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Online Report of Army Aircraft Mishaps

"Aviation leaders must look to reduce accidents involving human error, which continues to account for greater than 80 percent of all A-C accidents."

General Raymond T. Odierno and Honorable John M. McHugh

Last month we provided the preliminary assessment of FY11 aviation accident trends; we highlighted that 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. This month, we will continue to highlight human factors behind these human errors and ideas on how to get at this problem.

The Army Safety and Occupational Health Objectives for Fiscal Year 2012, signed by General Odierno and Secretary John McHugh, included Aviation Class A-C Accident Reduction as Objective Two:

"Objective Two: 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."

You will see human error in play again in our accident excerpts; the mishap review this month of the August mishap where an Air Force C-130 and an Army RQ-7B had a mid-air collision indicates errors in ATC on the operation of the tower were contributing factors. DES provides an article "The Right NCO for the Job" can make a difference in a unit by reducing human error through enforcing standards across all ranks. We also provide insights from the CRC's Human Factors Directorate on complacency in aviation maintenance mirroring that of aircrews and an article about emotions in decision making that may be insightful for Aviation Leaders in considering ways of mitigating human errors.

One way to mitigate human factors, as thoroughly outlined in the June 2011 Flightfax, is through proper application of the three step mission approval process. As a reminder that assumption of a "no risk" mission can lead to an accident, this month's blast from the past from August 2005 of "there are no new accidents" outlines the value of thorough mission briefing process (see "Two of the best aviators in the unit" section).

Until next month, fly safe!

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

Human Error: Complacency

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

I was recently invited to sit in on a two day human factors class involving maintenance errors. The class was being given at Cairns Army Airfield for some of the mechanics who keep everything flying. Despite sticking out like a sore thumb in my neon blazer, the group welcomed me. I think they became more comfortable with my presence after they found out I had once (a long, long time ago) been an Army mechanic (generators and track and wheeled vehicles) in an engineer outfit. One of the things that really stuck out in my mind during this training, was that the people who fix the aircraft are making the same types of human errors as those who fly them.

Human error in aviation accounts for at least 70% to 80% of all accidents. Human factors errors, those that occur because of our design (e.g., too short, too tall), function (hearing or vision issues, fatigue) or behavior/mood (e.g., impatient, angry, or depressed), are the most frequently cited in accidents. Although they are often lumped into the categories of “pilot error” or “maintenance error”, there are always underlying issues such as complacency, poor situational awareness, inadequate training, and root causes which produce these issues. While it is a characteristic of human beings to make mistakes, when they lead to accidents it is important to understand the nature of the mistakes in order to avoid repeating them.

During FY 2011, the errors most often made by our aviators involved overconfidence/complacency, aircrew coordination failures, assumption of low risk missions, and inadequate mission planning. While the mechanics may call them something different, the same types of errors were most prevalent in their work. The words complacency, communication, expectancy and norms when spoken by an aviation mechanic pretty much equate to complacency/overconfidence, aircrew coordination failures, assumption of low risk missions, and inadequate mission planning in aviator speak.

Despite all that is known about human error, the “big questions” are still valid: Why do we see these kinds of errors and what can we do to prevent them? Take complacency/overconfidence for example. Most definitions of these words involve two major components: 1) self-satisfaction, and 2) a decrease in the awareness or regard of dangers. While fixing or flying an aircraft is not exactly an easy thing, by the time you have done the same repair job or flown the same mission for the 50th time you have become confident in your ability. You know you can do the job and you feel sure that you know all the hazards associated with the procedures or mission. So what happens next? You begin to accept lower standards of performance and start pencil whipping those check lists because you know you’ll remember to actually check everything; you’ve never missed anything before. However, when you mentally hear yourself say “I’ll grab the safety glass next time”, when you no longer feel challenged and your attention is drifting, **you have become complacent**.

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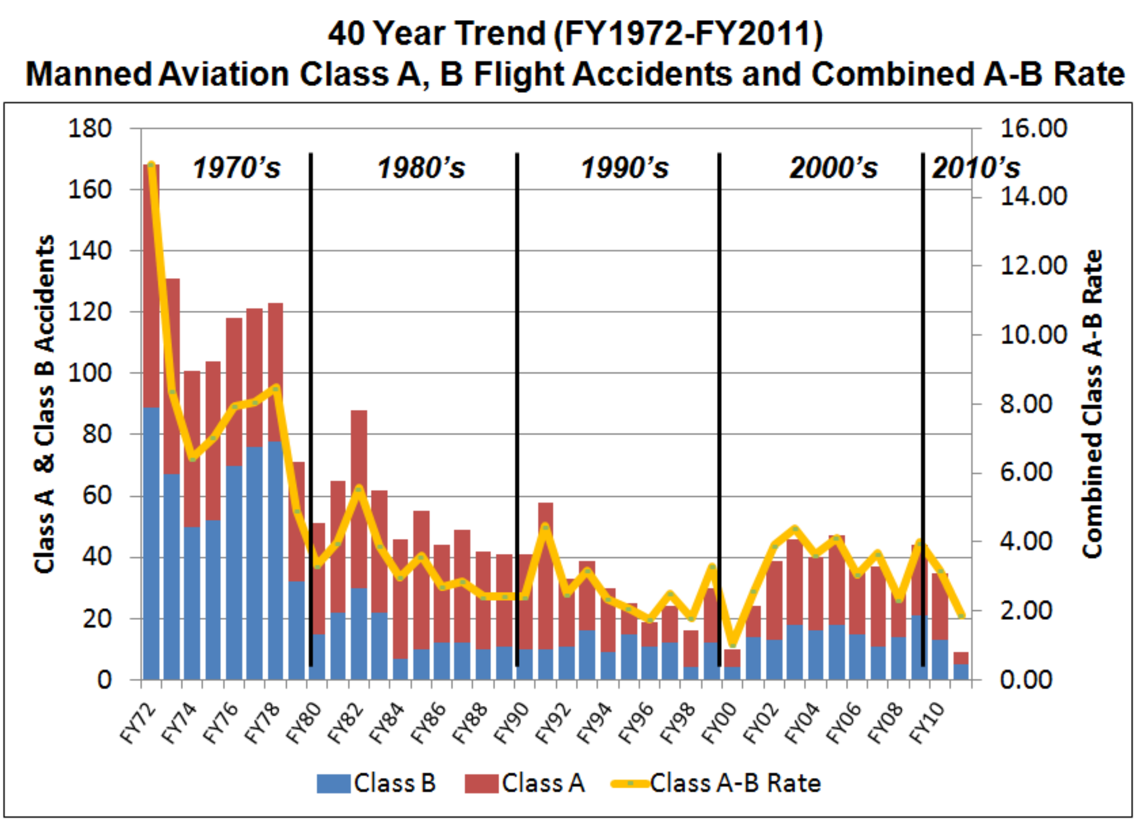
What can you do to mitigate complacency? First, be aware that it happens to everyone working in every field. Watch out for the symptoms in yourself and others around you. Don't take short cuts. Do each task in the correct order. Mark one line at a time on those checklists and only after you have really completed the check. It is far too easy to get distracted and think you have accomplished something when you really didn't. The mind is funny that way. It will fill in the gaps in our memory trying to create a complete picture based on our experience and not necessarily our most recent experience. Recalculate your numbers if you find yourself mentally drifting during the process. Take a short "brain break" if you are having trouble keeping your mind on task. Never take anything for granted and make sure that you always check things for yourself. Then let someone else double check you because two sets of eyes and two brains are better than one.

I have also been thinking about other errors that creep into the hanger and the cockpit, specifically crew coordination and communication issues, assumption of low risk missions and expectancy in maintenance processes as well as the similar underpinning seen with inadequate mission planning and acceptance of norms. In a future article, I hope to provide a bit of insight and discuss some potential mitigation strategies to help keep these types of human factors from becoming human errors.

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



Rate Per 100,000 Hours
Data as of 3 March 2011

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	3	1
	November	0	2	14						
	December	2	1	4	4					
2nd Qtr	January	0	0	8						
	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	8	2					
	August	2	2	9	2					
	September	0	1	5	0					
	Total for Year	15	16	74	11	Year to Date	2	1	3	1

As of 1 Nov 11

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
RQ-7	1	11	30	42	Shadow		1	2	3
RQ-11					Raven				
RQ-16A			3	3	T- Hawk				
MQ-18A									
SUAV			1	1	SUAV				
Aerostat	6	9		15	Aerostat				
Total Year	12	20	36	68	Year to Date	1	1	2	4

As of 1 Nov 11

Decisions, Decisions
By Peter Zimmerman and Jennifer S. Lerner

Do emotions influence your decision-making? Should they? Do they mislead or convey important information and aid your decision-making? The answer to all these questions is yes.

In January 2003, the space shuttle Columbia lifted off from Cape Kennedy with seven astronauts on board. Eighty-one seconds into flight, a piece of foam insulation fell away from the external tank that fueled the main engine. Cameras recorded the foam striking Columbia on its left wing. Foam had struck the spacecraft on prior flights but never caused much damage. Some engineers were alarmed by this latest incident, but senior NASA managers were reluctant to check for damage. To do so, they would have had to track down satellite imagery from other agencies or improvise a space walk. Neither approach was attractive. More troubling, officials seemed unwilling or unable to face the possibility of serious damage. "I don't think there is much we can do about it," said one senior manager. The damage wasn't detected until Columbia re-entered Earth's atmosphere 15 days later. As sensors sent erratic, confusing data, the shuttle lost control, broke apart and plunged to Earth, tragically ending the lives of its crew. The investigations that followed the disaster cited many failures, from technical problems to flaws in NASA's organization and culture. Investigators identified numerous opportunities in which management decisions could have led to an assessment of the damage. Decisions based on emotion and assumptions sealed Columbia's fate.

Longtime decision-making models assume people base decisions on evidence and rational analysis of alternatives, including attendant risks and uncertainties. But scientific discoveries about the brain undercut that basic assumption. Research shows the model of rational, self-aware decision-making rarely plays out in the real world. To begin with, most human cognition is unconscious. People absorb millions of bits of data per second through the senses and then compress, screen and process this data automatically through shortcuts in the brain. Neuroscience breakthroughs show the brain's emotional pathways engage more rapidly than cognitive pathways. As a consequence, the emotional centers of the brain influence what people see hear and feel in response to an event or task well before they experience a conscious thought. What emerges in conscious awareness are snap judgments, instant recognition, intuitions and feelings of certainty that can't be fully explained. Though wondrously efficient, these processes generate biases that can result in errors.

Two types of emotion influence decision-making: integral emotions arise from the situation at hand while incidental emotions carry over from past events. Integral emotions are legitimate decision inputs. Your brain is sending you an alert. In the Columbia case, the apprehension, alarm, even fear many NASA engineers felt were integral to judgments about safety. No one knew where foam had struck Columbia or with what

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effect, and the engineers wanted to find out. Incidental emotions can be misleading. Top NASA managers harked back to past incidents of foam strikes that caused little damage. They drew false comfort from the past, diverting their attention from situation at hand and the risk to Columbia and its crew. Failure to recognize and act on integral emotions helped seal Columbia's fate.

Here are some ways managers can recognize and deal with their emotions when it's decision time.

Diagnose your feelings. A common mistake among experienced executives is to assume the types of decision-making errors seen in the Columbia case don't affect them. Yet countless studies conducted in the Harvard Decision Science Laboratory reveal incidental emotions affect everyone, whether or not they're aware of them. Any situation can trigger cognitive and emotional biases that spill over into current experience. Probe whether your emotions are integral or incidental and whether they are appropriate.

Consider other perspectives. Consultants, advisers and confidantes can help you identify how your personal history and the situations you encounter are likely to bias your thinking. Education and training also can help. When asked what prepared him for leadership in Iraq as head of U.S. Central Command, Army Gen. David Petraeus cited the diverse perspectives he encountered in civilian graduate school. Looking at problems through the eyes of others can improve your judgment.

Treat each situation as unique. Our minds are hard-wired to assume the past reliably predicts the future. In fact, the neural pathways associated with prediction mirror those associated with memory. This explains why NASA managers felt comfortable with their decision based on incidents that turned out fine. If they instead had categorized earlier foam losses as near misses worthy of investigation, rather than as successes, catastrophe might have been averted.

Emotions can lead you astray, but they are time-tested evolutionary adaptations to universal life challenges. Rather than writing off your fears, investigate them fully and carefully weigh their role in your decisions.

Peter Zimmerman is a faculty member and chairman of the Senior Executive Fellows program at Harvard's John F. Kennedy School of Government. Jennifer Lerner is a professor of public policy at the Kennedy School and co-director of the Harvard Decision Science Laboratory.

Effective 28 OCT 2011, the U.S. Army Combat Readiness/Safety Center, Fort Rucker, Ala., instituted changes to selected organizational components to better relay their roles and status.

The previous Driving, Air, Ground, Human Factors and Civilian Task Forces have been updated to:

* Aviation Directorate
* Ground Directorate
* Driving Directorate
* Human Factors Directorate
* Civilian Injury Prevention Directorate

Task forces are organized to exist for a defined period of time. We felt it necessary to make these changes as directorates have a continuing mission.

Preliminary Loss Reports (PLR)

ARMY PRELIMINARY LOSS REPORT 12004

FLIGHT-RELATED MISHAP CLAIMS ONE SOLDIER'S LIFE

An 82nd Airborne Division, USFOR-A Soldier was killed in a flight-related mishap that occurred on 13 October 2011, at approximately 1000 local in Afghanistan. The 39-year-old SSG, a flight medic, was struck by the main rotor system of an HH-60M helicopter as he exited for a patient pickup. The aircraft had executed a landing on a slope. The SSG was evacuated to a medical center where he was pronounced deceased. Local News

This is the 1st Class A **Flight-Related** fatality 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

What were they thinking?

Recently, a soldier was involved in a pedestrian vs. train accident. The 23-year-old SPC was struck from behind by an approaching train while walking on the tracks. The Soldier was using a digital media player with earphones at the time he was struck. The Soldier was pronounced deceased at the scene.

In evaluating this incident, and armed with Dr. LeDuc's definition of complacency cited in her article (p. 2 and 3 of this issue), how would you raise the awareness levels of individuals when it comes to combating human factor errors and the root causes which produce these issues?

Right NCO for the Job?

SERGEANT FIRST CLASS JAE S. WAHN

DES Standardization Instructor, Assault Division
U.S. Army Aviation Center of Excellence
Fort Rucker, Ala.

This month's DES article focuses on the standardization instructor (SI) within the unit annual training plan (ATP). DES has observed a discernable difference in the quality and success of the units who embrace and adequately utilize this key leader and mentor within the aviation formation. Certainly, from a safety perspective alone, the impact of standardized practices and oversight prove vital to overall mission success.

Over the last 10 years, deployments and redeployments have placed special emphasis on training crewmembers. The propensity is to train, deploy, redeploy and then train the new crewmembers. What does this mean for the new age SI? No more riding the coat tails of standardization pilots (SP). The SI must evolve to stand out and lead the way with training and enforcing the standards across the ranks. Battalion and brigade staff must realize that having a good NCO as your senior SI can reduce accidents, increase crew coordination and improve unit readiness.

The "school-trained" SI has proven to have a wealth of experience and knowledge and we have fought to get where we are today. Ten years ago, the concept of the "*backseater*" was simply "launch-recover-launch." The non-rated crewmember (NCM) was looked at more as a maintainer with little crew interaction; thus the notion that they only participated in launching the aircraft, recovering it, and prepping for the next launch. We've evolved well beyond that now and recognize the value of the NCM as part of the integrated crew for airspace surveillance, crew coordination, among other important functions. The solution however, takes leadership buy-in.

The SP is doing the same with our pilots, so to have an SI as the right hand can be the difference in having a combat-ready unit for boots on ground date. Units that are utilizing these positions are clearly distinguishable from those that are not. DES has continuously witnessed stellar crewmember training plans, gunnery programs, MEDEVAC training programs, and an overall higher academic knowledge in comparison to units without key NCM positions.

The SI provides a standardized interpretation of systems, tactics, operations and each crewmember task in the aircrew training manual. The NCM is not only the overall key trainer for crewmembers, but maintainers as well. If the instructor is able to transmit the knowledge to lower levels, the unit can effectively improve troubleshooting procedures and increase the unit's operational readiness to higher levels. This concept revolves around having the right NCO in the right position to produce, document and track the training programs, and standardize the knowledgebase of the aviation

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community. Some units have incorporated this concept not only in the assault and lift community, but, also in the attack community with positive results.

As DES routinely observes during "*assessment" visits*, the utilization of these NCOs within ATP staff and flight crew will continue to make a tremendous and overall positive difference. We see the SI position manned by the right individual as an essential element to the overall success of the unit ATP. The bottom line, standardized training enforces crew readiness, positive crew coordination elements and reaffirms the risk mitigation process. Battalion and brigade leadership can find that having senior standardization NCOs on their staff can be beneficial to all aspects of operations, as well as training. The modern battlefield is continuously changing, instructing new tactics and techniques will be imperative to mission success, and these NCOs can provide the oversight on critical unit training events, which will ensure commanders are getting the best product available for combat operations abroad.

Have you used the Commander's Aviation Risk Tool (CART) yet?

Developed to provide information to air mission planners for use in the hazard identification step of the Composite Risk Management (CRM) process, CART provides units with a standardized, yet fully customizable customizable Risk Assessment Worksheet (RAW) that does all the calculations for you. CART is located in the Aviation Mission Planning System (AMPS) and can also be installed with the Centralized Aviation Flight Records System (CAFRS). Safety and standardization officers can create multiple CART templates for use in different operating environments as well as share templates with other units. Either start from scratch and tailor the categories and values to meet your unit's needs or use proven templates from others. Don't waste time checking your logbook; CART automatically pulls in your CAFRS flight data. Commanders, this is another location to view your Soldier's flight experience. If you have some extra time, read over the provided aviation accident cases to gleam insights on what went wrong in other related flights.

Check out CART today and tell us what you think!

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

U.S. ARMY COMBAT READINESS/SAFETY CENTER

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There are NO New Accidents (Part I)

Reprinted from August 2005 Flightfax

Author's note: I wrote this article after 4 years as a board president for the U.S. Army Combat Readiness/Safety Center. During this time, I have conducted 17 investigations and participated in the staffing and report preparation of over 200 more. There is a saying among the investigators that "There are no new accidents, just repetitions of the old ones." I hope by your reviewing these accidents, I can help you avoid the next repetition. This is the first of two articles that discuss aviation accidents that I have personally investigated. Part II will appear in next month's Flightfax.

Rules are made to be followed

On the first accident I investigated, the pilot in command was a highly experienced Department of the Army Civilian (DAC) aviator who made a mistake. How highly experienced? How about 15,000 rotary-wing flight hours? That's right, 15,000 rotary-wing hours, and in broad daylight he hit a set of wires that had been in the local flying area for over 15 years. Wires he knew were there. Wires he had crossed thousands of times. Wires that were marked on his map.

How did he let it happen? First, he was navigating from memory. When you fly in the same area for 20 years, you figure you can do that. When the student pilot asked where they were, he came inside the cockpit, found a point on the map and showed it to him. This brought both sets of eyes inside the cockpit at a critical point when a set of high-tension wires appeared from behind the trees. By the time he realized they were there, it was too late. He took the controls and tried to fly under the wires but was unable to do so. Fortunately, his 15,000 hours of experience enabled him to execute a controlled crash that caused no significant injuries. However, the aircraft was destroyed.

There were standards in place to prevent this accident. The brigade SOP required no less than 50 feet above the highest obstacle while in terrain flight. It also forbade dipping into open areas surrounded by obstacles. The student pilot on the controls not only was flying below 50 feet, but he also dipped into an open field that had the wires on the far end. Had the crew been operating IAW the standard, there would not have been an accident.

Two of the best aviators in the unit

A highly experienced crew consisting of an instructor pilot (IP) and a maintenance test pilot (MTP) were scheduled to conduct an annual proficiency flight. Between the two crewmembers were over 5,000 hours of flight experience. They were two of the three most experienced aviators in the company. The chain of command considered it a near "no risk" mission and crew. These two guys never had any problems.

The crew planned the flight, which included night vision systems, instruments,

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formation, traffic pattern work, and mountain flying. They prepared a risk assessment worksheet (RAW) and were briefed by the company commander. After preflighting the aircraft and ensuring they had plenty of fuel, they took off and flew straight into the mountains to do the mountain portion of the checkride first. They selected a relatively small landing zone (LZ) at 10,500 feet and attempted an approach to a landing. After passing below the highest obstacle, the MTP in the front seat of the AH-64A elected not to land and made an attempt to climb out of the LZ. As the aircraft began to climb, the rotor revolutions per minute dropped and the crew was unable to regain it. They had run out of power. The aircraft descended into 50- to 60-foot trees, rolled, and hit on its right side, destroyed. The MTP sustained a head injury and the IP had cuts and bruises.

The performance planning done before the mission indicated there was sufficient power to execute the maneuver. So what happened? The board found that the power margin available was less than 2 percent at the time of the accident. Two percent! Why would two aviators with the experience mentioned above put themselves in a position where a wind shift on final could cause serious problems? Why did the chain of command allow them to go into the mountains with full fuel tanks? The answer to the first question is overconfidence in their abilities, one of the most common causes of accidents. The answer to the second question is at the heart of this lesson learned. The company commander who briefed them did not know they intended to go into the mountains first. He did not know they were going to the small LZ they selected. The mission brief indicated a training area and not the specific LZ. He did not know that the power margin would be less than 5 percent. The RAW indicated less than a 10 percent power margin but not the 2 percent planned. What he did know was that two of his best aviators were going out to do a checkride and they didn't need him questioning them on the mission planning. It is there that he made a mistake. He needed to ask the questions. CAPTAINS, TAKE NOTE: JUST BECAUSE YOU DON'T HAVE SENIOR WINGS DOESN'T MEAN YOU CAN'T ASK QUESTIONS. If someone had just asked questions, the crew would have realized they needed to do some traffic pattern work to burn some fuel before going to the mountains.

Perishable skills are indeed perishable

IPs always talk about perishable skills. The rest of us often roll our eyes and agree to keep from arguing. I am now a believer. Here's why. An 8,000-hour IP was conducting UH-60 night vision goggle (NVG) environmental qualifications during reception, staging, onward movement, and integration at the National Training Center (NTC). He had three aviators, two crew chiefs (CEs), and a standardization instructor (SI) in the aircraft on a moonless night with gusty winds from the west. The mission was to "hot seat" the three aviators in the right seat and for the SI to work with the CEs. The first portion of the flight went without incident, and the second PI to be trained moved into the right seat. He had flown for 30 to 45 minutes when the IP took the controls and announced he was going to demonstrate a crosswind landing and

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takeoff to the south. He successfully completed the landing and conducted a before-takeoff check. He applied power to execute the takeoff and began a climb. He never cleared the dust cloud and flew into the ground. The aircraft tumbled and was destroyed. The IP and one of the CEs suffered serious injuries.

The board determined that several factors contributed to the accident. There was a false horizon to the south caused by a ridgeline between the aircraft and the garrison area. It ran down from right to left. The winds were variable between 270 and 330 degrees at 20 to 25 knots. The board found that the IP on the controls began an unintentional left turn immediately after takeoff. This was probably influenced by the false horizon. The left turn and variable winds placed the aircraft in a tailwind condition that kept the IP from being able to clear the dust created by the downwash. The dust cloud was blown along with the aircraft. Lastly, the power application that had been sufficient all night when taking off into a headwind was not sufficient to maintain a climb in the tailwind condition.

The most significant finding of the board was that while the IP was current in NVG flight, he had flown fewer than 10 hours of NVGs in the previous 8 months. He had also missed a pre-deployment training exercise. The board found that he was current but not proficient in NVG flight. Combining this with the arduous conditions of the NTC led to disaster. His “perishable skills” had not been exercised sufficiently at home station to ensure his success at the NTC. There was another significant problem in this accident that leads to the next lesson learned.

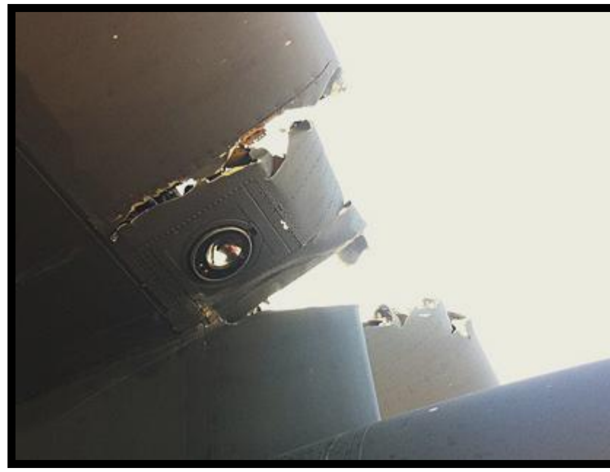
Crew coordination saves aircraft and lives

As the IP executed the takeoff described in the paragraph above, there was no help from anyone else in the aircraft. The PI and both CEs realized that the aircraft was in an unannounced left turn. They all knew they were in a crosswind condition, but no one told the IP he was turning. The board wondered why. The explanation from each of them was that they were sure the IP knew what he was doing. All of them had flown together many times before and all three trusted the IP without question. This phenomenon is often referred to as excessive professional courtesy. It occurs when a less experienced crewmember fails to question a more experienced crewmember even when he knows something is wrong. This happens often. (See Flightfax, February 2003.)

Another example occurred when an MH-6J IP flew to an elevated platform with obstacles nearby to insert troops. The PI later stated that he knew they were lower and closer to the obstacle than in previous iterations, but he didn’t say anything because he was sure the IP knew what he was doing. The rotor system struck one of the obstacles, and the aircraft crashed and was not repairable. The PI suffered serious injuries but has fully recovered. The lesson to be learned here is WHEN YOU THINK SOMETHING IS WRONG, SAY SO. There’s a reason two to six people in an aircraft are called a crew. Without help, everyone makes individual mistakes. It’s our crewmates who must help us avoid them.

--LTC W. Rae McInnis, US Army Retired, G3 Director, U.S. Army Combat Readiness/Safety Center

Mishap Review: C-130/RQ-7 Mid-air collision



Synopsis

While simultaneously approaching a FOB landing field, an Air Force C-130 and an Army RQ-7B had a mid-air collision resulting in wing and prop damage to the fixed wing aircraft and destruction of the Shadow UA.

History of flight

The RQ-7 had just completed a 5 hour ISR mission and was returning to land from the west to the airfield; the C-130 was in the middle of a 6 leg mission delivering cargo to the same airfield approaching from the east. While both aircraft were turning final (approved by ATC) the C-130 impacted the RQ-7 at the left wing leading edge destroying the RQ-7 and damaging the C-130 wing and prop. The C-130 crew landed safely with one engine shutdown.

Operation and Maintenance Procedures

All crew members were current and qualified in their respective aircraft and missions. Investigators found operations and maintenance procedures not to be contributory to this accident.

Commentary

It was determined that errors in ATC and the operation of the tower were contributing factors to this accident. The contract tower controller failed to recognize a pending conflict and approved the C-130 and the RQ-7 to proceed into the same airspace.

Note: Airfield management and operations tasks are increasingly becoming the responsibility of the Army's aviation formations – An article providing a review of airfield management resources for deploying Commanders can be found in the October 2011 edition of the Doctrine Division Newsletter located at https://www.us.army.mil/suite/page/432

Major Accident Review (MAR)

U.S. ARMY COMBAT READINESS/SAFETY CENTER

While in full autopilot mode orbiting at 14,000 ft MSL the aircraft began an un-commanded descending right turn. The operator attempted to regain control of the aircraft but was unable to do so. The aircraft continued to descend, lost command link and crashed.

Approximately two hours into a turbocharger test flight while orbiting at an altitude of 14,000 ft MSL with hold modes on, the MQ-1C aircraft experienced a left tail servo processor failure allowing the left rudder-vator to move freely. Air flowing over the flight control surfaces forced the left rudder-vator to full deflection, resulting in an un-commanded descent, left roll, right yaw and left slip. The PC turned the hold modes off and attempted to regain control of the aircraft with the operable right rudder-vator and vertical rudder. The vertical rudder motor could not overcome the aerodynamic forces being applied to the rudder. The vertical rudder was held in a position that caused an even greater right yaw. After approximately 3 minutes the aircraft descended to approximately 5,500 ft MSL and Line of Sight (LOS) communications were lost with the control shelter. Approximately 45 seconds later the aircraft impacted the ground.

Findings:

— Left tail servo processor malfunctioned
— Vertical rudder failed to operate properly

Recommendations:

— Conduct additional testing to determine exact cause for processor failure
— Conduct additional analysis to ensure Failure Modes Effects Criticality Analysis (FMECA) is accurate
— Review EP for Lost Control Prevent to determine if adjustments are necessary

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

Selected Aircraft Mishap Briefs

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

Utility helicopters

UH-60 

-A series. The aircraft main rotor blades made contact with the tail rotor driveshaft during environmental training. (Class C)

-M series. Flight medic received fatal injuries when struck by MRB during patient pick-up. (Class A)

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

TH-67A 

- The aircraft encountered dynamic rollover during training. (Class B)

OH-58D 

- Crew experienced a LOW ENG OIL caution during contour flight with vibrations and executed an emergency landing/running approach to a tank trail. Inspection revealed cracks in the vertical fin above the stinger mounting point and axial play in the tail rotor delta hinge spherical bearing. (Class C)

AH-6M 

- Engine over-torque condition occurred as crew was attempting to clear trees during gunnery operations. Post-flight revealed damage to all tail rotor blades. (Class C)

Cargo helicopters

CH-47 

-D series.   Sheet metal damage sustained to the aircraft fuselage during NVG sling-load mission. (Class C)

-D series. During NVG dust landing, aircraft landed hard sustaining damage to the landing gear and fuselage. (Class A)

Unmanned Aircraft Systems

RQ-7B 

- During a mission UA lost link and crashed into a mountain. (Class C)

- The UA experienced a FLAPS SVO FAIL. Recovery chute was deployed and vehicle was recovered with damage. (Class C)

-After takeoff engine failed. UA was recovered with damage. (Class C)

- During approach, low airspeed indicator illuminated. UA did not respond to attempts to abort the landing. (Class B)

MQ-5B 

- The UA crashed during landing. (Class A)