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Flightfax®

Online Report of Army Aircraft Mishaps

Welcome to our first edition of Flightfax for Fiscal Year 2012. This means, of course, we will provide a very preliminary overview of the FY11 aircraft accidents (pages 2-3). Our Blast from the Past this month comes from Gerald M. Bruggink's 1999 graduation address to Dutch pilots at USAACE, and imparts his wisdom to all aviators:

"The development of your judgment is not only governed by your own experience, but also by the experience of others, negative as well as positive. Those who learn the most at Happy Hour are the ones who keep their mouth shut and their ears wide open. In addition, read every mishap report you can lay your hands on with this question in mind: *At which point would I have done things differently*?"

When we pause and review mishaps without judgment or prejudice, perhaps the greatest lessons we learn is when we ask ourselves, "At which point would I have done things differently?" With this in mind, we've reviewed Army aircraft accident data and trends for FY11 and have seen an increase in Class A-C accidents since FY10. However, we've seen significant improvements in Class A accidents and in preventing fatalities. The increase in Class C with the corresponding drop in Class A and B accidents may be a strong indicator of healthy learning organizations are applying lessons learned from lesser incidents, thereby using effective risk mitigation.

Within the aviation realm, it is common to hear the statistic that 80% of accidents are due to human error. Once again, in reviewing the FY11 aviation mishaps, human error was the unsurprising trend. In the past few editions of Flightfax, we've highlighted the criticality of performance planning, adherence to standards and discipline, and mitigating risk through a 3-step mission approval process. In this edition, we spotlight the Aviation Safety Awareness Program (ASAP) on page 5. This operational test starts in January 2012 and will provide Aviation Commanders the capability of identifying crew failures in advance to avoid significant potential mishaps – especially those targeting human error.

ASAP truly has the potential to be a tool that enables Aviation leaders to understand the risks in their formations and gives them the ability to *do something differently* before a mishap occurs. The ASAP article provides an overview, and you can find more information on our web page at https://safety.army.mil. There's been some interest already expressed by some tactical unit personnel. If you're interested in evaluating and using this fully-funded tool for your active duty CAB, National Guard battalion, or fixed-wing formation, let us know soon.

Until next month, fly safe!

LTC Christopher Prather, Director, Air Task Force,
email: christopher.prather@us.army.mil

Preliminary Report on FY11 Aircraft Accidents

In the **manned aircraft** category, Army Aviation experienced 104 Class A-C aircraft accidents over FY11. This is an increase from the 94 Class A-C aircraft accidents in FY10, but a significant improvement in Class A incidents and in preventing loss of life.

	2010	2011
CLASS A	23	15
CLASS B	13	16
CLASS C	58	73
TOTAL	94	104
FATALITIES	28	15

Note: All fatalities include all of DoD, Allies, and Civilians. U.S. Army Soldier fatalities were 11 in FY11 in comparison to 16 last fiscal year.

CLASS A Summary: Fifteen of the 31 Class A and B mishaps occurred at night. Materiel failure or suspected materiel failure was contributing in 8 of the 31 mishaps with human error being associated with 23 (74%).

Operational Assessment Concerns:

DVE: Dust landings were contributing factors in 2 Class B and 10 Class C aircraft mishaps with one additional Class C whiteout event.

Human Factors: There were two UH-60 ground taxi mishaps, four wire/cable/tether strikes (two Class A, two Class B), one spatial disorientation (Class A) and one IIMC (Class C).

Materiel Failures: Examples of materiel failure for the 104 events included four FADEC failures, three engine failures, one control servo failure, four electrical system malfunctions/fires, and a tail rotor separation. (Note: Materiel failures from the aircrew's perspective: some bad parts were installed on the aircraft due to human factor failures).

2011 Breakdown by Aircraft Type:

	Class A	Class B	Class C
UH/MH-60	1	7	19
AH-64	4	3	15
CH/MH-47	3	4	16
OH-58D	5	0	12
LUH-72	1	0	1
TH-67/OH-58C	0	2	2
AH/MH-6	1	0	3
UH-1H	0	0	1
C-12/KA300	0	0	3
C-26	0	0	1

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Synopsis of selected accidents (APR – SEP 11) ** denotes night mission:

Manned Class A

** AH-64D. The crew reported loss of collective input response and executed a hard landing. Suspect materiel failure.

- AH-64D. The aircraft struck a ferry cable during cross-country flight training. Front seat crewmember sustained fatal injuries upon impact with the cable and the rear seat pilot successfully landed the aircraft.

** MH-47G. During initial aerial refueling qualification training, the main rotor blade made contact with and cut the refueling hose from the MC130 tanker. The aircraft landed with damage.

- AH-64D. The aircraft crashed during a high-altitude combat mission. One fatality.

** OH-58D. The crew experienced a control malfunction during hovering flight. The aircraft descended to ground impact. Suspect failure of a flight control servo.

- OH-58D. During a combat engagement with diving fire, the aircraft impacted the ground. Two fatalities.

** CH-47D. During NVG insertion, on short final, the aircraft descended rapidly and landed hard.

** AH-64D. On final approach, the tail rotor assembly separated from the aircraft. The aircraft landed to an unimproved area with damage. Materiel failure.

- OH-58D. The aircraft crashed following a wire strike while conducting terrain flight training. Two fatalities.

** CH-47F. The aircraft entered a rapid descent on final approach for troop extraction, resulting in a hard landing. The aft rotor assembly and transmission separated from the airframe.

-AH-6M. The aircraft descended into trees and crashed during range training. Both crewmembers were fatally injured. Materiel failure (FADEC).

In the **unmanned aircraft systems**, there were 66 Class A–C incidents with 12 Class A's, 20 Class B's, and 34 Class C's. The Class A's included six Aerostat balloons, three MQ-5Bs Hunters, two MQ-1s and one RQ-7B. High winds and tether breakage were the prominent cause factor in the Aerostat incidents. The RQ-7Bs comprised 39 of the 54 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

- RQ-7B and C-130. While in a holding pattern, the RQ-7B had a mid-air collision with a C-130 that was landing. Both aircraft sustained damage.

- MQ-1C. While on mission, an increase in engine operating temperature with leaking fluid was noted. During RTB, the engine failed and vehicle crashed.

Class A – C Mishap Tables

Manned Aircraft Class A – C Mishap Tables										
	Month	FY 10					FY 11			
		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	4	1	3	1		0	1	3	
	November	1		5	2		0	2	14	
	December		1	4			2	1	4	4
2nd Qtr	January		2	3			0	0	8	
	February	2	2	9	5		0	2	2	
	March	2		4			2	1	5	
3rd Qtr	April	2	1	5	1		2	1	11	
	May	1	2	2	1		2	2	2	1
	June	6		5	1		3	1	3	2
4th Qtr	July	1	2	4			2	2	8	2
	August	2	2	5			2	2	9	2
	September	2	1	5	5		0	1	4	0
	Total for Year	23	14	54	16	**Year to Date**	15	16	73	11

As of 6 Oct 11

UAS Class A – C Mishap Tables									
	FY 10 UAS Mishaps					FY 11 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		1	3
MQ-5	3			3	**Hunter**	3		1	4
RQ-7		15	25	40	**Shadow**	1	11	28	40
RQ-11					**Raven**				
RQ-16A			1	1	**T- Hawk**			3	3
MQ-18A	1			1					
SUAV					**SUAV**			1	1
Aerostat		2	2	4	**Aerostat**	6	9		15
Total Year	6	17	29	52	**Year to Date**	12	20	34	66

As of 6 Oct 11

BENEFITS OF THE AVIATION SAFETY AWARENESS PROGRAM (ASAP) TO ARMY AVIATION

Consider a program that would allow your unit to immediately and effectively:

- Prevent mishaps by addressing unintentional errors, hazardous situations and events, or high-risk activities not identified and/or correctable by other methods or through traditional safety reporting sources
- Enable this reported information to develop mitigations to reduce mishaps through operational, maintenance, training and procedural enhancements
- Give an aviation commander the capability to continuously be provided *early identification* of needed safety improvements that enabled significant potential for avoiding mishaps

Would you like to have this program in your unit? Our feedback has been positive and it is one that you would want. The good news is just such a program is being developed.

The purpose of this article is to provide information about the Aviation Safety Awareness Program (ASAP) since its operational test commences 17 JAN 12 through 30 JUN 12. This fully-funded (no cost to the units involved) test will assess if the program is effective in identifying and assisting command teams in mitigating risk in their formations.

DEFINITION AND BACKGROUND

The emerging definition from the Department of Defense defines the Aviation Safety Awareness Program as a “program that encompasses the proactive analysis and trending of threats, errors, and hazards as reported by those associated with flight operations, used to detect precursors to aviation mishaps. ASAP uses the investigation of underlying latent factors and related unsafe acts to identify mitigation strategies. ASAP allows commanders to identify previously unrecognized risks inherent in flight operations.”

Department of Defense studies identified ASAP as a pro-active safety tool that has proven to identify hazards and mitigate risk for the civilian aviation industry and NASA. ASAP has shown promise in Naval Aviation operations and in a limited test within Air Mobility Command (AMC) within the United States Air Force. Its expansion has potential to reduce mishap rates to the comparable civilian rate level, thereby saving lives and preserving aircraft. ASAP has proven in civilian industry, NASA, the USN and the USAF to enhance the safety culture among pilots, aircrews and ground personnel. At the same time, ASAP has the potential to build and institutionalize the safety culture in the growing UAS community, where a small investment will show positive returns for all Services. Previous ASAP research highlights that the program can potentially reduce accidents caused by human error.

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Aviation Safety Awareness Program and Army Aviation

The capabilities enabled by ASAP are significant given the Chief of Staff and the Secretary of the Army have provided a directive in Objective 2 of the FY12 Safety and Occupational Health Objectives (27 SEP 11) for Aviation Class A-C Accident Reduction. “Army Aviation accident rates are currently trending toward all-time lows. However, to sustain this downward trend, aviation leaders must look to reduce accidents involving human error, which continues to account for greater than 80 percent of all A-C accidents. Aviation leaders must adhere to the three-step mission approval process outlined in AR 95-1 (Flight Regulations). Initial mission approval, mission planning and briefing, and final mission approval are meant to lower or mitigate risk as the approval process moves from one step to the next. Aviation commanders must enforce the three-step process and deter any temptations to skip steps or reduce the inherent rigor involved.”

Not only has ASAP already demonstrated for other agencies to reduce accidents caused by human error, it is also a proactive program that:

- is an anonymous, self-reporting system modeled after systems currently in place at many airlines under auspices of the Federal Aviation Administration (FAA)
- encourages voluntary reporting of operations and maintenance safety high risk practices
- 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

ASAP gives commanders an additional resource to enforce the three-step mission approval process and to deter any temptations to skip steps or reduce the inherent rigor involved. It also assists in the early identification of risk by:

- Enabling textual reporting of errors, high-risk activity, or observed hazardous situations
- Providing non-punitive resolution of safety, training, and ops issues at the unit level
- Facilitating commander’s risk management process
- Including analysis, trending & corrective action capability at the Army/joint level
- Tailoring report format for various users
- Augmenting, but not replacing, existing safety reporting systems

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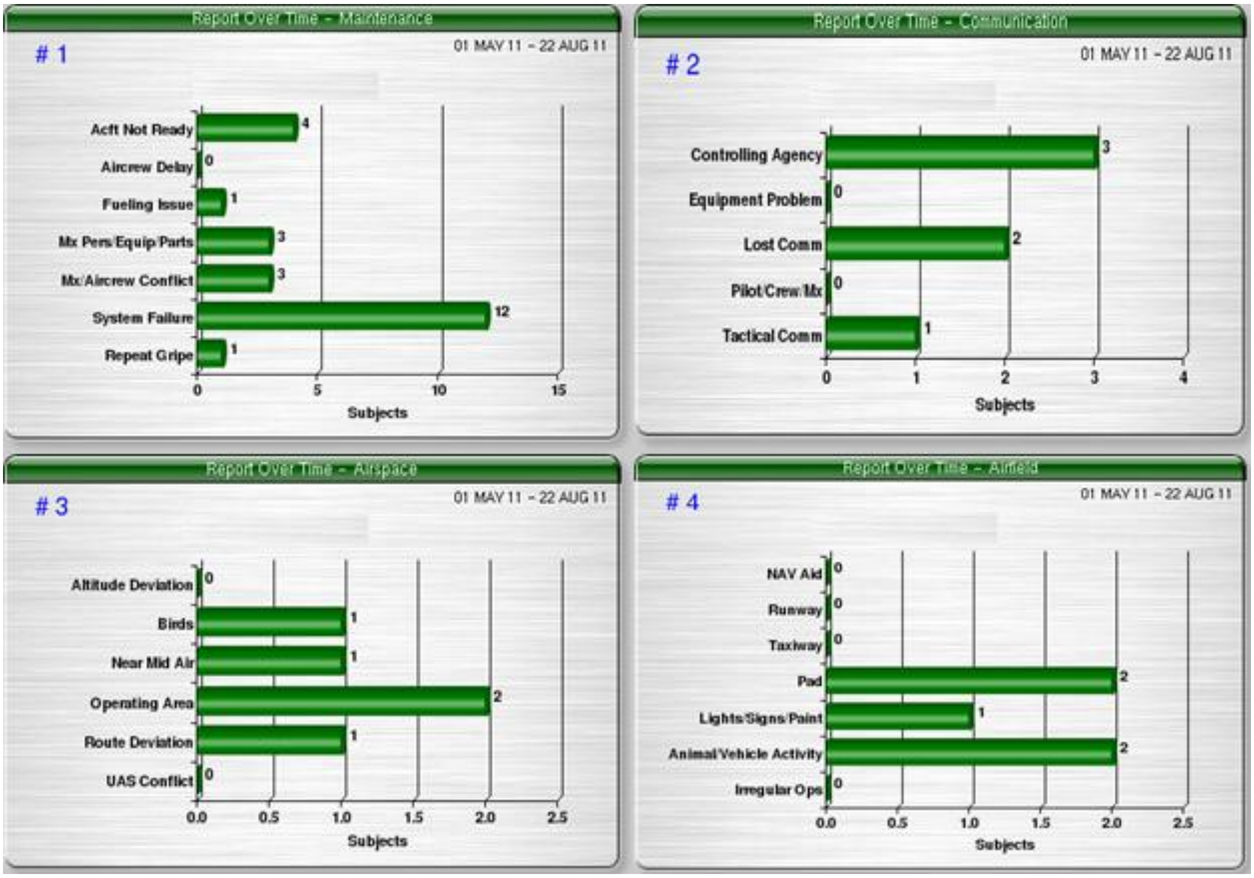


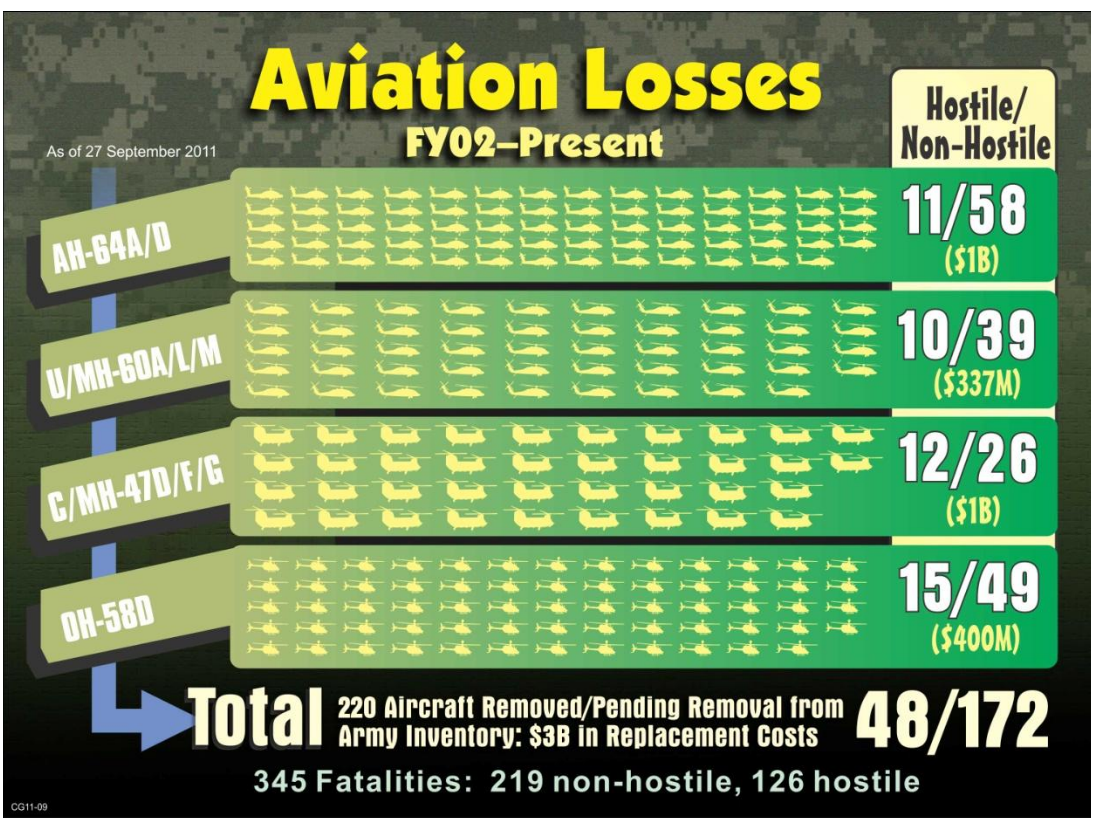
Example of one of the many real-time reports generated by ASAP. This report can be selected by a unit's ASAP manager or Commander to provide the top four most-reported mishap categories. The "high four" report is also a useful tool to determine whether a safety program or mitigation is effective, since a reduction in reports would immediately be reflected in the aggregate category and in sub-categories.

OPERATIONAL TEST OF ASAP

The Department of Defense funded an ASAP beta test and operational test to assist the Army in establishing a viable ASAP software and analysis program. The beta test was conducted with a unit at Fort Rucker in FY11. With improvements from the beta test, the operational test for the Aviation Safety Awareness Program commences 17 JAN 12 through 30 JUN 12. This fully-funded (no cost to the units involved) test will assess if the program is effective at identifying and assisting command teams in mitigating risk in their formations. The operational test is designed for implementation in a Combat Aviation Brigade, a National Guard or Reserve battalion, and a fixed-wing unit. If your unit is interested in participating in this test, contact the Air Task Force at: airtaskforce@conus.army.mil

More information about ASAP, to include a link to the ASAP demonstration web site, can be found at the Air Task Force web page at: https://safety.army.mil/atf


Aviation Trends
Overconfidence/Complacency
– 83% of accidents involved overconfidence
– 13% of accidents involved complacency
Aircrew Coordination Failures
– 28% of accidents involved crew coordination failures
Assumption of Low Risk Missions
– 61% of accidents occur during the day
– 30% of accidents happen during training
Inadequate Mission Planning
– Failure to adequately plan for obstacles
– Power management awareness
Manned Aircraft Accidents
40
30
20
10
0
19 (14)
15
25 (12)
24
22 (16)
13
15 (11)
16
Class A Class B
2008
2009
2010
2011
As of 2 October 2011
TF11-06F


Aviation Losses
FY02–Present
As of 27 September 2011
Hostile/ Non-Hostile
AH-64A/D
11/58 ($1B)
U/MH-60A/L/M
10/39 ($337M)
C/MH-47D/F/G
12/26 ($1B)
OH-58D
15/49 ($400M)
Total
220 Aircraft Removed/Pending Removal from Army Inventory: $3B in Replacement Costs
48/172
345 Fatalities: 219 non-hostile, 126 hostile
CG11-09

Set Yourself Up for Success

CHIEF WARRANT OFFICER 4 A.J. "BUD" KENNEY
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U.S. Army Aviation Center of Excellence
Fort Rucker, Ala.

Pages 2-40 through 2-42 of the latest edition of the OH-58D Maintenance Test Flight checklist outline the procedure for conducting an autorotation RPM check. This check has changed very little, if at all, since I went to the Maintenance Test Pilot Course (MTPC) in 1998. It consists of conducting a maneuver which places the aircraft in an autorotative state so that a measurement can be taken to determine the aircraft's autorotation RPM. The maintenance test pilot (MTP) performs a simple mathematical calculation, taking into account both the weight of the aircraft and the density altitude. The MTP then adjusts the main rotor pitch-change links to achieve the desired RPM if a correction is required. It's not rocket science.

As stated earlier, this check has not changed since I've been an OH-58D MTP and, as far as I know, it's the same check used since they first started building the OH-58D. However, the method of training this maneuver has changed for students going through the MTPC. DES has some key safety points for every MTP that we work with at Fort Rucker or when we are visiting units in the field. There have been three Class A accidents in recent years related to this check. If you are an OH-58D MTP, please take the following advice to heart.

When discussing this maneuver, we like to tell the Test Pilots to set themselves up for success. What this means is to plan for the worst during the check. Do not assume the engine is going to come back to life at the bottom of the autorotation just like it has hundreds of times before. I will be the first to admit that during my time as a junior MTP, I made that assumption. I can recall making the cross-country flight from Fort Carson, CO, to the National Training Center where we knew we would have to make an autorotation RPM adjustment due to the decrease in altitude. Before arriving at Bicycle Lake, we climbed over the Mojave Desert and rolled the throttle off to take the measurement. Fortunately, the engine always responded and I didn't have to attempt a successful touchdown autorotation to the desert floor.

Other than my own personal lack of experience at that time, the only excuse I can make is I was trained to do the check that way. Up until very recently, the OH-58D MTPC had always trained this maneuver on two grass strips in the south maintenance test flight area at Fort Rucker. This maneuver is now trained in the traffic pattern at Dothan Regional Airport so the student pilot can align the aircraft with an actual runway. Here's your first piece of advice: Conduct this maneuver only where a touchdown can be made to an improved landing area, if necessary.

The second piece of advice goes out to the currently deployed MTPs. This one deals with the weight of the aircraft at the time of the maneuver. Set yourself up for success by reducing the weight of the aircraft as much as possible before you do this check. That means taking the rockets out of the launcher, removing the Hellfire missiles, or pulling that ammo can

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full of .50 cal. Remember also that 300 pounds of fuel weighs the same as 300 pounds of ammo. If you are conducting a general maintenance test flight, try to save this check for last so that you are as light as possible when you do it. To give you some perspective, the “Slick” aircraft used for contact training at Fort Rucker weigh between 4,500 and 4,600 pounds with a full bag of fuel. Touchdown autos are conducted day-in and day-out on these aircraft without incident. The closer you can get to that weight, the better your chances are at surviving an engine failure.

The third and final piece of advice deals with heeding the second warning associated with this check. This requires the MTP to select an entry altitude that allows a power recovery by 500 feet above ground level (AGL). The reason for this warning should be obvious in that it allows the MTP time to plan an autorotation to the ground in the event of an actual engine failure. It could also apply to a mistake if the MTP forgot to roll the throttle back on before increasing collective to establish a climb. The “Throttle Warning” message will display at 400 feet AGL if the throttle is below 92 percent throttle position (TP). However, the MTP’s first warning indication will most likely be the LOW ROTOR audio when attempting to add power to establish the climb prior to 500 feet AGL. Regardless, adhering to the warning will give you the time you need to either fix the mistake or conduct a successful touchdown auto.

In conclusion, applying these three simple steps may someday keep you from damaging an aircraft beyond repair or even save your life. This should be the goal of every pilot. As many of you know, Corpus Christi Army Depot is in the process of building more OH-58D helicopters. Unfortunately, we continue to destroy them faster than they can repopulate the fleet. One last thing, even if you are not an OH-58D MTP, this advice still applies to all aviators conducting any type of power-off maneuver. Stay Safe!

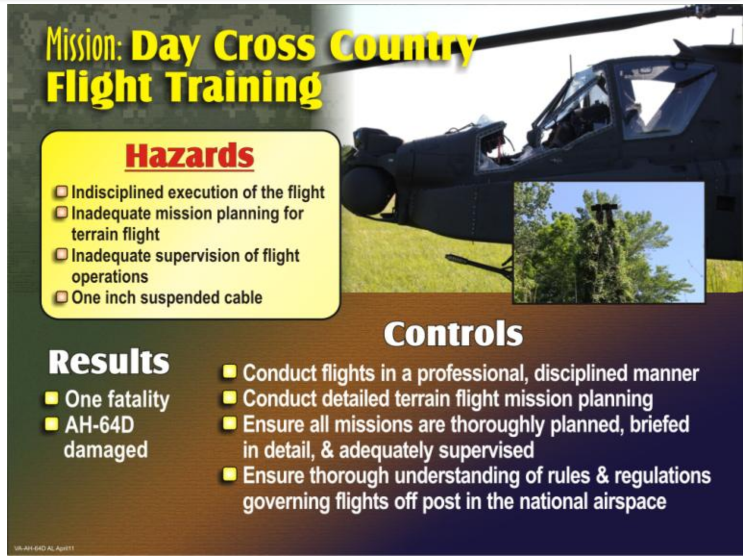
If you have comments, input, or contributions to Flightfax, feel free to contact the Air Task Force, U.S. Army Combat Readiness/Safety Center at com (334) 255-3530; dsn 558

Major Accident Review (MAR)

RMIS Case # 20110428001

U.S. ARMY COMBAT READINESS/SAFETY CENTER

Following a river at 110 knots and 50 feet above the water, the crew of the AH-64D struck a one inch ferry cable spanning the river. The cable cut thru the forward windscreen pinning the CPG to the seat before snapping and falling away. The aircraft landed without further incident.



The flight's training objective was to practice cross county navigation, formation flight, and formation flight lead changes. The accident aircraft was leading the flight of four AH-64Ds as they descended into a wide river oriented generally north-south. During the descent, the AMC instructed the flight to watch for wires. Flight airspeed and altitude was generally 100 KIAS and 50 feet AWL with airspeeds as high as 110 KIAS and altitudes as low a eight feet AWL as recorded by the digital collection system. The flight maintained a true airspeed above 100 knots while navigating up the river. The ferry associated with the cable was moored on the east side of the river obscured by vegetation. Cable stanchions on both sides of the river were overgrown with vegetation and virtually invisible. Riverbank vegetation along a bend in the river upstream of the ferry obscured the cable. Flying at 50 feet above the water and 111 KTAS, the lead aircraft struck the ferry cable slightly left of the center of the river. The cable bisected the front cockpit and broke across the armor panels of the CPG seat. The back seat pilot executed a climbing left turn, announced the wire strike and landed approximately 2 miles to the north of the ferry crossing without further incident. The CPG was fatally injured by the cable.

Findings:

- Failure to detect and avoid a one inch ferry cable strung across a river
- Flight deviated from the planned and briefed route of flight
- Inadequate mission planning, briefing and mission approval
- Inadequate knowledge and violation of local flight rules and restrictions

Recommendations:

- Ensure flight operations comply with flight rules, regulations and common practice regarding terrain flight authorized locations,operating airspeeds and altitudes
- Have a thorough understanding of the mission planning, briefing and approval roles and responsibilities of the initial mission approval authority, mission briefing officer, and final mission approval authority
- Reinforce individual aircrew members knowledge of local flying rules and restrictions

Major Accident Review (MAR)

RMIS Case # 20110709001

U.S. ARMY COMBAT READINESS/SAFETY CENTER

The crew of the OH-58D conducting terrain flight navigation did not recognize their close proximity to a set of high power lines. The aircraft struck the lines, severing three power lines, rolled onto its left side and descended into trees fatally injuring both crewmembers.

During day terrain flight continuation training, the OH-58D struck a set of high tension power lines. The wire hazard was known and posted on maps produced by the Tactical Operations Officer and utilized by flight crews throughout the unit. The crew's route of flight crossed the wires within 200 meters of the wire strike location on three occasions, at one point paralleling the wires for approximately 600 meters to the north of the wire strike location. After flying southeast, parallel to the wires, the crew turned to the northeast and crossed the wires approximately 100 meters north of the accident location. The crew then made a 180 degree right turn short of the turn point they used on previous passes thru the area. On the final pass down the valley the pilot on the controls flew into the set of high power lines perpendicular to the flight path. The support stanchions were masked by vegetation, the pilot on the controls did not know his exact location in proximity to the wires, and the IP in the left seat was apparently focused inside the cockpit inputting a route change to the navigation system. Neither the PI or the IP addressed or identified the wire obstacle in their flight path. The aircraft struck the wires in a slight left bank immediately rolling hard left descending into the trees and coming to rest on its left side fatally injuring the crew.

Findings:

— Pilot on the controls did not detect the obstacles in his flight path

— Instructor Pilot did not assist in obstacle detection and avoidance

Recommendations:

— Standardize NOE routes establishing barriers and checkpoints for routine training.

— In routine training areas utilize physical hazard markings (Reflective Balls on the wires) where able.

— Research the feasibility of incorporating vertical hazards on the Multi-Function Display.

Gerald M. Bruggink gave this speech during the July 1, 1999, graduation ceremony for Dutch pilots at the U.S. Army Aviation Center, Fort Rucker, Alabama. Mr. Bruggink, born and raised in the Netherlands, first began his military flight training in 1939. He fought in World War II as a combat fighter pilot and became a POW of the Japanese in 1942. After the war, he returned to flying units on Java; but in 1950, he returned to the Netherlands to begin instructing. He emigrated to the U.S. in 1955, where, soon after, he became an instructor pilot in Air Force and Army schools. In the early 1960s, Mr. Bruggink started his career in safety — a career that took him through the U.S. Army Safety Center and National Transportation Safety Board (NTSB). He retired as the Deputy Director of the Bureau of Accident Investigation at the NTSB.

You Should Have Heard What the Dutch Were Told…

Reflections on the role of judgment

"Being asked to address a group of graduating Dutch pilots here at Fort Rucker is a distinct honor for an old-timer, who would like to use this opportunity to offer you more than congratulations and good wishes. However, all the smart things that can be said on such a momentous occasion have already been beaten to death many times in the past. Nevertheless, I am going to dig up an ancient piece of wisdom as it appeared in a prepared text presented by Charles A. Lindbergh at a safety conference in New York in 1928: 'A pilot's real training begins in flying, as in other professions, after he has left school.'

That was 71 years ago, and you have no reason to question the validity of that statement. As a graduate with brand new wings, you don't expect to get orders tomorrow assigning you as pilot in command of Queen Beatrix's helicopter. What makes the difference in selecting a pilot to a particular task? The standard answer is your experience level. But, is that the complete answer? Did Lindbergh have something else in mind when he used the term 'real training?'

As one of this country's most gifted pilots, he was well aware that the most critical part of a pilot's 'real training' is the development of his judgment as he gathers experience. While there is a limit to the skills you can learn in handling your aircraft, the development of your judgment in using these skills is a never-ending process. Thus, we should never look at a pilot's total flying experience in isolation. The most telling, as well as the most elusive part of a pilot's makeup, is the maturity level of his judgment. Where does that leave you now that you are stepping out of the protective school environment with limited experience and judgment? This ceremony today provides the answer. You got your wings because you have sufficient maturity of judgment to safely gain the experience that turns you into a mission-ready pilot.

As I have no business venturing onto terrain covered by the land mines of behavioral science, I won't mess with the intricacies of pilot judgment. Instead, I will remind you of your familiarity with the development of judgment and its effects on risk management in a more mundane form of transportation: driving a car. The value of this

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comparison is not reduced by the rumor I heard that it is easier to get a private pilot's license in this country, than a driver's license in Holland!

When you passed your driver's test, you convinced the examiner that you had adequate skills, knowledge and judgment to gain practical experience on your own without endangering yourself and others. As your experience grew, you found out that risk management on crowded highways requires more than driving skills and obeying traffic rules. You learned to make allowances for the unpredictable behavior of other road users without using foul language or insulting gestures. You discovered that your judgment of traffic situations and your subsequent decisions were affected by your mood, the influence of distractions, time pressures, fatigue and a host of other factors. You were also confronted with the hazards of road conditions, inclement weather and design shortcomings in your car. Finally, you probably learned the hard way that constant vigilance sets the stage for the exercise of sound judgment.

You will go through a similar, but more complex and unforgiving maturing process in aviation. As a pilot who began his military flight training 60 years ago in what now seems the Stone Age of Aviation, I could entertain you for hours with the things I got away with and those that got me into trouble. However, this is not the time or the place. Instead, I have capsulated what I learned and observed over the years in a number of thoughts that may benefit the development of your aviation judgment:

1. An unpredictable factor in any person's life is the blind role of chance, be it hostile or benevolent. Don't look at this as a form of fatalism, but as an incentive to give fate a helping hand in your favor.

2. For many years, I have tried to spread the word that one of the greatest hazards in aviation is uncritical acceptance of easily verifiable assumptions. The collision in Tenerife between two B-747s that killed 583 persons proves the point. This was the mother of all human factor accidents.

3. The development of your judgment is not only governed by your own experience, but also by the experience of others, negative as well as positive. Those who learn the most at Happy Hour are the ones who keep their mouth shut and their ears wide open. In addition, read every mishap report you can lay your hands on with this question in mind: At which point would I have done things differently?

4. Many accident investigation authorities fail to strengthen the protective role of the human element by not answering this question: What might have reduced the likelihood of the accident or the severity of its consequences?

5. Persons who survive adolescence and ownership of their first car have been exposed to the basic human factor aspects and the elements of chance in accident avoidance and causation. What they actually learned in this process is largely a matter of their perceptiveness, innate intelligence and sense of care.

6. [What is] the most simple and practical interpretation of human factors in our daily activities? Make it easier for yourself and others to stay out of harm's way.

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Blast From The Past

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7. Every form of flying has an ultimate objective, which is not safety per se. Commercial aviation has to keep its stockholders happy; military aviation is perfecting its capabilities in pursuit of the nation's objectives; and the general aviation pilot who flies just for the fun of it may have safety on his mind but not as his ultimate objective.

8. Even the crew of Air Force One cannot assure the President that they will complete their next trip without a mishap. They can only bend the odds in their own favor and hope that everyone involved in the condition of their aircraft and the progress of their flight does the same thing.

9. Whether you realize it or not, having confidence in your aircraft implies you have confidence in its maintenance personnel. You promote the 'Right Stuff' in those personnel by taking an active interest in what it takes to keep your aircraft serviceable.

10. Considering the uncertainties of the future, you may want to keep this thought in the back of your mind: Contrary to conventional wisdom, the principal driving force for an individual in a combat situation is not so much flag and country and similar lofty notions, but the trust and the expectations of his teammates and leader.

These thoughts may be helpful as your judgment matures. In the meantime, I have been hovering too long and I come back to earth with this wish: May sound judgment always remain your trustworthy companion in the air, on the road and at home."
-- Gerald Bruggink from the November 1999 Flightfax

Selected Aircraft Mishap Briefs

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

Utility helicopters

UH-60 

-L series. The aircraft main rotor blades made contact with the tail rotor driveshaft during a dust landing. (Class C)

Attack helicopters

AH-64D 

- The aircraft contacted the ground during a single-engine demonstration, resulting in damage to the turret assembly and main landing gear. (Class C)

-The crew experienced a No. 1 engine NP exceedance during an evaluation flight. The IP assumed the controls and performed a single engine emergency landing. (Class C)

Observation helicopters

OH-58C 

-The aircraft engine failed during flight training while at 200 feet AGL and 70 KIAS. The aircraft touched down hard in a field following an autorotation, resulting in a severed tailboom and damage to the landing gear. (Class B)

Cargo helicopters

CH-47 

-D series. The aircraft fuselage contacted an upgrade during NVG landing. (Class C)

Unmanned Aircraft Systems

RQ-7B 

- The UA failed to reach optimal airspeed for takeoff and crashed. (Class B)

- The UA experienced an RPM spike upon launch and did not climb above 100 feet AGL. The crew was unable to recover for landing and the system crashed with damage. (Class C)

- The controllers experienced rotor RPM spikes and engine failure during operation. The recovery chute was launched and the UA was recovered with damage. (Class C)

- The UA experienced ignition and generator failure during flight. The recovery chute was launched and the UA was recovered with damage. (Class C)

MQ-1C 

- The UA experienced operating temperature spikes and controllers attempted to return it to station when it failed to maintain altitude and descended to ground impact. (Class A)

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