ACT-E graph depicts, Qualities, Principles, and Objectives relate to one another in the concept that effectively utilizing the qualities in turn strengthens the principles, and meets the objectives. Conversely, a breakdown in just one Quality weakens one or more Principles which then results in failing to meet he Objective. As the example shows, the quality of "Announce and Acknowledge Decisions and Actions" relates to the principle of "Communicate Effectively and Timely" which meets the objective of "Establish and Maintain Team Relationships". As a review of the qualities, principles, and objectives:

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Qualities:

1. Announce and acknowledge decisions and actions.
2. Ensure that statements and directives are clear, timely, relevant, complete, and verified.
3. Be explicit.
4. Direct assistance.
5. Prioritize actions and equitably distribute workload.
6. Situational awareness.
7. Mission changes and updates.
8. Offer assistance.

Principles:

1. Communicate effectively and timely.
2. Sustain a climate of ready and prompt assistance.
3. Effectively manage, coordinate, and prioritize planned actions, unexpected events, and workload distribution.
4. Provide situational aircraft control, obstacle avoidance, and mission advisories.

Objectives:

1. Establish and maintain team relationships.
2. Establish and maintain efficient workloads.
3. Exchange mission information.
4. Cross monitor performance.

Instilling the concepts of crew coordination begins at the earliest stages of an Army Aviator's career. Within the last year, the development and implementation of the Aircrew Coordination Training – Basic (ACT-B) began for IERW students. ACT-B focuses on training Flight School students on forming positive crew coordination habits beginning with the Primary Phase of Flight Training. Classes contain exercises in verbal and non-verbal communication, stressing the use of standardized terms and engaged discussion. Even before the "nickel ride", students receive valuable instruction in crew coordination. The training continues throughout one's time at Ft. Rucker as instructors at the flight line evaluate crew coordination daily as crew coordination is woven into all flight tasks. Flight tasks contain specific verbiage in the description of maneuvers which through exercise and meaningful repetition become rock solid in new aviators. The framework is set for new aviators to act as an effective crew member upon arrival to their first unit.

The requirement shifts to the gaining unit to sustain and build upon the crew coordination Principles. Sustainment training within the unit utilizes vignette-based presentation. ACT-E facilitators within the unit utilize specific aircraft scenarios to spawn discussion of crew coordination successes and failures utilizing the Qualities, Principles, and Objectives. The concept of a group discussion further develops the climate of efficient flow and exchange of information within the unit which also transitions well into the aircraft. Commanders have the flexibility of tailoring the annual ACT-E requirement to maximize unit involvement or training opportunities. A major element in sustainment of crew coordination is command climate. In order to meet the four ACT-E Objectives, an environment must exist that allows for the candid but constructive exchange of information.

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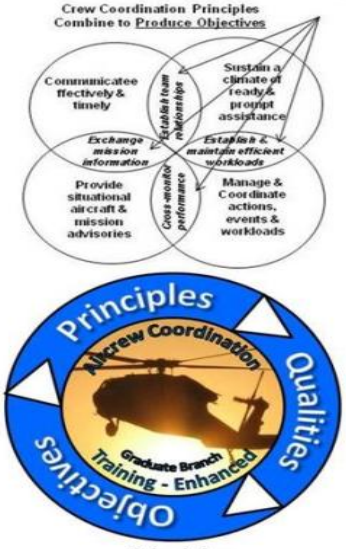
After action reviews continue to play an important role in evaluating the effectiveness of mission accomplishment and identifying areas of improvement. For crew coordination an example of Objectives met during an AAR would be placing the Objectives into a question. DID WE as a crew establish and maintain team relationships? DID WE establish and maintain efficient workloads? Was mission information exchanged? DID WE as a crew cross monitor performance? If the climate of candid and positive communication exists, specific strengths or weaknesses can be highlighted to improve future mission accomplishment.

The truest test of crew coordination occurs in the aircraft. Every member of a crew has a personal interest in the safe operation of the aircraft. Each has a positive involvement and contribution in the function of the crew regardless of experience, and capabilities well beyond monitoring the standby load meter.

Recently, questions from the field were raised on the proper procedures for conducting and documenting ACT-E training. TC-3-04.11 chapter 4-60 outlines the requirements for ACT-E. Qualification for Rated crewmembers occurs in flight school after 2005. All other crewmembers, including flight school graduates, before 2005 receive initial qualification training by an ACT-E instructor using the most current USAACE approved qualification course, which is available through the U.S. Army "Blackboard" server. Once qualified, crewmembers require training each ATP year using the vignette-based presentation facilitated by an ACT-E instructor. TC 3-04.11 further details the training requirements and personnel authorized to conduct training. Finally, after all ACT-E training is complete, ensure its properly documented on the 7122. If it's not documented, it may as well never occurred.

--CW5 Dwight Greenlund, Fixed Wing Branch Chief, Directorate of Evaluation & Standardization, COMM: (334) 255-2453

Relationship of Aircrew Coordination Principles, Qualities, and Objectives



Qualities								Principles	Objectives			
1. Announce and Acknowledge Decisions and Actions.	2. Ensure that statements and directives are clear, timely, relevant, complete, and verified.	3. Be explicit.	4. Direct Assistance.	5. Prioritize Actions and Equitably Distribute Workload.	6. Situational Awareness.	7. Mission Changes and Updates.	8. Offer Assistance.		1. Establish and maintain team relationships.	2. Establish and maintain efficient workloads.	3. Exchange mission information.	4. Cross-monitor performance.
X	X	X						1. Communicate effectively and timely.	X		X	
			X		X		X	2. Sustain a climate of ready and prompt assistance.	X	X		
	X		X	X				3. Effectively manage, coordinate, and prioritize planned actions, unexpected events, and workload distribution.		X		X
					X	X	X	4. Provide situational aircraft control, obstacle avoidance, and mission advisories.			X	X

Mishap Review: NVG Troop Extraction

While landing to conduct a NVG troop extraction under zero illumination conditions, the CH-47D drifted aft followed by a left drift and roll. The fore and aft rotor discs struck the ground simultaneously, resulting in significant aircraft damage and minor injuries to the crew.

History of flight

The mission was a NVG two-ship insertion of ground forces into an HLZ approximately 8 miles from home base followed by an on-call extraction approximately 3 hours later. The crews began their duty day at 1800L with pre-flights and aircraft run-ups. Mission brief was conducted at 2000L followed by crew briefs at 2030L. The weather was few clouds at 10,000 feet; visibility 5000m with blowing dust; winds 350/09 knots gusts to 15. Temperature was +24C and PA of +6300 feet. The illumination for the flight was 0%.

The flight departed at 2300L with the accident aircraft in the lead position. The infil portion of the mission was successfully completed at approximately 2315L with the lift team returning to base to await the second portion of the mission. At approximately 0245L the flight departed their FOB en route to the exfil location to extract ground forces. Less than 10 minutes later, the flight set up for landing to the northeast to an unimproved HLZ with moderate dust conditions and level terrain. During the VMC approach, dust was called at the cabin doors by both door gunners at approximately 15 feet. The FE (right door gunner) began to call the aircraft down from 10 feet. At the 8 foot call-out the FE announced the aircraft drifting aft, followed by a left drift and left roll. The aircraft continued to roll to the left and the fore and aft rotor discs struck the ground with the aircraft coming to rest on its left side.

Crewmember experience

The PC, sitting in the left seat, had more than 2500 hours total flight time, with 2200 in the CH-47D (1200 as a PC/MP) and 600 hours NVG time. The PI, flying in the right seat, had 2100 hours total time, 390 hours in the CH-47D and 350 hours NVG time. The FE in the right cabin door had 670 hours with 260 NVG. The door gunner in the left cabin door had 245 total hours with 88 NVG. The CE, located on the ramp, had 430 hours with 260 NVG.

Commentary

The accident board determined the pilot on the flight controls failed to maintain and recover orientation on short final due to loss of visual reference and failed to perform a go-around or continue forward and down upon loss of visual cues. The PC failed to closely monitor and prevent the PI from over-controlling and make corrections regarding the PI's inability to recover orientation.

All information contained in this report is for accident prevention use only. Do no disseminate outside DOD without prior approval from the USACRC. Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required.

AH-64D Five Year MishapTrend Review

During the last five Fiscal Years (FY08 – FY12), there were 11 recorded AH-64D Class A mishaps resulting in 4 fatalities. Additionally, there were 15 Class B and 60 Class C mishaps. A review of the mishaps reveals the following:

- 8 (64%) of the 11 Class A mishaps were caused by human error. 3 (27%) had materiel failure as causal factors. Class B's consisted of 7 human error and 8 materiel failures. Of the 60 reported Class C mishaps, 63% involved human error, 30% involved materiel failure, and 7% were bird strikes.

Leading mishap events (Class A)

▪ **Power management/excessive maneuvering**. There were five accidents associated with the aircraft running out of power for the conditions/maneuver being performed or appropriate power was applied too late to be effective. (1) One accident occurred when the aircraft contacted the ground during a descending turn. (2) Another when conducting a VMC NVS approach to a 12,200 foot pinnacle. The aircraft's rotor RPM decreased and the aircraft settled and impacted the terrain. (3) On a MTF, when the aircraft was placed in a downwind OGE hover, the aircraft settled and impacted the ground, resulting in injuries to the front seat pilot. (4) Following mission completion, an AH-64D crashed during a return to target type maneuver at high altitude. (5) While conducting a reconnaissance mission in mountainous terrain, the aircraft descended and impacted the ground resulting in total loss of the aircraft and one fatality.

▪ **Materiel failure.** There were three materiel failure mishaps, resulting in two fatalities. Fatigue failure of the mast base support assembly caused the main rotor to impact the forward fuselage, which resulted in fatal injuries to the front seat pilot. In another accident, the FMC commanded BUCS ON in the ROLL channel on short final. Aircraft rolled abruptly and crashed. Lastly, on an air movement security mission the #1 engine oil pressure low caution message sounded. The aircraft could not maintain altitude and impacted the ground with one fatality.

▪**Wire strike.** One wire strike mishap occurred when the aircraft struck a ferry cable obstacle during a day cross-country training flight. The front seat pilot sustained fatal injuries upon impact with the cable and the rear seat pilot successfully landed the aircraft.

▪**Additional.** An AH-64D crashed following loss of tail rotor thrust resulting from a break in the drive shaft. Maintenance had failed to properly torque the #5 tail rotor drive shaft bolts, resulting in a failure of the aft hanger bearing. Another mishap occurred when a suspected over-torque of the main rotor hub nut retention ring at the factory created improper pre-loading of the bearings and led to a catastrophic bearing failure and overheating of the static mast. The aircraft sustained major damage during landing with limited control authority.

	AH-64D CLASS A – C Mishaps			
FY	Class A	Class B	Class C	Army Fatal
2008	0	2	10	0
2009	2	3	17	1
2010	3	3	7	1
2011	3	3	19	1
2012	3	4	7	0
Total	11	15	60	3

Class A – C Mishap Tables

	Manned Aircraft Class A – C Mishap Table									
	Month	FY 12					FY 13			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities
1st Qtr	October	2	2	6	1		1			
	November	1	0	13	0					
	December	2	2	6	4					
2nd Qtr	January	2	0	11	0					
	February	2	1	6	0					
	March	1	2	11	0					
3rd Qtr	April	2	1	5	4					
	May	1	0	3	0					
	June	1	0	2	0					
4th Qtr	July	4	3	10	1					
	August	2	4	7	0					
	September	1	0	2	0					
	Total for Year	21	15	82	10	Year to Date	1			

as of 12 Oct 12

UAS Class A – C Mishap Table									
	FY 12 UAS Mishaps					FY 13 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	5	1		6	W/GE		1		
MQ-5	1		2	3	Hunter		1		
RQ-7		5	19	24	Shadow			1	
RQ-11			1	1	Raven				
MAV									
YMQ-18	1			1					
SUAV			5	5	SUAV				
Aerostat	2	5		7	Aerostat				
Total for Year	9	11	27	47	Year to Date		2	1	

as of 12 Oct 12

Who pays the price?

The following article is adapted from a presentation made by Colonel Edward E. Waldron II, commander, Army Safety Center, at the Army Aviation Training Symposium/Policy Committee Meeting at Fort Rucker, November 1981.

The single greatest drain on aviation resources continues to be crew-error mishaps. The persistence of the crew-error problem in a widely varying aviation environment is cause for great concern.

Generally speaking, almost 80 percent of all Army aircraft mishaps involve crew error. This percentage has remained virtually constant for 20 years.

The record shows that the proportion of mishaps involving crew error has not varied more than 10 percent since 1958 while:

- Aviation operations changed from peacetime to combat and back to peacetime.
- Annual flight time ranged more than 5 million hours from the highest to the lowest year.
- The number of aircraft mishaps ranged more than 1,000 from the highest to the lowest year.

FY 81 was a continuation of the same sad story. Analysis of the 43 Class A mishaps during fiscal 81 showed that the cause factors were neither new nor unique. Commanders and aviators just found new ways to repeat the same old mistakes and caused so-called "new" mishaps. In almost every case, the errors causing the mishap were the result of the people involved, failing to do their jobs by the book. The mishaps were spread almost uniformly through the whole range of flight experience and across all the aircraft systems.

Seventy-seven percent of last year's Class A mishaps were caused by errors made by flight crews, instructor pilots, flight commanders, mission commanders, and unit commanders. The dominant factors appearing with alarming regularity were a breach of flight discipline on the part of aircrews and a persistent indifference on the part of commanders and supervisors.

Supervision, source of the problem

Traditionally, the blame for crew-error mishaps has been laid on the person at the controls of the aircraft at the time of the crash – usually the pilot. We feel this blame has been misdirected and, as a result, so have most of our prevention efforts.

Here is the irony of the whole aspect of safety: **Those charged with the responsibility for the safety do not usually pay the consequences when safety supervision breaks down. The flight line mechanics and aircrew members pay the price in full for lack of proper and adequate supervision.** The term "pilot error" has been used to excuse a multitude of actions by commanders which have allowed or set the stage for flight-crew –error mishaps. The bottom line of the crew-error problem is that supervisors are to blame for these mishaps. How else can you explain sending an aircraft with an inoperative artificial horizon on a night mission in marginal weather when fully instrumented aircraft sat on the ramp? The crew, trying to maintain VMC under a low cloud layer, flew the Huey into high tension lines. The pilot was killed and the aircraft destroyed.

How can you explain pairing two young inexperienced aviators in one aircraft in a flight of five when the other aircraft in the formation are piloted by experienced aviators?

Continued on next page

The young aviators were unable to handle a mission which would have tested even experienced crews. They crashed making an ITO in marginal weather and all three occupants were killed.

How can you explain sending a single aircraft into a remote jungle area with the emergency locator transmitter for that aircraft sitting in the supply room instead of being installed in the aircraft? After more than a month of searching at a cost of more than $300,000 for air time alone, we gave up on finding the UH-1 and its three crewmembers.

How can you explain violating crew rest policy on a training mission into marginal weather conditions? The pilot became disoriented and flew the aircraft into the ground, killing himself, the copilot, and the crewchief.

How can you explain a commander allowing a pilot, who was known to bend the rules, to remain on flight status after two flight violations had been filed against him, one for violation of procedures and one for "cowboying" the aircraft? The pilot buzzed several jeeps during a tactical exercise and finally succeeded in crashing into one of them, killing himself and destroying the aircraft.

How can you explain assigning a pilot IP duties on the U-21 after he had failed a standardization checkride in the C-12? Two weeks later, this IP gave a pilot a simulated single-engine failure on final approach and allowed the pilot to put the aircraft in a position from which a safe recovery was impossible. The IP told the pilot to go around. Because of position, altitude, airspeed, and the landing configuration, the go-around was contradictory to procedures. But the pilot tried it anyway. He applied max power to the single operating engine – the IP had not brought the other engine on. This caused the aircraft to roll and yaw left. The IP then reached for the controls, but he was too late.

Supervision, key to the cure

These are not isolated cases. They are typical examples of crew-error mishaps which clearly show that indifferent supervision is the source of the crew-error problem and responsible supervision is the key to the cure.

Regrettably, the accident record shows that flight safety has often been neglected within the overall effort of training a combat-ready force. The rationale for this, characteristically, has been "safety compromises realistic training." While readiness is the primary mission, that mission can only be achieved by combining safety considerations with readiness training. Just as air and ground elements are integral parts of a single force, safety and readiness training work together to provide a combat-ready force. Commanders can become so involved in the tactical scenario they forget that the purpose of realistic training is to produce combat-ready crews and equipment. A smoking hole does neither.

Senior commanders must ensure that subordinate commanders do not use tactical exercises as an excuse to completely disregard flight regulations and sound aviation management principles. Realistic training must be safe training because safety is an integral part of all professional operations. We can't throw safety out the window when we get into combat. We should have learned that lesson in Vietnam. Constant supervision and the elimination of substandard performance is the only way to keep aircrews from destroying aircraft and killing themselves and their passengers. To ignore or fail to correct unsafe acts and unprofessional behavior is a violation of the special trust and confidence placed in commanders.

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Aviation safety depends on commanders. They either push the program or let it slide. It's a command responsibility and those flight line mechanics and aircrews will do whatever commanders decide. They will not practice safety unless commanders show them that violation of safety rules will not be tolerated.

Command action

Commanders have several powerful tools to use to reduce crew-error mishaps. First, improve the direct supervision of all flight operations through personal involvement. Second, increase the discipline of aircrews and force them to operate the aircraft according to regulations and time-proven procedures.

Pilots continue to disregard regulations and procedures, kill themselves and their passengers, and rack up millions of dollars in destroyed and damaged equipment because commanders allow them to get away with it.

Commanders have told me that because they are unable to be present in every cockpit, once the aircraft is off the ground the pilot is on his own. But I feel that even though each commander cannot be physically present in every cockpit on every flight, his presence can be felt in that cockpit. His presence would be the professional attitude that he has established through his own example and the requirements he places on his subordinates and crews.

Suspending pilots and IPs for procedure violations, recording unsafe acts and violations of regulations, and relieving aviators from flying duty with forfeiture of flight pay for flight discipline infractions – these are positive actions commanders may take to improve the discipline and professional performance of aircrews. **If you want to call it arm twisting, go ahead. Whatever its name, it is designed to establish and enforce procedures which in training or in combat will keep professional performance up to maximum levels.**

A great number of aircraft mishaps can be prevented through what is commonly called professionalism, a self-disciplined maturity coupled with competence demonstrated in all aspects of a mission.

Professionalism is the most essential safety ingredient. Any job done professionally is inherently safe. But if there is no professionalism, there is no safety. Human-error mishaps are especially deplorable because they are preventable.

The commander's special trust is the correction of safety errors before the fact. When senior commanders determine that flight personnel have not had the benefit of a commander who knows and assumes his safety responsibility, then crew error is, in fact, command failure.

Senior commanders won't tolerate failure in supply or maintenance management, or accept poorly trained and equipped soldiers, and above all, will not excuse those who fail to show concern for the welfare of their troops.

Why should Army aviation be any different?

Subscribe to Flightfax via the Aviation Directorate Website: https://safety.army.mil/atf/

CW5 Mike Reese, Chief Warrant Officer of the Army Aviation Branch, is featured in five video PSAs. Four PSAs highlight overconfidence, mission planning, low-risk missions, and indiscipline, and the other highlights seatbelt use. You may view and/or download the PSAs on the USACR/Safety Center public website at the following link:

https://safety.army.mil/multimedia/VIDEOLIBRARY/tabid/419/Default.aspx

NOTICE: Change to Flightfax Subscription Procedures

Some changes have occurred in subscribing to the Flightfax newsletter. Up to this point subscriptions were manually entered into contact lists and Flightfax was manually emailed out to you from a member of the Aviation Directorate. A new program has been installed allowing automatic mailing lists to be generated as well as distribution of new issues. An automatic unsubscribe feature is also incorporated.

Subscribers will sign up on the Aviation Directorate website (https://safety.army.mil/atf/) to receive Flightfax each month by email. You must sign in using your CAC/PIV. Your AKO email address will be entered when you select the subscribe button. An email acknowledging your subscription (with the latest Flightfax issue attached) will be sent to your AKO email address.

AKO email address is the standard. For those individuals without CAC access and/or an AKO email address (sister services, other agencies, etc) the manual contact lists will still be available. Those case-by-case individuals must contact the Aviation Directorate to be subscribed.

Transition glitches. For those individuals who subscribed prior to 6 Sept 2012, you are under the old contacts subscription process. Please re-subscribe under the new system. You have not been dis-enrolled but you may receive two newsletters. Reply to the first mailing stating you are receiving two copies and you will be manually deleted from the old contacts list. Thanks ahead of time for your patience.

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in September 2012.

Cargo helicopters

CH-47

-D series. Left cockpit door separated from the aircraft upon take-off from the airfield. Crew landed the aircraft without further incident and door was recovered. (Class C)

Utility helicopters

UH-60

-M Series. #2 engine oil–LOW pressure indication during RL progression evaluation. Aircraft landed without further incident. Post flight revealed cap had not been replaced on the oil reservoir. Replaced engine. (Class C)

It is impossible to accurately measure the results of aviation safety. No one can count the fires that never start, the aborted takeoffs that do not occur, the engine failures and the forced landings that never take place. And one can neither evaluate the lives that are not lost, nor plumb the depths of human misery we have been spared.

But the individuals with the flight controls, fueling hose, wrench, radar, or work order can find lasting satisfaction in the knowledge they have worked wisely and well, and that safety has been the prime consideration.

Fixed wing aircraft

RC-12P

Crew was conducting an RL progression training flight when they experienced a cockpit warning indication for a left main landing gear anomaly. Crew initiated emergency procedures and the landing gear collapsed upon touchdown. (Class A)

Unmanned Aircraft Systems

MQ-1C

UA experienced high temp warning on climb-out. Crew executed emergency procedures to return to base. Engine failed with system landing short of the runway. (Class A)

Aerostat

Aerostat recovered with damage after being observed drifting unsecured. Inspection revealed that the tether had been severed from a suspected aircraft rotor strike. (Class B)

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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Flightfax®

Online Report of Army Aircraft Mishaps

We began the first 60 days of this fiscal year with a good trend; manned accidents are lower than last year. With this good trend news, reporting the hazards and recommended mitigations of emerging trends becomes difficult for this month's Flightfax. We certainly are not complaining, and can think of no better way to enter the holiday season.

So instead, we highlight a seasonal risk – IIMC. Pages 4 and 5 highlight IIMC accidents over the past 10 years. We've said it before, and acknowledge it now; it is easy to Monday morning quarterback the stats over the last ten years and point to what went wrong, which is essentially what is presented on those two pages. A much harder task is to review the cases over the last ten years and find an area that Aviation leaders can immediately address and mitigate the IIMC risks. Attempting to accomplish the harder task, we considered that in 21 Class A cases, the Air Mission Commander made errors that directly contributed to the accident. This is especially evident with respect to visual obscuration-related accidents, and particularly inadvertent IMC.

In seven of the thirteen IIMC accidents, the AMC made improper decisions that got the flight into IIMC. Examples include: allowing the flight to enter an area of deteriorating visibility; conducting the mission using expired weather information; no IIMC break-up contingency which resulted in an uncoordinated break-up and chalk 2 losing control of their aircraft; and ignoring a Blue Force Tracker text message from the battalion battle TOC instructing the flight to remain overnight due to adverse weather at home station. Overconfidence, inadequate IIMC training, and minimal AMC experience were cited as root causes of these errors.

Fifty-three percent of the IIMC accidents can be traced back to AMC failures, which points to an obvious mitigation suggestion. A good start may include reviewing who is appointed as an AMC, with the understanding AMCs are chosen based upon recent aviation experience, maturity, judgment, and their abilities for mission situational awareness, and the understanding of commander's intent. A further mitigation could include a thorough review of your unit's AMC training and certification program. The goal is to select individuals based upon their experience, training, and their demonstrated proficiency and tactical decision making skills. Tightening up on how AMCs are appointed, trained, and evaluated could potentially reduce IIMC risk by 50 percent or more.

Until next month, fly safe!

LTC Christopher Prather USACR/SC Aviation Director
email: christopher.prather@us.army.mil

The Realities of Inadvertent IMC (Flightfax 8 Dec 1976)

"If inadvertent IMC is encountered climb to 2000', contact range control on FM 30.8."
"Descend immediately to regain VMC when IMC conditions are experienced."
"Inadvertent IMC flight is prohibited at all times."

The above are not excerpts from some inadvertent IMC plans currently in existence – they are the plans. They also represent the attitudes that cause inadvertent IMC to be Army aviation's number-one killer. No matter how much we wish to ignore the possibility of encountering inadvertent IMC or rationalize that it really doesn't exist at all – "people shouldn't attempt VMC flight when the weather is marginal" – it still happens, generally with catastrophic results. The question is why? Why does an instrument-qualified aviator flying an instrumented aircraft lose control under these conditions when he obviously demonstrated skill in instrument flight by obtaining the qualification? The answer lies primarily in one significant difference between deliberate and inadvertent IMC flight – PLANNING. The pilot undertaking a deliberate instrument flight has studied the weather, thoroughly charted the route, computed fuel requirements, has all the necessary navigation publications, and has a clearance from ATC to cap it off. He knows exactly where he's going and how to get there. Inadvertent IMC, on the other hand, is an unplanned event occurring generally at low airspeed and low altitude, with the crew totally unprepared for instrument flight. Psychologically, it's a nightmare.

The pilot that fears the consequences of blundering into the ATC system without a clearance is probably unsure of his position, and very likely does not have instrument navigation charts available. Add to this the utter lack of a preplanned course of action for a safe recovery and disaster is virtually assured. So, to answer the question of why the pilot lost control – he didn't – he never attempted to control the aircraft, only tried to return to VMC – generally in a diving 180-degree turn, terminating in a high speed ground impact.

Now what can be done about this? To begin with, the pilot has to be convinced that a system insuring his safe recovery has been established; therefore, each installation with aircraft assigned must develop a simple, *workable* IMC recovery plan. Keep in mind the pilot will have to memorize the altitude to which he is to climb, the facility to contact and the recovering airfield, so keep these immediate actions as straight-forward as possible. Additional details such as frequencies, en route fixes, lost communication procedures, etc., must also be made available to the pilot in the form of a local publication permanently carried in the aircraft. All of which brings us to the next point – aircraft and aircrew suitability. Although both civilian and military aviators have tried unsuccessfully for years to disprove this – you still can't fly instruments without instruments nor can you fly instruments when you can't interpret them – so before trying to hack marginal VMC, be absolutely certain that both you and the aircraft are prepared for and capable of instrument flight.

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The final and most critical consideration – aircraft control. Any survivor of an inadvertent IMC situation will attest to the startling suddenness of the encounter. There is simply no time for an orderly transition to instruments – as in an ITO – which very probably accounts for the fact that in the majority of the inadvertent IMC accidents, the pilot had made no apparent attempt to go to the gauges. Since an attempted immediate return to VMC is virtually a suicidal act, and the pilot has no instrument scan established, the situation is certainly grim – but far from hopeless.

In recognition of this very critical transition period, HQDA directed USAAVNC to develop an immediate action procedure which would enable the pilot to rapidly transition to instrument reference. The procedure developed, which is now DA policy, is a simple step-by-step technique, bringing the instruments into the pilot's scan in order of criticality as follows:

1. ATTITUDE INDICATOR – level the aircraft. Quite obviously, the most important first step, as no following control input will achieve the desired response if the aircraft is not in a level attitude.
2. HEADING INDICATOR – maintain heading. Turn only to avoid *known* obstacles. Don't compound things by getting vertigo.
3. TORQUEMETER – adjust to climb power. Let's get away from the hard ground as fast as possible.
4. AIRSPEED – adjust to climb airspeed.
5. RECOVERY PROCEDURES – initiate only after transition to instrument reference is complete and the aircraft has reached a safe altitude. Don't distract yourself from the primary job of regaining control of the aircraft. Save the yelling for later or let the copilot do it.

Remember this above all else – **WHEN INADVERTENT IMC IS ENCOUNTERED, YOU MUST GO ON INSTRUMENTS. THERE IS NO OTHER OPTION.** An immediate landing or a 180 away from the weather will work only when you are still VMC – and, unfortunately, we have the fatalities to prove it.

We should all bear one thing in mind when we talk about a troop who 'rode one in.' He called upon the sum of all his knowledge and made a judgment. He believed in it so strongly that he knowingly bet his life on it.

That he was mistaken in his judgment is a tragedy, not stupidity. Every supervisor and contemporary who ever spoke to him had an opportunity to influence his judgment, so a little bit of all of us goes in with every troop we lose.

IIMC Accidents – The Past 10 Years

In the last 10 years the Army has experienced 230 rotary wing Class A mishaps. Approximately one third (77) were accidents with fatalities totaling 240 deaths. A review of these Class A accidents shows that at least 13 accidents occurred due to inadvertent instrument meteorological conditions (IIMC) and/or continued flight into marginal weather conditions. These 13 mishaps (6%) accounted for 50 (21%) of the total fatalities that occurred during the time period. 10 of the 13 accidents occurred under NVD/N flight. Breakdown by airframe shows 7 UH-60; 3 AH-64; 2 CH-47; and 1 OH-58D.

❑ While conducting a **UH-60L**, cross-country support mission, the aircraft encountered unforecast deteriorating weather conditions at night and attempted to push through the deteriorating weather conditions. After unsuccessfully attempting to continue the mission under visual meteorological conditions (VMC), the crew attempted to transition to IFR. As the flight crew attempted to transition to IFR, the aircraft struck a TV transmission tower support cable and crashed, resulting in destruction of the aircraft and 7 fatalities.

❑ During the conduct of night vision goggle (NVG) multi-aircraft operations at 500 feet above ground level (AGL), the lead aircraft in a flight of two **UH-60L** aircraft encountered instrument meteorological conditions (IIMC). During the execution of inadvertent IMC procedures, the aircraft descended rapidly and struck the ground. The aircraft was destroyed and five of the seven personnel on board were injured.

❑ During night vision goggle currency and readiness-level progression training, the crew of a **UH-60L** encountered instrument meteorological conditions. The aircraft entered 70- to 80-foot-tall trees in a 30-degree nose-low attitude, with a 45-degree left bank angle, at approximately 80 to 100 knots. The aircraft was destroyed and three crewmembers were fatally injured.

❑ While en route to conduct a night vision goggle (NVG) reconnaissance, surveillance, and orientation mission, the **OH-58D** accident aircraft crew encountered low visibility and attempted to execute a 180-degree turn to the left. The nose pitched up, causing a corresponding increase in altitude and decrease in airspeed. The accident aircraft rolled out of the left turn and went into a right turn. The crew attempted to regain flight control when the aircraft struck the ground, causing significant damage to the aircraft and fatally injuring the pilots.

❑ While conducting a night, single-aircraft, night vision goggle, cross-country training flight, the crew members encountered inadvertent instrument meteorological conditions. The crew members of the **UH-60L** lost control of the aircraft and struck the ground in a 10 to 15 degree nose-low attitude. The aircraft was destroyed and the three crew members received fatal injuries.

❑ While returning to base in an **UH-60A** at night, utilizing night vision goggles with heads-up display, the pilot in command (PC) encountered inadvertent instrument meteorological conditions. As the PC transitioned to instrument flight, the aircraft's airspeed increased but

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instead of a positive climb, the aircraft descended and impacted the ground. One Soldier was fatally injured, seven were seriously injured, five sustained minor injuries, and the aircraft was destroyed.

❑ While returning to base at the end of a night mission utilizing night vision devices, the **AH-64D** aircraft encountered instrument meteorological conditions and attempted to reverse course in order to avoid the weather. The aircraft slowed to near zero airspeed, entered a high rate of descent, and impacted the ground. The aircraft rolled downhill approximately three times and came to rest upright. Both crew members sustained minor injuries and the aircraft was destroyed in a post-crash fire.

❑ While returning to the stagefield following night live-fire training, the **AH-64D** aircraft with the instructor pilot on the controls, failed to maintain orientation while executing inadvertent instrument meteorological conditions (IIMC) recovery procedures. As a result the aircraft descended and impacted the ground. Both crewmembers received fatal injuries.

❑ While performing a multi-ship, day out, night vision goggle return with simulated troop insertion, the pilot inadvertently entered instrument meteorological conditions. The **UH-60L** aircraft developed an unusual attitude which became unrecoverable. As a result, the aircraft crashed through a set of large diameter power lines and impacted the ground. Three crew members received fatal injuries and the aircraft was destroyed.

❑ The accident occurred while conducting night vision goggle continuation training in deteriorating weather conditions. The **UH-60A** aircrew elected to circumnavigate the lowering weather conditions via an alternate route. While following a paved road, the aircraft encountered heavy rain showers and fog and struck the military crest of a ridge line, impacting trees and rocks. The aircraft was destroyed and all five crewmembers sustained fatal injuries.

❑ While attempting to return to home station from a night area reconnaissance mission in marginal weather the crew of the **AH-64D** failed to maintain or recover orientation. As the aircraft initiated a turn to reverse course, the aircraft established an unrecoverable attitude and crashed with the crew receiving fatal injuries and the aircraft being destroyed.

❑ While conducting a day time, two-aircraft general support mission, the crew of the **CH-47D** failed to maintain orientation and aircraft control after inadvertently encountering instrument meteorological conditions (IIMC) and crashed, resulting in 18 fatalities and a destroyed aircraft.

❑ While conducting a day, single-aircraft, cross-country training flight, the **MH-47G** did not adjust in-flight procedures in response to meteorological obscurations by altering altitude or flight path sufficiently to avoid clouds or areas of restricted visibility. Nor did they adjust airspeed to allow the crew to see obstacles in time to avoid them or commit to instrument flight procedures when deteriorating weather reduced their flight visibility. As a result, the aircraft crashed into a television tower and support cables, resulting in 4 fatalities, 1 injury and a destroyed aircraft.

Academic Training

CW4(P) Timothy Smail
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL
Cargo Branch Chief

The OPTEMPO aviation units have been operating at for a decade has created challenges on many levels. I am going to highlight one that stands out to me from my various assistance/assessment visits to units in and out of the AOR during the past couple years.

First of all, let me say that aircrews have been very professional in accomplishing some amazing feats. Our aviation force's mission focus and execution is the best in our storied history. However, with such a high OPTEMPO, aircrews have slipped a bit in their general aviation knowledge. This is substantiated by the high failure rate on the written and oral evaluations we give during our visits. In addition, we've also seen weak academic programs clearly lacking effective leadership involvement. The result is an aviation force where the majority of crews have never seen a robust academic training program.

The academic training aviators receive in flight school provides a solid foundation that should be continuously built on for an entire career. Unfortunately, some of the aviators who have graduated flight school since the start of combat operations have not been effectively doing that. After 11 years of combat operations some of these aviators are now senior trainers and leaders. By contrast, the pool of master and senior aviators who graduated flight school prior to combat operations and know how to conduct a robust academic training program is rapidly dwindling.

As we approach the end of combat operations and dwell continues to increase, aviation leaders must firmly emphasize academic training to reverse this trend. They must also take advantage of our master aviators — the pillars of aviation knowledge — before they retire and are unavailable to guide and develop junior aviators in their craft. Emphasizing academic knowledge and continuing mission-focused training while we transition to a garrison force, will result in safer, more professional aircrews, ready for any contingency operation - home and abroad.

CW4(P) Timothy Smail, Cargo Branch Chief, DES, timothy.c.smail.mil@mail.mil, (334) 255-3029

Mishap Review: Flight-related fatality

During a MEDEVAC hoist training mission, a PAO camera man, while filming the operation from a nearby tree-line, was struck by falling tree limbs resulting in fatal injuries.

History of flight

The mission was to conduct external hoist and patient loading/unloading training as part of an overseas humanitarian and civic assistance exercise. The mission was considered a standard mission and authorized by the exercise commander. Weather at the time and location of the accident was clear skies, 7 miles visibility, winds calm, and OAT of 26 C.

The HH-60 arrived at the training site approximately 1000 hours local. As part of the mission, a PAO camera man was assigned to film the training. The first four iterations of the hoist training were filmed from inside the aircraft. The aircraft then landed and dropped of the camera man who filmed another four iterations from the ground.

Following completion of the hoist training, the aircraft landed and picked up seven simulated ambulatory patients. The camera man repositioned approximately 75 feet to the front of the aircraft to film the aircraft's departure. His position was located in a tree line under a large cedar type tree. On take off, as the aircraft was climbing to gain altitude to clear the tall trees at the end of the LZ directly over the camera man, the rotor wash dislodged three to four large tree limbs which fell and struck the individual, causing fatal injuries.

Commentary

The accident board determined the accident was caused by environmental factors. Broken tree limbs falling to the ground and injuring personnel generally cannot be determined nor anticipated. But, when looked at holistically, caution should be taken when operating under trees during aviation operations or windy conditions. The board recommended that units be briefed on the facts and circumstances of this accident and include this risk and associated controls in developing their risk assessments.

Class A – C Mishap Tables

	Manned Aircraft Class A – C Mishap Table									
	Month	FY 12					FY 13			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities
1st Qtr	October	2	2	6	1		1		5	
	November	1	0	13	0			1	2	
	December	2	2	6	4					
2nd Qtr	January	2	0	11	0					
	February	2	1	6	0					
	March	1	2	11	0					
3rd Qtr	April	2	1	5	4					
	May	1	0	3	0					
	June	1	0	2	0					
4th Qtr	July	4	3	10	1					
	August	2	4	7	0					
	September	1	0	2	0					
	Total for Year	21	15	82	10	Year to Date	1	1	7	0

as of 26 Nov 12

UAS Class A – C Mishap Table									
	FY 12 UAS Mishaps					FY 13 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	5	1		6	W/GE	2			2
MQ-5	1		2	3	Hunter			3	3
RQ-7		5	19	24	Shadow			3	3
RQ-11			1	1	Raven				
MAV									
YMQ-18	1			1					
SUAV			5	5	SUAV			1	1
Aerostat	2	5		7	Aerostat				
Total for Year	9	11	27	47	Year to Date	2	0	7	9

as of 26 Nov 12

UH-60 Five Year Accident Trend Review

During the last five Fiscal Years (FY08 – FY12), there were 31 recorded UH-60 Class A mishaps, resulting in 39 fatalities. Seventeen of the class A mishaps occurred under NVGs, thirteen during the day and one night unaided. Additionally, there were 25 Class B and 116 Class C mishaps. A review of the mishaps reveals the following:

- 93% (29) of the 31 Class A mishaps were caused by human error, 1 suspected materiel failure, and 1 cause factor not yet been reported.
- Class B's consisted of 22 (88%) human error, 2 (8%) materiel failures and 1 lightning strike.
- There were 116 reported Class C mishaps with 94 (81%) human error, 17 materiel (15%), and 5 bird strikes.

Leading accident events (Class A)

▪ **Power management/excessive maneuvering**. There were seven accidents associated with the aircraft running out of power for the conditions/maneuver being performed or appropriate power was applied too late to be effective. (1) While initiating a go-around under NVGs, the rotor RPM decreased and the aircraft descended and impacted a rock formation causing 10 fatalities. (2) During an approach to an 11,000 foot landing site, the aircraft's rotor RPM decreased and the aircraft settled and impacted the terrain. (3) During approach, the aircraft developed a low-rotor condition and crashed short of its intended landing zone. (4) During high altitude training, aircraft crashed into a mountain, resulting in four fatalities. (5) While conducting a day, cross-country ferry flight through mountainous terrain, the rotor drooped and the aircraft settled into trees. (6) When power was applied to stop a descent, the main rotor RPM drooped and the aircraft descended into rocky terrain. (7) Aircraft was conducting combat maneuvering type flight maneuvers during an incentive ride when it crashed, resulting in six fatalities.

▪ **Materiel failure.** There was one suspected materiel failure mishap resulting in two fatalities. The aircraft was conducting a vertical take-off when it developed an uncommanded left spin followed by a hard landing. Exact cause of the uncommanded spin could not be determined.

▪ **Ground taxi/personnel injury.** Nine incidents of aircraft ground taxi mishaps or personal injury to passengers occurred. In the four ground taxi mishaps, two involved UH-60's striking barriers and two involved rotor meshing between taxiing aircraft. On the flight-related/personal injury side, one fatality occurred when a soldier exited the aircraft at approximately 30' above ground level during a night time landing in dust conditions. There were three incidents of personnel being struck by main rotor blades during night time pax operations in uneven terrain. One fatality occurred when a soldier on the ground was struck by a falling tree branch apparently knocked loose by rotor wash.

▪**Wire/object/tree strike.** Five mishaps involved aircraft striking an object. (1) During NVG fast rope insertion training the main rotor blades struck the ship's exhaust stack resulting in one fatality. (2) During NVG approach to a FOB the main rotor blades contacted a concrete

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barrier wall. (3) During take-off, the main rotor system came in contact with a power line and a utility pole. (4) One tree strike occurred during confined area training. (5) A tether cable to an aerostat was struck and severed.

▪ **Dust/low illum/hard landing.** Four mishaps were attributed to dust/low contrast conditions. (1) During NVG assault mission in low contrast conditions and zero illumination, the aircraft impacted the ground, resulting in four fatalities. (2) During NVG approach to unimproved desert LZ the aircraft impacted the ground and rolled resulting in one fatality. (3) Aircraft experienced dust during NVG take-off and crashed. (4) During NVG dust landing, the right main landing gear contacted the ground. The aircraft rolled to the right coming to rest inverted.

▪ **IIMC/orientation.** Four accidents occurred due to IIMC, spatial disorientation or failure to maintain orientation. (1) During NVG MEDEVAC mission in marginal weather, the crew failed to maintain orientation and the aircraft crashed with four fatalities. (2) While conducting a civilian search and rescue mission on a mountainous glacier, the aircraft descended and impacted the terrain. (3) While conducting a night IMC approach, the aircraft developed a high descent rate and impacted the ground, resulting in three fatalities. (4) After encountering IIMC conditions the aircraft descended and impacted the ground, resulting in one fatality.

▪ **Additional/unknown.** One aircraft was destroyed by fire caused by a fuel leak during a start sequence. During phase inspection, the cross-feed fuel line nut to the #2 fuel cross-feed breakaway valve was not properly installed, resulting in the leak. Additionally, one aircraft crashed while conducting a passenger drop-off in a non-standard HLZ. Cause of the accident has not yet been reported.

	Blackhawk CLASS A – C Mishaps			
FY	Class A	Class B	Class C	Fatal
2008	5	7	29	6
2009	10	8	21	7
2010	8	2	16	20
2011	2	4	25	0
2012	6	4	25	6
Total	31	25	116	39

"I'm Inadvertent IMC" Feb 94 Flightfax

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 crewmembers were injured. Of the seven Class C accidents, four were sling load 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.

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.
- Do 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!
- Do 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.

Continued on next page

- *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 IIMC 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 1/2-mile and 1-mile visibility?
- Reinforce good crew coordination and crew interaction.
- Ensure that if aerial observers 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.
- Do 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 IIMC accidents occur 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.

From the February 1994 Flightfax – (POC was CW5 Robert A. Brooks, Aviation Branch, USASC)

'Flying the airplane is more important than radioing your plight to a person on the ground incapable of understanding or doing anything about it...'
- Emergency Checklist-

About the Weather

Ask yourself: Even if it's *legal* to go, how *prudent* is it?

What happens if it's right at the limit – just good enough to take off? What if you do take off and then it *turns* to soup 15 minutes into the mission? What are you going to do now? Can you land where you are and wait it out? What are you going to do if you can't?

What if it gets so bad that you decide to turn around, and there **ain't no turning around** – you bump into the clouds? What are you going to do now? Do you have a plan? Do you have enough fuel? Are you prepared to deal with IMC?

Ask yourself: Am I truly prepared to deal with IMC?

Do you have excellent proficiency? Are you totally prepared? Do you have a plan that you've coordinated with the rest of the aircrew? Have you briefed it? Is the aircraft properly equipped? Do you have navaids and instrument approaches available? Do you have a coordinated plan to reduce the effects of spatial disorientation should it strike you or another crewmember in inadvertent IMC?

Ask yourself: How bad does it have to get before I say no?

If you are routinely flying in the worst weather that's legal to fly in, it's only a matter of time until you find yourself inadvertently IMC. And if you're not ready – not fully prepared – this could be where the statistics catch up with you and you have an accident. And please remember that accidents resulting from inadvertent IMC situations are ***very rarely*** minor accidents.

Ask yourself: Is *this* mission worth doing in *this* weather?

Maybe your unit should establish some weather criteria of its own. How much experience does the unit have? Are you a bunch of old-timers who've got a lot of IFR time and are well prepared to deal with IMC? Or are most of you rookies who haven't been inside a cloud since you were with your IP in flight school? Or are you somewhere in between? Maybe you should have different minimums that consider not just crew experience but mission criticality as well. And what if you establish ahead of time the level at which go-no-go decisions are made – that if the weather is here, then the decision must be made at this level. In other words, what if you elevate the decision to a level that's consistent with the level of risk?

Sound familiar? Good! That's basic risk management.

And basic good sense.

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in October 2012.

Cargo helicopters

CH-47

-D series. Aircraft contacted security tower during landing attempt in dust conditions. Aircraft forward rotor system and tower sustained significant damage. (Class A)

Utility helicopters

HH-60

-M Series. Aircraft contacted vegetation with the main rotor blades during operations on the HLZ. All 4 MR tip caps required replacement. (Class C)

Attack helicopters

AH-64D

-Crew experienced a low-rotor warning as they were repositioning on the taxiway for incoming aircraft while performing a 'HIT' check. (Class C)

Observation helicopters

OH-58D

-Aircraft experienced an NP over-speed (126% / 7sec) during FADEC training. Engine replaced. (Class C)

Unmanned Aircraft Systems

MQ-1C

-UA experienced engine oil/coolant and gearbox over-temp and FADEC FAIL indications during flight. Crew attempted to land to the runway and experienced engine failure. System impacted just off the runway. (Class A)

MQ-5B

-System experienced an arresting hook failure during landing sequence and was subsequently returned to flight mode to expend fuel per 'hook-up' landing procedures. Upon touchdown beyond the approach angle, with decreased airspeed, the system veered off the runway and crashed. (Class C)

-System successfully caught the initial right-hand arresting cable during touchdown for landing, after which it veered right and struck the 2nd arresting gear. The right-main landing gear was sheared off and the aircraft skidded to a stop. (Class C)

RQ-7B

Crew experienced an engine RPM/temperature spike during flight. During emergency landing, the system experienced an engine failure and crashed on the FOB. (Class C)

U.S. ARMY COMBAT READINESS/SAFETY CENTER

Report of Army aircraft mishaps published by the U.S. Army Combat Readiness/Safety Center, Fort Rucker, AL 36322-5363. DSN 558-2660. Information is for accident prevention purposes only. Specifically prohibited for use for punitive purposes or matters of liability, litigation, or competition.

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Number 20 December 2012

Flightfax®

Online Report of Army Aircraft Mishaps

As you and your families gather to celebrate the holidays, we want to take a moment to send greetings from the Aviation Directorate staff. We appreciate all you do to keep our Soldiers safe.

Fiscal year 2013 is off to a superb start for reducing accidents. We can maintain this year's success through assessing and maintaining your unit's safety culture. Safety culture fosters an instinctive mindset in Soldiers that manifests itself in Soldiers' activities, both on and off duty.

Safety culture is not separate or distinct from organizational culture. When done right, safety is an ingrained aspect of the organization's existing culture. A unit's shared beliefs, values and attitudes all contribute to operational safety and efficiency. Soldiers are the key stakeholders in any culture, and leaders must have their buy-in to make safety pay in their formations.

Safety must not compete with the organization's primary mission. Safety complements, not dictates, mission execution. Much of what our Army does comes with inherent risk, but in the thick of the fight, the Soldiers engaged in actual operations control how hazards are mitigated. Leaders must guide them through holistic risk assessments that account for hazards posed by the enemy, environment, materiel, and their own human error, and then give them the latitude to make smart decisions to control aggregate risk.

Risk management is linked to readiness. Safety keeps Soldiers and equipment in fighting condition. Every loss degrades readiness, regardless of the source. Accidental fatalities are senseless because they can often be prevented, and every death leaves a lasting gap in that Soldier's unit and Family. To stay ready, Soldiers must stay safe.

Safety must be an imperative, not a priority. An imperative is a "have to do," while priorities can shift due to competing demands. Safety can't slide to the left or right simply because something else might seem more important. In terms of Soldier's lives, there is nothing more important than safety.

Aviation safety is not accidental. It is a deliberate process where members in an organization take the time and effort to effect positive change and foster a safety culture because they care about saving fellow Soldiers' lives.

Until next month, fly safe!

LTC Christopher Prather
USACR/SC Aviation Director
email: christopher.prather@us.army.mil

The cold hard facts about the cold Flightfax 13 December 1989

Often overheard around the world is the statement, “If you don’t like the weather here, hang around a few minutes and it’ll change.” However, Army aviation missions don’t change just because the weather does. Or because the seasons do.

Winter is shivering its way across many parts of the world where Army aviators fly. Extreme cold and blowing snow offer special challenges in ground operations, preflight, and actual flight conditions.

Rapidly changing weather is by far the greatest hazard to cold weather flying. Weather minimums must be established early in planning any operation to prescribe the least acceptable weather in which a commander will permit an operation to be mounted. Current aviation weather forecasts are mandatory. Factors that must be considered are temperature, density altitude, wind speed and direction, icing, visibility, turbulence, and snow and ice conditions.

Aviators must never underestimate the danger of the cold. The following hazards brought about by changes in the weather can be more than inconvenient; they can be deadly.

Icing

Only those aircraft equipped with deicing and/or anti-icing equipment are capable of safe instrument flight into clouds or visible moisture when the temperature is freezing or below. Takeoffs should not be attempted when frost, ice, or snow is on the airfoil surfaces. Only a thin layer of ice is necessary to cause a loss of lift.

Structural icing is the most hazardous condition associated with the cold. AR 95-1 prohibits Army aircraft from flying into known or forecast severe icing conditions. Icing is most common when the temperature is between 32 degrees F with visible moisture in the form of clouds, drizzle, rain, or wet snow. Icing is rarely experienced in temperatures colder than -4 degrees F.

Weather forecasters give icing severity based on meteorological conditions as they affect fixed wing aircraft. However, helicopter main rotor blade rotation amplifies ice accumulation, so reported conditions will be more severe for helicopter operations.

Freezing rain

When freezing rain is encountered in flight, the pilot should land as soon as possible. Until landing is possible, the pilot should request a higher altitude if IFR, or if VFR, initiate a climb and contact the nearest ATC facility for clearance. Freezing rain is usually the result of a warm air mass overriding a cold air mass. If the pilot climbs when he encounters freezing rain, he will normally be entering warmer air.

Static electricity

During cold weather, static electricity creates serious problems. It can be generated by the movement of an aircraft through the air, by brushing snow and ice from the aircraft, or by dragging steel ground cables over the snow.

During refueling and rearming operations, it is extremely important to ground the aircraft properly. Individuals must discharge static charges built up in their bodies by touching a properly grounded surface. During refueling operations, fuel nozzles should be fully inserted into the aircraft filler neck at all times.

Landing in snow

Operation over snow-covered terrain is difficult, even for the most experienced aviators, and landing is especially tricky. When landing, pilots should never plan to terminate the approach to a hover, as disorientation can occur in the resulting snow cloud. The initial position of an approach to

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snow is the same as any other approach. The primary difference is in the last 50 feet. Instead of making the normal deceleration below effective translational lift (ETL) airspeed, an airspeed greater than ETL should be maintained until just prior to touchdown. This procedure keeps the helicopter in front of the snow cloud until touchdown, after which the aircraft will become engulfed in the snow cloud.

The approach angle during the last 50 feet deviates from the standard constant angle of descent. A slight leveling off is required to maintain airspeed. As the aircraft descends to an in-ground effect altitude, blowing snow will develop to the rear of the aircraft. It is at this point that deceleration should begin to position the aircraft in a landing attitude. Once ground contact is made, torque should be reduced until the aircraft is firmly on the ground.

13 Dec 89 Flightfax – author not listed.

References:

FM 1-202, FM 1-230, FM 31-70, FM 31-71 [Current reference is FM 3-04.203]

If you have comments, input, or contributions to Flightfax, feel free to contact the Aviation Directorate, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; DSN 558

UAS Class A – C Mishap Table									
	FY 12 UAS Mishaps					FY 13 UAS Mishaps			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	5	1		6	W/GE	2			2
MQ-5	1		2	3	Hunter	1		3	4
RQ-7		5	20	25	Shadow			5	5
RQ-11			1	1	Raven				
MAV									
YMQ-18	1			1					
SUAV			5	5	SUAV			2	2
Aerostat	2	5		7	Aerostat				
Total for Year	9	11	28	48	Year to Date	3	0	10	13

as of 12 Dec 12

Professional Army Aviator

CW4 Dann G. Myers
Directorate of Evaluation and Standardization
U.S. Army Aviation Center of Excellence
Fort Rucker, AL
Assault Branch Chief

What does it mean to be a professional Army aviator? The word implies that you are an expert; a technical and tactical expert in the employment of your specific aircraft. To claim the title of professional you must do three things:

- ❑ **Become an expert in the tools and skills necessary to do your job.**
- ❑ **Always perform to the best of your abilities.**
- ❑ **Keep your knowledge up to date.**

Aviators become experts in the necessary tools and skills by attending flight school, going through RL progression, and attending unit training events conducted at the Joint Readiness Training Center and the National Training Center. They continue to advance their skills, gain experience and become tactical and technical experts in their field by participating in mission planning exercises, working with company leaders and coordinating with battalion and brigade staff elements. Aviators must always keep their eyes and ears open so they can soak up as much information about their chosen field as possible. If an individual chooses to show a lack of personal discipline and does not participate in unit training events or in the day to day operations of the unit, they will lack the opportunity to accumulate knowledge. Eventually, the level of their knowledge base, along with proficiency in the aircraft, will deteriorate and they will be viewed by their peers and command as less than professional.

When we do not perform to the best of our abilities we not only let ourselves down but our entire team. We are all familiar with individuals that do not pull their own weight. We have all flown with someone that does not want to do the detailed mission planning or be bothered by mission rehearsals and briefings. We have all worked with someone who, when given an aircraft and crew to conduct continuation training, takes the easy route and goes VFR to a local airport where they can get lunch. They then return to their home station VFR instead of planning an IFR flight to their destination and then planning a VFR flight with a tactical route in the local terrain flight area. If all we do is the minimum to get by, and don't plan and train for the next combat theater, then we will never become better and lives could be lost. Meeting minimum standards is not the mark of a professional.

The Directorate of Evaluation and Standardization has recently been directed to "Put the big S back in DES". To that affect, we have started administering general knowledge written examinations to aircrew members in units during our visits. What we have learned is that most units have very good training programs to get aviators from RL3 to RL1, but due to OPTEMPO, or personnel shortages, continuance of academic training is lacking in many units. Recently, DES has observed an alarming trend beginning to emerge based on previous assessment visits. A large number of individual aviators are incorrectly answering emergency procedures and aircraft limitation questions. In the past, the

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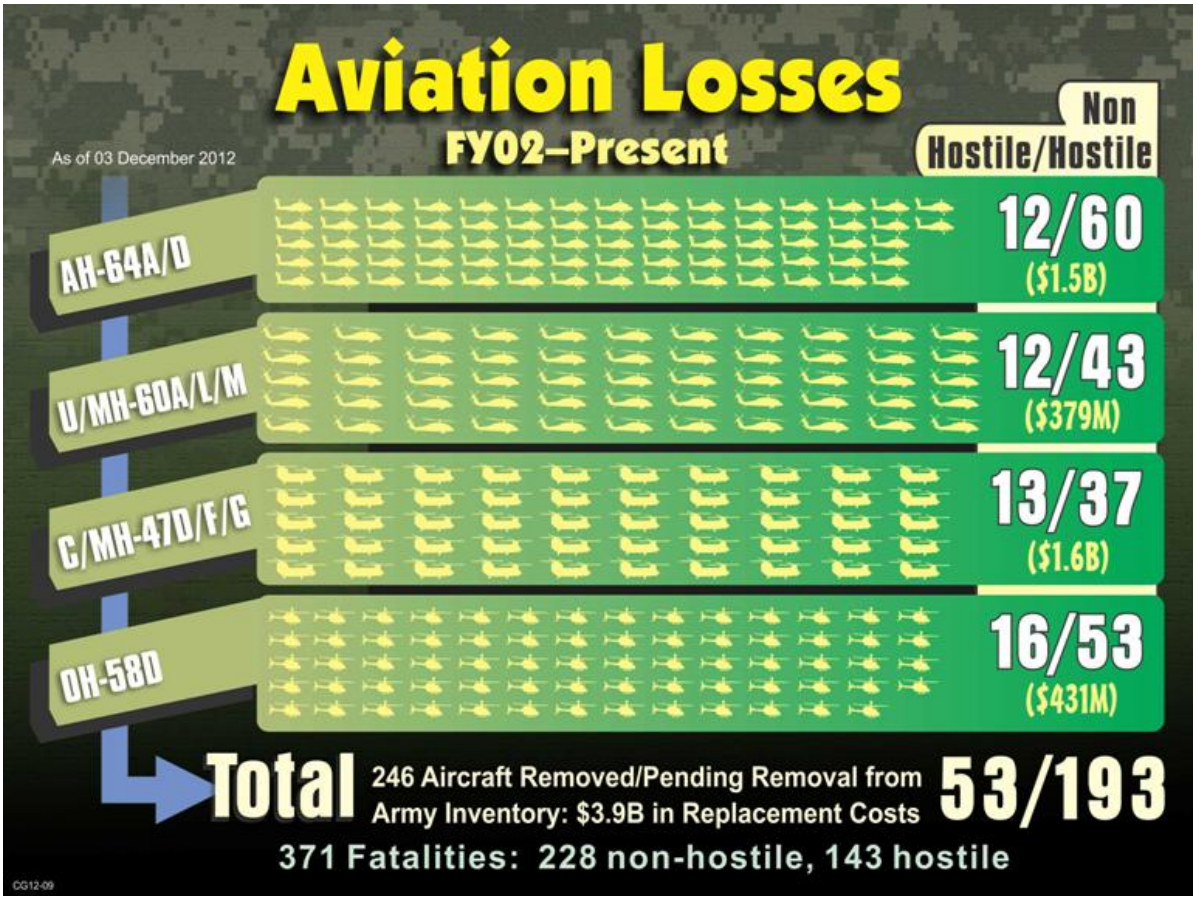
commonly missed areas on the written tests were generally limited to areas of the ATM where recency was a factor, i.e. instruments, aerodynamics, and installation standard operating procedures. The fact that many are missing questions fundamental to the aircraft in which they operate speaks to personal discipline, standards, and safety. Even more alarming is that the aviators missing the emergency procedures and limits questions are senior PCs, UTs, and MPs – the primary trainers in the unit. Many times aviators out of flight school do the best on the chapter 9 and chapter 5 questions due to the recency with the school environment. Every aviator must have the personal discipline to continue to study and gain knowledge in the aircraft which they operate and must understand actions to be taken in an emergency. Although ATP commanders are responsible for the unit academic program, individual aviators are responsible for maintaining a basic level of knowledge which includes aircraft emergency procedures and limitations. One can hardly be known as a professional when they lack the very basic fundamental knowledge of the aircraft they fly.

Bottom line then, is if you want to be known as a professional aviator, a tactical and technical expert, it is up to you. Aviators must take advantage of all training opportunities presented in order to gain new knowledge and build upon the basic skills taught in flight school. To become the expert that others come to for answers, you must perform at a level above your peers, and exercise the personal discipline required to be a proficient expert aviator. It is up to each of us to become the professional aviator that the Army and our country expect and require us to be.



Mishap Review: UH-60L Ground Taxi

While taxiing to parking following completion of a day air movement mission, chalk 1, in a flight of two UH-60L's, attempted a 180 degree turn on a maintenance pad and made contact with an 8' T-wall barrier. The tail strike resulted in damage to all four tail rotor paddles, separation of the tail rotor gearbox and structural damage to the tail pylon and drive train (Class B). There were no injuries.

History of flight

The mission was a day aerial movement (two UH-60Ls) with a follow on LZ/PZ reconnaissance. The low risk mission was considered a standard combat set with final mission approval completed by the battalion commander. The crews began their duty day at 1030L. Pre-flights were conducted at 1100 followed by crew briefs. The weather was 25,000 broken, visibility 7 miles with winds 090/06 knots. Temperature was +22 C , PA of +23 feet and altimeter of 29.91.

The flight departed at 1330L with the accident aircraft in the lead position. Approximately one hour later, the flight arrived at their destination, dropped off and received new passengers, then departed back to home base.

Upon return to their home station, the aircraft dropped off their passengers and repositioned to the taxiway to return to parking . At approximately 1600 hrs local, chalk one pulled into the center of three maintenance pads. The aircraft was maneuvered onto the pad with the intention of doing a 180 degree turn to have the nose pointing out on the pad in anticipation of completing a maintenance inspection. As the aircraft began its initial 180 degree turn there was a concern about tail rotor clearance with a metal stand located at the rear of the pad. The aircraft stopped the turn, maneuvered forward to ensure clearance, then continued the pedal turn. As the aircraft made its final right turn, the tail rotor made contact with a concrete T-wall that was part of a bunker located just off of the right-rear of the maintenance pad. When the tail rotor made contact with the T-wall, the tail rotor gearbox separated from the aircraft. Emergency shut down was completed and the crew exited without injury.

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Crewmember experience

The PC had more than 3200 hours total flight time, 1686 in the UH-60. The PI had 600 hours total time with 556 hours in the UH-60. The CE, right side CE station, had more than 488 hours. The CE, located in the left CE station, had 520 hours.

Commentary

The accident board determined that the crew did not adequately ensure the tail was clear prior to turning and the crewchief became fixated on the tailwheel and stabilator clearance while not properly clearing the tail rotor tip path of obstacles. The crew did not properly employ all the tenets of crew coordination in that he crew did not communicate positively, announce actions, provide aircraft control and obstacle advisories, nor were they explicit in their communication procedures.

All information contained in this report is for accident prevention use only.
Do no disseminate outside DOD without prior approval from the USACRC.
Access the full preliminary report on the CRC RMIS under Accident Overview Preliminary Accident Report
https://rmis.army.mil/rmis/asmis.main1 AKO Password and RMIS Permission required

Manned Aircraft Class A – C Mishap Table

	Month	FY 12					FY 13			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities
1st Qtr	October	2	2	6	1		1		5	
	November	1	0	13	0			1	4	
	December	2	2	6	4					
2nd Qtr	January	2	0	11	0					
	February	2	1	6	0					
	March	1	2	11	0					
3rd Qtr	April	2	1	6	4					
	May	1	0	4	0					
	June	1	0	2	0					
4th Qtr	July	4	3	9	1					
	August	2	5	5	0					
	September	2	0	2	0					
	Total for Year	22	16	81	10	Year to Date	1	1	9	0

as of 12 Dec 12

CH-47 Five Year Accident Trend Review

During the last five Fiscal Years (FY08 – FY12), there were 19 recorded CH-47 Class A mishaps, resulting in 9 fatalities. Additionally, there were 17 Class B and 88 Class C mishaps. A review of the mishaps reveals the following:

- 94% (18) of the 19 Class A mishaps had human error cause factors, with one flight-related (sling load) materiel failure. 14 of the Class A mishaps occurred under NVGs. 13 mishaps were in OEF and 3 in OIF. 5 Class A's involved dust landings (four under NVGs).
- Class B's consisted of 16 (94%) human error and 1 environmental high-wind incident. 12 mishaps occurred under NVGs. OEF accounted for 12 of the Class B's with OIF having 1. Dust landings were present in seven Class B mishaps – all under NVGs.
- There were 88 reported Class C mishaps with 66 (75%) human error, 16 (18%) materiel, three environmental and three unknown/not reported. 49 were under NVGs. 40 were in OEF and 13 in OIF. 11 Class C incidents involved dust landings.

Leading accident events (Class A)

▪ **Dust/Hard landing**. There were seven accidents associated with aircraft landing mishaps. (1) Aircraft came to rest on its left side following NVG hard landing in dust (2) Aircraft entered dynamic rollover during day dust landing (3) Aircraft landed hard in dust conditions while crew was under NVGs. Damage included structural, landing gear, and main rotor system (4) While conducting a hasty air assault at night, the aircraft descended rapidly and impacted aft first with a right roll. The impact caused minor injuries to the crew and separated the aft pylon from the aircraft (5) Aircraft was conducting a combat night insertion into a non-standard HLZ. Aircraft was chalk 2 of two when it suddenly descended while on short final and had a hard landing (6) During landing, aircraft experienced brown out conditions. Aircraft contacted and bounced off the ground, rolling onto its right side into a wall (7) Aircraft contacted the ground with forward speed during landing in dust conditions under NVGs.

▪ **Materiel failure.** Aircraft's sling load separated from the aircraft. Caused by failure of the reach pendant.

▪ **Blade strike.** Four mishaps involved aircraft striking an object. (1) During a NVG upslope landing into a non-standard HLZ, aircraft flares expended. Aircraft drifted forward and left with the forward main rotor system making contact with rising terrain (2) During NVG environmental training, aircraft landed short of intended HLZ. Main rotor system contacted sand dune resulting in Class A damage (3) While attempting a two-wheel pinnacle landing on a steep rocky surface, the aft rotor system contacted terrain, resulting in significant damage (4) While attempting a pinnacle landing , rear rotor blades contacted a tree. Aircraft became unstable and pilots hard landed to severely sloped terrain, damaging all rotor blades on the front and aft systems.

▪ **External loads.** Four accidents related to sling load operations were reported. (1) Failure of the reach pendant caused loss of load (2) Crew experienced spinning of the sling load approximately 5 minutes into the flight. The load was a single point reach pendant rigged

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TRICON weighing approximately 6000 Ibs. The crew tried to gain control of the load and stabilize it by slowing down their airspeed, but the spinning did not subside and the load separated following failure of the reach pendant's lower eye. (3) During sling load operations, load was subsequently blown over in the wake of rotorwash from the aircraft, striking a member of the hook-up crew on the ground. Soldier was fatally injured (4) During short final to deliver external load, emergency jettison lever was bumped and the load fell from approximately 150-200 feet AGL.

▪ **Misc.** (1) During initial aerial refueling qualification training, the MRB made contact with and cut the refueling hose from the MC130 tanker (2) Aircraft experienced #2 engine failure during descent. Rear of the aircraft landed on an 8 foot stone wall. Front of the aircraft came to rest on the ground (3) Aircraft was chalk 3 of a flight of 4 on an NVG air movement when the crew experienced spatial disorientation and lost control of the aircraft. The aircraft struck the ground in a nose low, left banking attitude. The aircraft was destroyed and all seven Soldiers onboard were fatally injured (4) Soldier was fatally injured when explosives he was carrying exploded due to static electricity generated by the aircraft.

FY08 - 12	**Chinook CLASS A – C Mishaps**			
FY	**Class A**	**Class B**	**Class C**	**Fatal**
2008	5	2	25	9
2009	1	6	19	0
2010	5	3	11	0
2011	3	5	18	0
2012	5	1	15	0
Total	19	17	88	9

FY03 - 07	**Chinook CLASS A – C Mishaps**			
FY	**Class A**	**Class B**	**Class C**	**Fatal**
2003	5	1	9	1
2004	2	3	11	0
2005	3	2	8	19
2006	3	1	10	14
2007	3	3	11	13
Total	16	10	49	47

Flying in the Snow

Flightfax, 26 Sep 90, author not listed

By the time you read this, some Army aviation units will already be flying in winter conditions. For the most of you, however, there is still time to brush up on snow operation procedures before you need them. If the PIC in the following account had done that, this accident might never have happened.

The PIC had attended classes on snow operations and landings within the past 60 days, but he did not participate in hands-on training. He was not required to attend the makeup training sessions before undertaking a mission that required direct application of points the instruction covered.

On the day of the accident, he was assigned as PIC of the third aircraft in a flight of five UH-60s. The mission was a tactical troop insertion, and there were 10 soldiers aboard his aircraft in addition to the three crewmembers. The lead aircraft brought the flight into a downwind approach to an area of up-sloping terrain covered by dry powder snow. To the left of the landing site, the ground sloped downward. As the PIC of chalk 3 selected a touchdown point down slope and to the left rear of the lead aircraft, the crew could see a large amount of snow circulating through the rotors of the first two aircraft. During the approach, the other crewmembers warned the PIC that his rate of closure was excessive. As he continued the approach, using the aircraft on the ground and a distant tree line as visual references, a cloud of loose snow enveloped the aircraft. The helicopter landed hard on the slope and rolled onto its left slide. The passengers were thrown out as the aircraft rolled over. Luckily, there were no serious injuries.

The aircraft hit the ground at 11 to 17 knots ground speed and in a descent of 1,600 feet per minute – excessively fast even for an approach to level terrain. This, and the fact that it was landing to a slope, decreased the aircraft's stability. FM 1-202: Environmental Flight cautions that an approach to the ground should not be attempted in dry powdered snow unless the touchdown area is known to be level and free of obstructions.

In another case, a platoon leader, who was also the mission briefer, failed to mention to the PIC of a UH-1 that he had never made snow landings or takeoffs, although he knew the mission they were about to fly required such procedures. He had also made a last-minute change in PICs, which he hadn't cleared with operations, and he failed to check the crew-rest status of the PIC he selected. If he had, he would have known that the new PIC had slept only 9 hours in the previous 43 hours. As the platoon leader made an approach to a field site covered with 12 inches of loose, powdery snow, he decreased his airspeed. The aircraft was engulfed in blowing snow that started at the rear of the aircraft and moved toward the front, causing the platoon leader to become spatially disoriented. Thinking the aircraft was moving rearward, he applied forward cyclic, and the next thing he knew, the aircraft hit the ground.

The procedure described in FM 1-202 for taxiing or repositioning in loose snow is to either ground taxi or bring the aircraft to a high hover and air taxi at a faster than normal speed to the reposition area. The pilot of another UH-1 didn't use either of these procedures because he was sure he could maintain sight of a reference point outside his right window. When he couldn't, he lost sight of his visual reference in blowing snow and became disoriented, and the aircraft drifted, hit the ground, and rolled over.

Overconfidence often plays a part in whiteout accidents. That was true in the following case.

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The unit IP, who was flying an AH-1, was familiar with snow-landing techniques. But the approach-to-ground technique he chose for landing at a sloping, snow-covered FARP wasn't suitable for the landing site. After touching down with the right skid on the uphill side of an 8 degree slope covered by dry powdered snow, the IP felt the aircraft begin to roll left and tried to abort the landing. The aircraft was engulfed by snow blown up by its rotors, and, as he tried to fly out of the whiteout, the IP lost all outside references. The aircraft drifted into a line of trees and crashed. The IP had used the same approach-to-ground technique several times that day and was confident in his ability to do it again; however, the previous landings had been made to relatively flat ground.

The landing area he had selected this time met the definition of a confined area (it was surrounded by trees to the left and high ground to the front and right). In this case, the preferable snow-landing technique would have been to terminate at a high hover, followed by a slow vertical descent to the ground as visibility permitted. The rotorwash would have cleared away the loose snow and allowed the aircraft to make a visual approach with less risk of encountering whiteout conditions.

Takeoffs can be equally hazardous in snow conditions. FM 1-202 and Aircrew Training Manual task 2104 stipulate that a maximum performance takeoff will be made where there is a danger of whiteout from rotor-induced snow. In one case, the PIC of a UH-1 used a normal takeoff (airspeed over altitude) from a snow-covered parking ramp – and the results were predictable. He lost sight of the ground in blowing snow and the aircraft crashed, injuring both pilots.

The PIC was an experienced IP, but he had little experience in snow operations. He had been in the area only 3 months, and he had never flown in powdery-snow conditions. The PIC was also in a hurry to take off. In fact, he was in such a hurry that the crew chief had to remind him to perform the HIT check. The crew had begun their flight to a field site the day before, but because of problems with a fuel boost pump they had been forced to return to their home station. It was 1500 hours before repairs could be made and they could take off again. Then deteriorating weather forced them to stop en route. By this time, the short winter day was almost over, and rather than attempt to find an unfamiliar field site in darkness, they decided to remain over night. The fact that some of the equipment for the supported unit (which was already in the field) was on the aircraft probably added to the PIC's hurry to take off the next morning. There had been no loose snow on the ground when they departed their home base the day before or when they arrived at the airfield where they spent the night. But during the night, about 3 inches of snow fell, and when the PIC attempted a normal takeoff, the powdery snow was blown up by the aircraft's rotors, causing him to lose sight of all ground references.

While it did not contribute to the accident, investigators found that the aircraft was over gross weight. The crew had not weighed the equipment they were carrying; instead they guessed, and they missed it by 397 pounds. In addition, the PIC's performance data was not correct for the environmental and aircraft conditions. Although in the cold temperatures the aircraft had the reserve power needed to take off with the load it was carrying, these factors indicate the PIC's planning was not as it should have been.

You can readily see from these examples the potential hazards associated with flight operations over snow. And it doesn't happen just to inexperienced pilots, either; some of these pilots had several years of experience flying in the snow. The point is, if your unit doesn't have an effective training program to ensure pilots are knowledgeable and capable of safely operating aircraft over snow-covered terrain, time's wasting. Don' wait to find yourself in a situation where all the world seems to have suddenly gone white. Right now is the time to get ready for flying in the snow.

Selected Aircraft Mishap Briefs

Information based on Preliminary reports of aircraft mishaps reported in November 2012.

Cargo helicopters

CH-47D

-Aircraft landing gear contacted a berm during approach in brown-out conditions to an unimproved HLZ. Gear partially separated from the aircraft and suspected structural damage occurred to the left-aft fuselage. One crewmember sustained ambulatory injuries. (Class B)

Utility helicopters

LUH-72A

-Crew noted a loud report from the upper cabin area one hour into a flight. Training was terminated and the aircraft landed. Post-flight inspection revealed that the left hydraulic cabin door had separated. Additionally, all four main rotor blades sustained damage from contact with the door. (Class C)

Fixed Wing

C-12U

-Aircraft struck a deer while taxiing following landing. Left prop sustained damage. (Class C)

EO-5C

-Crew experienced both #1 and #2 engine hydraulic pump caution indications during flight. Crew announced an emergency and landed without further incident. (Class C)

Unmanned Aircraft Systems

MQ-1C

-System experienced an engine failure during manual transfer of fuel operation. Engine restarts were attempted without success. System crashed in proximity of its departure origin but was reportedly destroyed upon impact. (Class A)

MQ-5B

-System was launched with the arresting gear hook in the down position, which then caught the arresting cable during take-off. Aircraft exited the runway sustaining damage. (Class C)

-System experienced engine RPM fluctuations during flight, followed by complete engine failure. Wreckage was located and destroyed in place. (Class A)

RQ-7B

-Crew experienced GEN and ignition FAIL warnings during approach to land. UA crashed and was recovered with damage. (Class C)

-System experienced RPM loss and subsequent ignition failure during flight. Recovery chute was deployed and UA was recovered with damage. (Class C)

-System experienced engine RPM decrease followed by total engine failure during flight. System crashed and was recovered with damage. (Class C)

RQ-20A

UAS struck an aerostat tether wire during flight training. UAS was destroyed in the strike. (Class C)

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