Flightfax

ARMY AVIATION RISK-MANAGEMENT INFORMATION

JULY 2005 ✦ VOL 33 ✦ NO 7

Crew Coordination Special Issue

"I Got It!"

U.S.ARMY

DASAF Corner

Why the CRC and What's Next?

The Army Safety Center recently transformed to the Combat Readiness Center (CRC). Once an organization that focused solely on accidental losses, we're now looking at all losses of combat power. This holistic view is quickly providing a new capability for our Army to understand loss and become more effective through control measures and predictive analysis. So, what's next for the CRC? How will the Army operationalize this new knowledge to better support the combatant?

Guidance from the Chief of Staff, Army (CSA) and Secretary of the Army (SECARMY) is clear. In their words, we must "manage risk where the rubber meets the road, not be risk averse, and aggressively take the fight to the enemy by better understanding the risk and the required control measures." However, we can't meet this requirement unless the knowledge is relevant and in the hands of the user.

More than 300,000 American Soldiers currently are serving in 120 countries across the globe. Our Army's junior leaders are gaining a wealth of knowledge on combat operations, both on the ground and in the air. They have a lot to say, and it's important that senior leadership listen as we move forward in our transformation. This point became clear to me as I was preparing my thoughts for this article and dialoging with my aide-de-camp.

My aide is a combat veteran, like many of our young leaders. In his brief career he's served tours in Korea, Afghanistan, and Iraq. I've dragged him around the world with me; he's participated in more than 120 briefings and been closely involved in countless Army-level investigations. So I asked him, "Why the CRC and not the Safety Center?" He quickly responded, "Sir, just last night I placed the twenty-third red tab in my West Point yearbook. Each red tab marks a peer of mine who's died...we need the CRC."

Losing friends is personal. His response was moving, so I decided to dig a little deeper and asked, "From your foxhole, what should be next for the CRC?" Early the next morning I found the following e-mail on my BlackBerry:

"Sir, you asked me two questions. First, 'Why the CRC?' Here are my thoughts.

"It's the CRC because our Army can't afford to lose combat power, particularly during this Global War on Terror. On average, one American Soldier has died every 9 hours since 11 September 2001. Updating you each day on our statistics is very sobering, especially this early in my career.

"The number one killer of DOD personnel in Operation Enduring Freedom is incidents involving helicopters; these incidents rank third in Iraq. However, these statistics pale in comparison to the number of Soldiers dying in vehicles from accidents, roadside bombs, and improvised explosive devices. This year alone, an average of one Soldier has died each day in a combat vehicle and two have died each week in their privately owned vehicles. Two-thirds of the Soldiers lost to accidents thus far have died in vehicles. And, the numbers continue to rise.

"We can't help but see the magnitude of our challenge on the roadways, both at home and in theater. In the air—both in and out of combat—we've lost nearly 160 Soldiers and more than three battalions' worth of helicopters at a cost of nearly $2 billion. These trained men and women weren't just Soldiers; they also were friends, sons, daughters…and classmates.

"The CRC will be the focal point for analyzing all accidents, serious incidents, and combat losses. It's about capitalizing on current technologies to become predictive and identify tactics, techniques, and procedures to mitigate and prevent future losses. The answer to the question of 'why' is why hasn't there been a CRC all along?

"I took notes this past February when the CSA and SECARMY directed the Safety Center to transform to the CRC. Its new mission was to continue embracing safety, but also fulfill a requirement to report, track, and analyze combat losses. The CSA and SECARMY stated that before the CRC, there wasn't a 'single source' data depository for composite Army losses. They also pointed out there wasn't an Army-level resource explaining how combatant commanders should report, investigate, and—most importantly—prevent composite losses. Looking out my foxhole, it appears there's very little Composite Loss Awareness (CLA) shared across the battlefield.

"Your second question was, 'What's next for the CRC?' Clearly, we must enhance CLA where the rubber meets the road. From my perspective, CLA is defined best as providing and sharing holistic loss data so Soldiers can understand each mission's unique characteristics, similarities, and relevance to previous incidents. For nearly 2 years, senior leaders knew seatbelts weren't being worn in vehicles; aircraft were flying too low and too fast in certain conditions; and hazards often were overlooked in anticipation of enemy engagement. Regardless of the number of policy letters written, every unit relief in place or transfer of authority resulted in learning the lessons anew. How do we become more aware and not repeat our mistakes? How can the CRC provide CLA?

"CLA works only if everyone in the formation understands what can take them out of the fight, regardless of the cause. This understanding exists in the tactical and non-tactical environment when Soldiers know and manage the risks. Composite Risk Management (CRM) insists that all players know the dangers, understand the trends, and comprehend the particular environment in which they operate, combat or not. Therefore, acquiring CLA is essential to managing composite risk. Leaders then can make the right decisions rapidly and without lengthy, calculated, and metric-based computations ('old safety'). Digital warriors already are familiar with the concept of CLA, and the CRC will enable them in combat. Here's how.

"There's a grid coordinate location associated with every incident report the Army sends and receives, whether the report is generated through the in-theater SIGACTS, ArmyWatch, Joint IED Task Force, Army Shootdown Assessment Team (ASDAT), serious incident reports, or CRC accident reports. The intelligence community has known for many years the value of populating a map with enemy movement and reports. Why hasn't the safety community grasped this same concept? Safety isn't operationalized by doctrine and, therefore, often isn't seen as a composite part of the fight.

"Imagine the Force Battle Command, Brigade-and-Below (FBCB2) or BlueForce Tracker (BFT) overlay on the M1114 HMMWV. These screens look a lot like the interactive moving maps displayed on any navigation system in a newer-model car. The route is planned, the briefings are conducted, and the patrol begins. Using these existing systems, the CRC should live up to its potential and provide our Soldiers with relevant, interactive, and worthwhile information. This same concept applies to the young aviator planning his mission on the Aviation Mission Planning System (AMPS) and op cell monitoring on BFT. The maps generated by these current Army systems should include an overlay of composite loss data.

"Since the CRC will maintain a centralized loss database, it has the capability to plot on these maps a color-coded dot (orange) for every accident occurring in Iraq since the first movement. Additionally, the CRC should receive real-time reports from the IED Task Force and ASDAT or SIGACTS. Those incidents can be plotted easily with another color (red) to indicate enemy activity. Interactively overlaying this information with two basic choices—length of time (30, 60, or 90 days or 6 or 12 months) and the type of loss (air or ground)—will justify its relevance to the user.

"When a cursor drops over any particular dot, the specifics of the incident will display in a small pop-up window (e.g., 'M1114

Rollover/Speed' or 'OH-58D Shootdown/ SA16'). If the user wants more information, a simple double-click immediately will link him to the loss or accident report for that particular incident. The tool's value is that it will remain a single-entry requirement from current databases across the Army. Multiple venues and users will engage simultaneously on the SIPRNET as a software program from current technologies (AMPS and BFT).

"If these maps were printed and posted at every ALOC convoy sign-out location, in the commander's office, or beside every flight operations hazard map, the Army's junior leaders could visualize the importance of not speeding, wearing seatbelts, and rehearsing rollover drills. A majority of orange dots undoubtedly would convince a young convoy commander. For aviators, these orange dots sometimes would justify altitude restrictions, airspeed, or airspace constraints, which often are overlooked.

"What if this information was interactive and with the user at all times? Step back into that M1114 HMMWV and sit at the BFT screen. Along the route, imagine the TC or company commander is scrolling the menus and happens to see on his 10-meter imagery a series of orange or red dots 5 miles ahead. A closer look reveals this road historically has more IED attacks than accidents, or that the orange dots are rollovers caused by excessive speed in oversized vehicles. In seconds he can pick up the radio and tell the other vehicles to reduce their speed for the next 2 miles. Single entry, multiple use, and relevant to the combatant—a real-time, interactive CLA overlay providing the necessary situational awareness and rapid risk mitigating decision skills necessary to cut all types of Army losses.

"One step further would allow unit adaptation. The CRC manages the minimal Army data and map-populated points. However, the software allows catered modifications for any deployed unit that wishes to annotate additional near-miss information or collect close-call data (missed enemy engagements or near mid-air collisions). The CRC will work closely with the software and rapidly modify it to fit the unit's request.

"We've lost the equivalent of three brigades since 9/11, and nearly half these losses weren't in combat. For often unforgiving and preventable reasons, many superb Army leaders are no longer in the fight. We're the best Army in the world and we can do better—our Nation deserves it. Understanding and learning from composite losses is the fastest way our combatant commanders can make the appropriate decisions to prevent the loss of combat power. CLA through digital technology will save lives and enable CRM—it's the way ahead for the CRC and the key to helping our combatant leaders.

"Very Respectfully,
Travis"

So, why the CRC and what's next?
Hmm…I couldn't have said it better myself!

Joe Smith

BG Joe Smith

Flightfax

Commander and Director
of Army Safety - **BG Joseph A. Smith**
Deputy Commander - **COL George Bilafer**
Publishing Supervisor - **John Hooks**
Managing Editor - **Paula Allman**
Graphics - **Leslie Tisdale**

e-mail - flightfax@safetycenter.army.mil
https://crc.army.mil

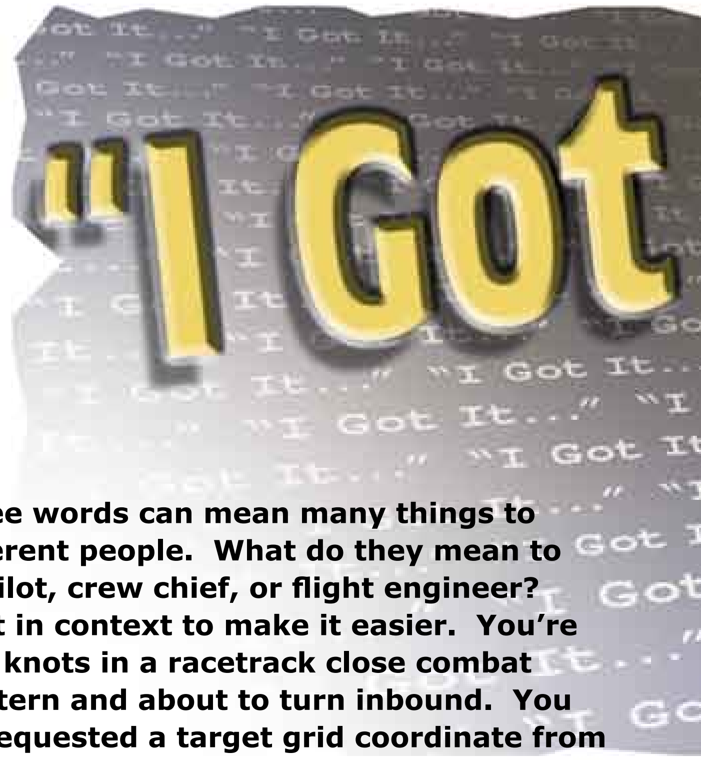
CONTENTS

POV FATALITIES through June

FY05	FY04	3-yr Avg
105	86	82

U.S. ARMY COMBAT READINESS CENTER

Flightfax is published by the U.S. Army Combat Readiness Center, Building 4905, Fifth Avenue, Fort Rucker, AL 36362-5363. Questions about the editorial issues addressed in Flightfax should be directed to the editor at DSN 558-9855 (334-255-9855) or flightfax@safetycenter.army.mil. Distribution questions should be directed to Media and Marketing at DSN 558-2062 (334-255-2062).



These three words can mean many things to many different people. What do they mean to you as a pilot, crew chief, or flight engineer? Let's put it in context to make it easier. You're doing 100 knots in a racetrack close combat attack pattern and about to turn inbound. You also just requested a target grid coordinate from your sister ship and initiated a transfer of the flight controls. You hear "I got it." Any idea what your crewmember is trying to tell you?

The mission called for a team of two AH-64Ds to conduct close combat attacks (CCAs) in support of the division field training exercise. The flight arrived at the training area and immediately occupied preplanned attack-by-fire positions (ABFs) in support of their assigned infantry battalion. After approximately 50 minutes of using the ABFs, the team began conducting CCAs in support of the infantry battalion. Each circuit was flown at airspeeds between 60 and 120 knots and altitudes between 50 and 200 feet.

As the accident crew prepared to turn inbound, the other aircrew in the team asked if they wanted a target grid coordinate. The accident aircraft's front-seat pilot instructed the other aircrew to send grid coordinates and immediately said to the backseat pilot, "You have the controls." Fifteen one-hundredths of a second later, the backseat pilot said, "I got it." Eleven seconds later the aircraft, in a 12-degree nose-

Written by accident investigators to provide major lessons learned from recent centralized accident investigations.

down, 13-degree left bank, impacted a 44-degree upsloping hillside with its nose. Both cockpits received severe structural damage during the initial impact. After the initial impact, the aircraft rebounded skyward and developed an extremely nose-low attitude. The aircraft then fell nearly straight down on its nose and impacted the ground a second time. The aircraft came to rest predominantly upside down on its right side, leaning against its mast-mounted assembly. Both pilots suffered fatal injuries.

The centralized accident investigation (CAI) board determined no one was operating the flight controls for the 11 seconds preceding the accident. The backseat pilot's “I got it” referred to his receipt of the target grid coordinate; he never placed his hands or feet on the flight controls. The front-seat pilot misinterpreted the backseat pilot's “I got it” to mean he'd assumed responsibility of the flight controls. Head tracker information from the maintenance data recorder corroborates the CAI board's conclusion, showing both pilots were looking inside their respective cockpits for the last 11 seconds of the flight.

Standard crew terminology

Each aircrew training manual (ATM) contains detailed information regarding aircrew coordination. The AH-64D ATM contains the following paragraph:

“To enhance communications and crew coordination, crews should use words or phrases that are understood by all participants. They must use clear, concise terms that can be easily understood and complied with in an environment full of distractions. Multiple terms with the same meaning should be avoided.”

The CAI board determined the accident crew

If you or other crewmembers fail to follow standard crew terminology, you'll create an ambiguous communications environment highly prone to successive errors that can culminate in an accident.

failed to follow several aircrew coordination essential elements and basic principles, but all the errors were traced back to a lack of standard crew terminology. The paragraph cited in the ATM is critical. If you or other crewmembers fail to follow standard crew terminology, you'll create an ambiguous communications environment highly prone to successive errors that can culminate in an accident.

This accident illustrates how a lack of standard crew terminology creates errors that can be cumulative in nature, with mistakes becoming so powerful that even the most experienced crewmembers cannot overcome them (the backseat pilot in this accident was an IP who had over 1,800 flight hours). In fact, the backseat pilot used terminology specifically called out in the ATM as ambiguous when he said "I got it."

Why did this crew make these errors? The CAI board concluded haste and overconfidence—two common trends in aircrew coordination-related accidents—were involved. In essence, the accident crew deconstructed their standards failsafe when they failed to use standard cockpit terminology. As the standards failsafe continued to weaken, the effects of haste and overconfidence became unchecked and caused the crew to continue to make mistakes, culminating in the accident-inducing final error.

Conclusions

Standard crew terminology is the common thread through all aircrew coordination competencies. Ambiguity is not allowed in the cockpit or between crewmembers. We simply cannot efficiently process ambiguous instructions. If you've allowed ambiguity in your cockpit, you're lucky to still be alive. Make no mistake—you've committed a potentially lethal error. ♦

Editor's note: This short article does not capture all the complicated interactions that occur between crewmembers during a typical training flight or an actual mission, nor does it address all the aircrew coordination basic qualities or essential elements. If you have questions regarding these issues, contact your local IP or SP.

—Comments regarding this accident may be directed to the Accident Investigations Division at the U.S. Army Combat Readiness Center, DSN 558-9552 (334-255-9552).

8 elements of crew coordination

1. Communicate positively—sender directs and receiver acknowledges.
2. Direct assistance.
3. Offer assistance.
4. Announce actions.
5. Acknowledge actions—repeat critical parts.
6. Be explicit.
7. Provide aircraft control and obstacle advisory.
8. Coordinate action sequence and timing; request tail clear, receive clear acknowledgement, and turn tail.

"The Shaker is the Taker"

Dr. Lawrence Katz
ARI-RWARU

Aircrews rely upon communication for maximum performance and safety. This seems readily apparent and it's the reason that the Aircrew Coordination Training Enhancement (ACTE) program strongly emphasizes the importance of clear, timely, relevant, complete, and verified verbal communications. However, while this is a critical component of crew functioning, little attention has been directed towards the influence of nonverbal communications on effective aircrew coordination.

Nonverbal communications occur in the cockpit. They include such events as facial expressions, head nods, hand motions, shrugs, shoulder taps, pointing, and even visual monitoring of another crewmember's actions. The interviews I've conducted while serving as the point of contact for the development of ACTE have repeatedly confirmed that crew interactions during training and missions are often unspoken.

This begs the question, "What happens when these nonverbal communications are prevented or impeded?" Specifically, some Army rotary-wing aircraft employ a tandem-seating configuration and all Army helicopters operate at times with limited in-cockpit visibility resulting from night (unaided) and night vision goggle (NVG) flight. The resulting reductions in nonverbal communications may have an important impact on crew coordination.

Several crewmembers reported that even in the tandem-seat Apache, certain nonverbal conventions have emerged. "The shaker is the taker" for example, has become a common reminder that shaking the cyclic indicates taking control of the aircraft when electronic communications are impaired. Some Apache instructor pilots (IPs) reported that they often use the mirror in an attempt to search a student's head movements for indications of confusion. However, there seems to be general agreement that the Apache requires a different level of verbal interaction than side-by-side configured aircraft.

As one IP put it, "Apache IPs are forced to talk more. They can't hit the student upside the head." LTC Andy Wellesley, Chief Ground Instructor at the United Kingdom School of Army Aviation, states, "When we shifted from the Cobra to the Apache, we added lots of sophistication but may have lost standardization in communications. Now we must verbalize what was normally nonverbal when we would get busy in times of high workload." He reflected on the comfort level afforded by a side-by-side seating configuration. "It's just that reassurance there's another human that you can communicate with nonverbally and make eye contact." Similarly, LTC Peter Terrett, Chief Flying Instructor at the United Kingdom School of Army Aviation, reported that IPs used to rely upon nonverbal communications to pick up on signs of distress or confusion, because quite often you can identify when the student is going to go wrong.

We need your help on this...

We are currently conducting research to explore the impact of limited nonverbal communication on aircrew coordination. As you can tell by the sources cited in this article, this issue is of international interest. A necessary first step of this project is to identify what types of nonverbal communications are used among crewmembers in the different airframes, in either the training or the operational environment.

Nonverbal communications include any interactions in which a message is sent or received without using written or spoken words; e.g., prodding, pointing, tapping, gesturing, etc. Please share with us any examples of this behavior that you or others you know have ever used. What was the nonverbal behavior and what was its purpose? What message was being sent? Why wasn't it verbalized?

To provide input, e-mail the author and include the airframe in which the nonverbal communications have occurred. All information will be kept in strictest confidence. Only group summary results will ever be discussed or reported. No personally identifiable information will be used in reporting results of this project to any agency, either within or outside the U.S. Army. Individuals participating in this research will remain anonymous. ♦

—Lawrence Katz, Ph.D. is a Research Psychologist with the Army Research Institute Rotary Wing Aviation Research Unit (ARI RWARU) at Fort Rucker, AL. He is the Technical Contracting Officer Representative for the ACTE Program. He can be reached by calling DSN 558-2385 (334-255-2385) or e-mail lawrence.katz@rucker.army.mil.

Crew Coordination

I was in law enforcement and our mission was marijuana eradication in a Bell UH-1H. I'd been involved in a number of these operations, so the mission was somewhat routine. The marijuana farmers knew their plants could be easily spotted from the air so they tried to hide them by planting them under trees and mixed with other plants.

The method for finding and eradicating the marijuana plant is not exotic. We hover taxi low and slow to brush rotor wash on the foliage. When marijuana plants are disturbed by the wind, they have a distinctive green color that is easy to spot. Once spotted, we place or direct ground crews to cut the plants and tie them in bundles. We sling load the bundles to waiting trucks.

I was the primary set of eyes to look for marijuana on this mission. I shared the cabin with two other pilots. We had done this stuff before, and knew what we were supposed to do and how to do it. We wore standard flight suits, helmets, gloves, boots, and mission equipment. Before takeoff, the cabin doors were slid open. I was free to move from side to side, but was secured from falling out of the cabin via a body harness and strap connected to a hard point ring on the cabin floor. We maintained crew commo via the intercom.

On this flight we took another agent who had no official duty other than riding along and watching us do our job. He was belted into a rag and tube seat and given a headset with which he could listen, but he couldn't talk to us on the intercom.

We were working a wide valley, at and below the treetops, approximately 100 feet above the rocky creek bed. I was moving back and forth from the left to the right side of the cabin door. On the last move to the left side, I lengthened the safety strap through the buckle and tugged on it to take up the slack, and then got out onto the skid. Our extra "non-crewman" noticed this, and thought I was trying to unhook the safety strap from the floor ring. Without telling or showing me, he disconnected the safety strap from the ring. I was now untethered and didn't know it.

I slid out with my feet on the left skid, my butt on the edge of the floor, and my right hand holding the small cabin door. Seconds later, as we were moving sideways to the right up the slope, a wire suddenly came into the pilot's view. It was very close and almost under the rotor disk about to strike the pilot's window. He made an understandably rapid and substantial input of left cyclic. The aircraft rolled severely to the left to avoid hitting the wire. This abrupt movement caused my feet to slip off the skids and my butt to slide off the edge of the floor. My butt landed hard on the skid just as my ribs struck the floor edge. Both of my feet were outboard of the skid, but I still had a grip of the door with my right hand. As I'm sitting on the skid and the aircraft is finally getting back level and under control, I noticed my safety strap hanging beneath my feet!

I looked at the non-crewman and saw that he knew what almost happened. His interpretation of my expression was that I was angry with him. He misinterpreted anger for terror!

His interpretation of my expression was that I was angry with him. He misinterpreted anger for terror!

The pilots up front still didn't know what had happened in the cabin. They were still reacting to the near wire strike. We later communicated that since we had passed through that location at least twice before, we had probably passed under that wire—twice! How could we have missed it? We climbed up and looked down to where we knew the wire to be, but we still had a hard time seeing it. We had the Wire Strike Protection System (WSPS), but the way we were moving sideways, the WSPS wouldn't have helped.

The non-crewman revealed later that he released the safety strap because he thought I wanted more room to maneuver. ♦

Editor's note: Our thanks to the author who was lucky to remain attached to the UH-1H long enough to be able to tell us this story. As the story above shows, you—the pilot—may be in for a big surprise. These surprises may be avoided if you invest the time necessary for thorough preflight briefings. A preflight briefing may not contemplate changes that occur during flight. Communicating such changes to all crewmembers is essential. To do so may require you to take the time to stop or slow down and explain the situation. Without clear communications, small misunderstandings may occur; and as we've seen, small misunderstandings can lead to disastrous results.

Keep in mind, however, that you may experience a malfunction or emergency during which you cannot take the time, for there is none available to stop or slow down and chat it over with your crew. In those events, you have to rely on the formal training these crewmembers have received or the preflight briefing you have provided.

—Adapted from Helicopter Professional Pilots Safety Program (Heliprops), Volume 13, Number 3, 2001.

The Right Headset in Your Fixed-Wing Aircraft

CW4 Paul Miller, CW4 David Littner, CW4 David Keshel,
CW4 Elza Brokaw, and CW3 John J. Lill
WOSC 05-03

Editor's note: The active noise cancellation and active noise reduction (ANC/ANR) headsets are only appropriate for "fixed-wing" aircraft. This technology cannot be used in rotary-wing aircraft because the equipment defeats the lateral impact protection of the helmet.

As a crewmember, precise communication is imperative for crew resource management and mission success. According to studies done by Frederick V. Malmstrom, Ph.D., active noise reduction headsets significantly reduce pilot's physical and mental fatigue, as well as loss of proficiency during flight.

In years past, there could have been a misconception that David Clark headsets were the only ones the Army allowed. This was because units were making unauthorized modifications to aircraft electrical systems to power other headset systems. The U.S. Army Aviation and Missile Command (AMCOM) fixed-wing program management office (PMO) determined that battery-powered aviation ANR headsets are authorized as long as no modifications are made to the aircraft. Many units have locally procured such headsets and have had great success with off-the-shelf ANR products.

The principle of the ANR headset is to cancel unwanted low-frequency noise. Unwanted noises are those sounds that interfere with the pilot's reception and understanding of crewmember and air traffic control communications. Passive attenuation of high-frequency noise is accomplished mainly through the ear cup, noise-absorbing padding, and secure fitting ear seal design. By placing a miniature microphone inside the ear cup, noise entering from the flight deck through the ear cup is sensed and analyzed by an electronic circuit. The electronic signal is inverted, amplified, and transmitted through the earphone canceling out the noise, whether you are actively talking or just listening to the radio or another crewmember. Most of the electronic noise-canceling technology headsets are failsafe in that they provide individual circuits for both the ANR portion and the radio/intercom portion of the headset. If the headset power source (battery pack) or ANR electronics fail, the headset will continue to function for communications.

In accordance with testing performed at the U.S. Army Aeromedical Research Laboratory, Fort Rucker, AL, by Dr. A.J. M. Houtsma, Ph.D., both the Bose AHX 32-01 and David Clark (DC) P/N 40862-01 perform very well at reducing exposure to hazardous noise levels. Testing was performed at a flat 108 dB(A) for frequencies starting at 63 Hz extending to 4,000 Hz.

The two headsets tested took very different approaches to reducing noise attenuation with both passive and active technologies. The DC P/N 40862-01 performed very well with passive attenuation at all frequency levels, mostly attributed to the heavy construction of the plastic shell, noise-reducing materials within that shell, and the gel-type ear cups that conform very well to the contours of the skull around the ears. With the ANR off, the DC headset reduced the sound level below the Army's 85-decibel threshold for hazardous noise, and above 300 Hz, reducing it below the OSHA standard of 80 decibels. After turning the ANR on, this headset performed very well at reducing the low frequencies well below the 80-decibel level and maintained the higher frequencies well below 80 decibels. The effect of ANR is very noticeable.

The two headsets tested took very different approaches to reducing noise attenuation with both passive and active technologies.

The Bose model AHX-32-01 did not provide low frequency passive noise attenuation below 200 Hz, and reduced the noise level below the Army 85-decibel threshold at approximately 300 Hz. In the higher frequencies, the Bose provided very effective passive noise attenuation. After turning the ANR on, the Bose reduced noise attenuation below the 80-decibel OSHA standard across the frequency spectrum tested.

Marketing by both companies highlights findings in this unsolicited study of two commonly used ANR headsets. The DC headset is very good at passive noise attenuation in low frequencies, such as for propeller-driven airplanes, and does a good job in the high frequencies. The DC headset provides noticeable ANR especially good in the above applications. The Bose headset is more lightweight and may be more appropriate for long mission profiles based on interviews with pilots who have used both products. The ANR headset is better suited for use in jet aircraft where there is considerable noise energy above 1,000 Hz in comparison with propeller aircraft. Pilots have commented that the Bose audio clarity is excellent. No matter the make or model of headset, many studies have discovered significant reduction in performance when an eyewear frame breaks the seal of the ear cup. Caution must be taken to minimize the eyewear structure penetrating the seal. Using wire-style frames may help preclude this problem.

Individual units will have to decide which headset is appropriate to meet their needs.

Many products are available through FEDLOG and commercial venders with government sales representatives are ready to assist your needs. The David Clark model is approximately $300 less than the Bose, both having a 5-year warranty. For more information, log on to their Web sites: **http://www.bose.com/** and **http://www.davidclark.com/.**

—This article was written by CW4 Miller, CW4 Littner, CW4 Keshel (team leader), CW4 Brokaw, and CW3 Lill as a class project while attending the Warrant Officer Staff Course 05-03 at Fort Rucker, AL.

HaveQuick II Radio

CW3 Bryan E. Allen
Camp Page AAF, Korea

The Army gives us great equipment to use; it may not all be on the cutting edge of technology that is readily available at high-end techno retailers, but it is still world-class. You will find that our aircraft radios are no exception. Would you ever think about taking off on a mission without your radios working properly? Are you sure? What do radios need in order to be fully operational prior to flight? I have entertained this question many times, and depending on who you ask, you get varying answers. Instructor pilots will more likely give you the textbook answer and that is usually sufficient information for us "line dogs." But my experience has taught me that ALL available radios, under given circumstances, are absolutely necessary.

I am an avid fan of the HaveQuick II radio, found in most Army rotary-wing aircraft. Ask any AH-64 pilot and they'll tell you the HaveQuick II radio is crucial to mission accomplishment. However, in the UH-60 community, we seem to lack the institutional discipline to put this radio to use on a daily basis. I've heard pilots state they don't need the HaveQuick because it's not a secure radio. That's true, but it can be made secure quite easily by utilizing the KY-58, which should be installed with the ARC-164 (or equivalent) radio set. Pilots have also said HaveQuick takes too long to employ. False! There are at least two simple ways to put this system into operation. First, schlep over to flight ops (if you don't know the way, ask your friendly neighborhood 15P) or the S-2 shop and pull out the special instructions, and then find the section that lists all the multiple words of the day (MWODs). Depending on your current location in the world, these MWODs will either be "training WODs" or "theater WODs." Theater WODs are used during actual wartime missions.

Once you've retrieved the WODs, see the TACOPS officer again (or your standards section) and get the HaveQuick II checklist, or you can open your -10 and use the one in there. Just follow the instructions in the checklist. Trust me, once you've done this a couple of times, you'll see how simple it is. This may take a little more planning on your crew's part than you're used to, however this is the single most daunting task of using HaveQuick II.

The second way involves a little planning for your ops and commo section. You may be aware the MWODs can be loaded by a common fill device (CFD), better known as an ANCD. Depending on the proficiency of your commo guys, this procedure requires some input from the pilots. Once the MWODs are loaded in the CFD, just flip up the little cover on top of your ARC-164, plug in the fill cable, and push the little red button.

After spending a year engaged with enemy forces in Iraq and Kuwait, the requirement to have an operational radio capability hit close to home.

Some of you may be wondering why this article is in *Flightfax*. After spending a year engaged with enemy forces in Iraq and Kuwait, the requirement to have an operational radio capability hit close to home. When talking to Air Force airspace controllers over Baghdad on more than one occasion, I was told to go to the current HaveQuick II frequency to get airspace updates. Had I not taken the time to ensure my HaveQuick II was up and running, someone else might be writing an article of my ill-fated flight in a totally different section of this publication!

The radio works, folks, and it doesn't take a rocket scientist to figure it out. All it takes is an understanding of the radio and the few extra minutes it takes to put the system into operation. HaveQuick can give you access to a wealth of knowledge that our dedicated Air Force guys provide on a regular basis. Now wouldn't it be nice to be able to talk to the AH-64s when you come under fire and your FM decides to take a vacation? ♦

—CW3 Allen is the Airfield Commander and Safety Officer at Camp Page AAF, Korea. He may be contacted at bryan.allen@us.army.mil.

FY05 Aviation Mid-Year Review

Charisse Lyle
U.S. Army Combat Readiness Center

The Army continues to be extremely busy this fiscal year. Many of our Soldiers are deployed in combat missions around the world, and this continues to have an effect on the number of accidents reported thus far. On the home front Active, National Guard, and Reserve Component forces are protecting our borders and key nodes of infrastructure. Army Aviation is involved in these operations 24/7. This article will concentrate on a review of only Class A accidents due to the fact that some in-theater accident reports are still filtering into the Combat Readiness Center.

Army Aviation experienced 17 Class A accidents during the first half of FY05, claiming the lives of 17 Soldiers and one civilian Army contractor, and costing over $31 million. Over a third of the accidents (7) occurred in the Central Command (CENTCOM) area of operations (AO).

Leading accident events

■ **Loss of situational awareness.** There were three accidents where the aircrews lost situational awareness and allowed the aircraft to descend into the ground. These accidents resulted in three fatalities. Aircrew coordination failures contributed to all three accidents.

■ **Inadvertent instrument meteorological conditions (IIMC).** Two IIMC-related accidents, both involving UH-60L aircraft, resulted in seven fatalities. Pre-mission planning errors were contributory in both. Aircrews continued flight into deteriorating weather conditions and, upon encountering IMC, failed to correctly execute the IIMC procedure.

■ **Wire strikes.** There were two wire strikes involving a UH-60 and an OH-58D, both occurring at night and resulting in two fatalities. One occurred in Iraq and one in CONUS.

■ **Aircraft collisions.** Two aircraft collisions occurred during this period—a mid-air between two OH-58Ds and a collision between an AH-64 and a UH-60. Both occurred in Iraq at night and resulted in four fatalities.

Airframes

■ **UH-60 Black Hawk** (35%). The UH-60 accounted for six Class A accidents during this timeframe. Currently, one accident is still under investigation.

• Thirty-nine percent of the accident fatalities occurred in one IIMC-related accident. This accident was initiated when the UH-60L crew planned for day operations, but departed during darkness. The weather listed in the en route section of Form 175-1 was below the unit's minimum required weather for night operations. During the flight, the crew encountered IMC and, as they attempted to transition to instrument flight rules, struck a 1,700-foot guy wire on a television transmission tower at approximately 80 knots. The aircraft was destroyed and all seven people on board received fatal injuries.

• In a related accident, the pilot in command of the lead aircraft of two UH-60Ls flying an OPBAT/night vision goggle (NVG) training mission, continued flight into deteriorating weather. As the lead aircraft initiated IIMC procedures, the pilot experienced spatial disorientation. The aircraft decelerated and descended into trees at near-zero airspeed. The aircraft sustained major damage and five of the seven personnel on board were injured. Preflight planning errors allowed the mission to continue using expired weather information. This led to the en route portion of the flight being conducted in weather that was less than the night minimum requirements.

• A UH-60L struck the top wire on a high-tension power line in Iraq, became entangled, broke loose, and subsequently made an uneventful rolling landing into a nearby field. The left side of the aircraft sustained extensive damage. Because the crew was familiar with the route, they did not use their map to navigate. These wires were depicted on their map.

• Another wire strike occurred when an EH-60A contacted a radio tower and wires during NVG low-level flight, and subsequently crashed into a nearby field.

• Other accidents included a UH-60A whiteout during an approach that resulted in a tree strike and extensive aircraft damage. Also, a pilot-induced hard landing was reported while practicing dust landings, which caused the main rotor blades to strike the tail cone.

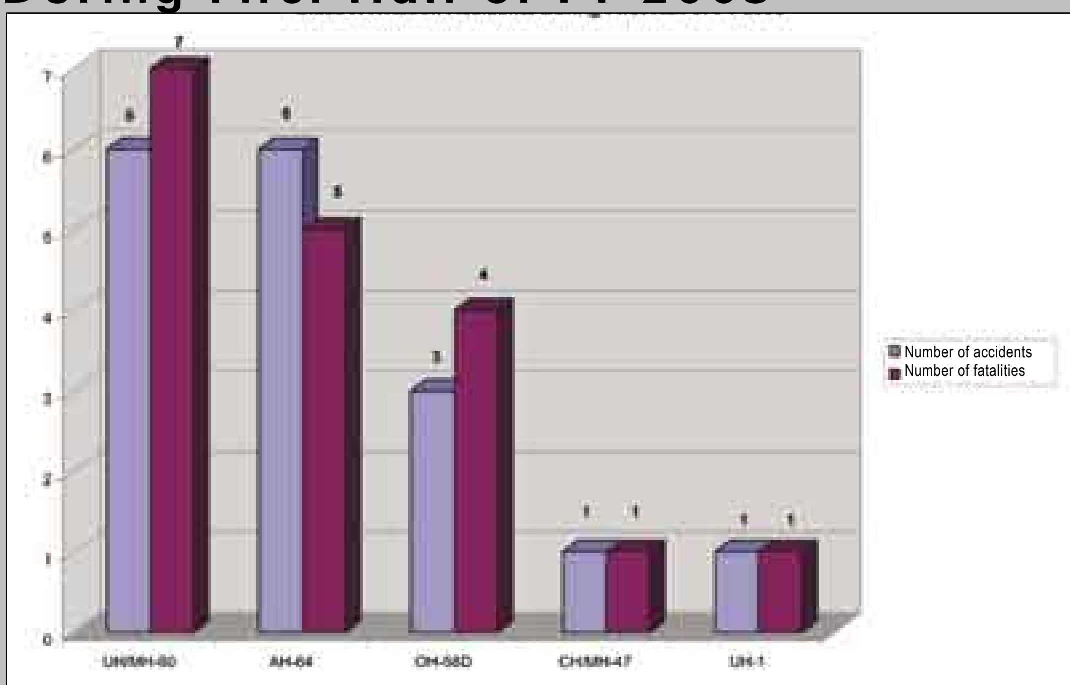
■ **AH-64 Apache** (35%). The Apache accounted for six Class A accidents during this time period. Two AH-64 accidents are still under investigation.

• While conducting a night formation flight approach to the forward arming and refueling point utilizing the night vision system, it is suspected the AH-64A crew lost visual contact with the lead aircraft, a UH-60A. As the UH-60's tail wheel touched down and the main landing gear was approximately one foot off the ground, the AH-64's tail section impacted the UH-60's main rotor system from above. Both aircraft were destroyed in the postcrash fire. All occupants in the UH-60 escaped without injury; however, both AH-64 pilots were fatally injured.

• While an AH-64 crew was conducting a team, daylight close-combat attack training mission, the front seat pilot on controls initiated a transfer of the flight controls while turning inbound for the attack run. Eleven

Class A

Class A Aviation Accidents During First Half of FY 2005



seconds later, the aircraft impacted a hillside, killing both pilots. Both crewmembers had been focused on receiving target grid coordinate information and neither pilot was flying the aircraft at the time of impact. The front seat pilot had relinquished the flight controls before ensuring the backseat pilot had assumed control of the aircraft.

• An AH-64D crew was performing day gunnery training. The pilot had initiated a right break while safeing the weapons system. The aircraft descended to ground impact and was destroyed, one pilot received fatal injuries and the other pilot was injured.

• A tree strike occurred during AH-64D day initial aircraft qualification training (BAG training), which was initiated by a misunderstanding between the instructor pilot (IP) and the rated student pilot (RSP). The RSP's understanding was that he was to conduct a terrain flight approach to a remote training site; however, the IP had actually directed him to execute a turn over the training site and continue south. The RSP initiated the approach and the IP was late with corrective action.

■ **OH-58D Kiowa Warrior (KW)** (18%). The KW was involved in three accidents, all in the CENTCOM AO.

• The aircrew of an OH-58DR was escorting a convoy at night in Iraq that had lost a vehicle earlier in the day to a roadside explosive device. It is suspected that both pilots became preoccupied with searching for roadside explosives and failed to detect wires in their flight path. The aircraft struck the wires and crashed. Both pilots received fatal injuries and the aircraft was destroyed.

• While conducting a multi-ship, night zone reconnaissance at terrain flight altitude, using AN/AVS-6(V) NVGs, the pilot on controls in the trail OH-58DR aircraft lost visual sight of lead. The trail aircraft's main rotor blades struck lead's vertical fin and tail rotor. Both aircraft lost control, impacted the ground, and were destroyed. The lead OH-58D pilots received minor injuries while the pilots in the trail aircraft were fatally injured. It is suspected that the pilot confused lead's NVG position lights with the surrounding ground lights, a visual illusion called ground light misinterpretation. There were no radio communications from trail to inform lead of the loss of visual contact.

• During a day combat recon mission, the OH-58DR aircrew's .50 Cal machine-gun malfunctioned. Both pilots were focusing inside the cockpit troubleshooting the weapons system and lost situational awareness. The crew failed to notice their descent in time to prevent ground contact.

Crew coordination failures and loss of situational awareness are a recurring theme in the majority of these accidents.

■ **MH-47E Chinook** (6%). The aircrew landed on a narrow road in a steep ravine to offload U.S. Soldiers. The Soldiers remained at the rear of the aircraft to wait for the aircraft to depart. An Afghan interpreter broke away from the group, started up the right slope and was struck and killed by the aft main rotor blade.

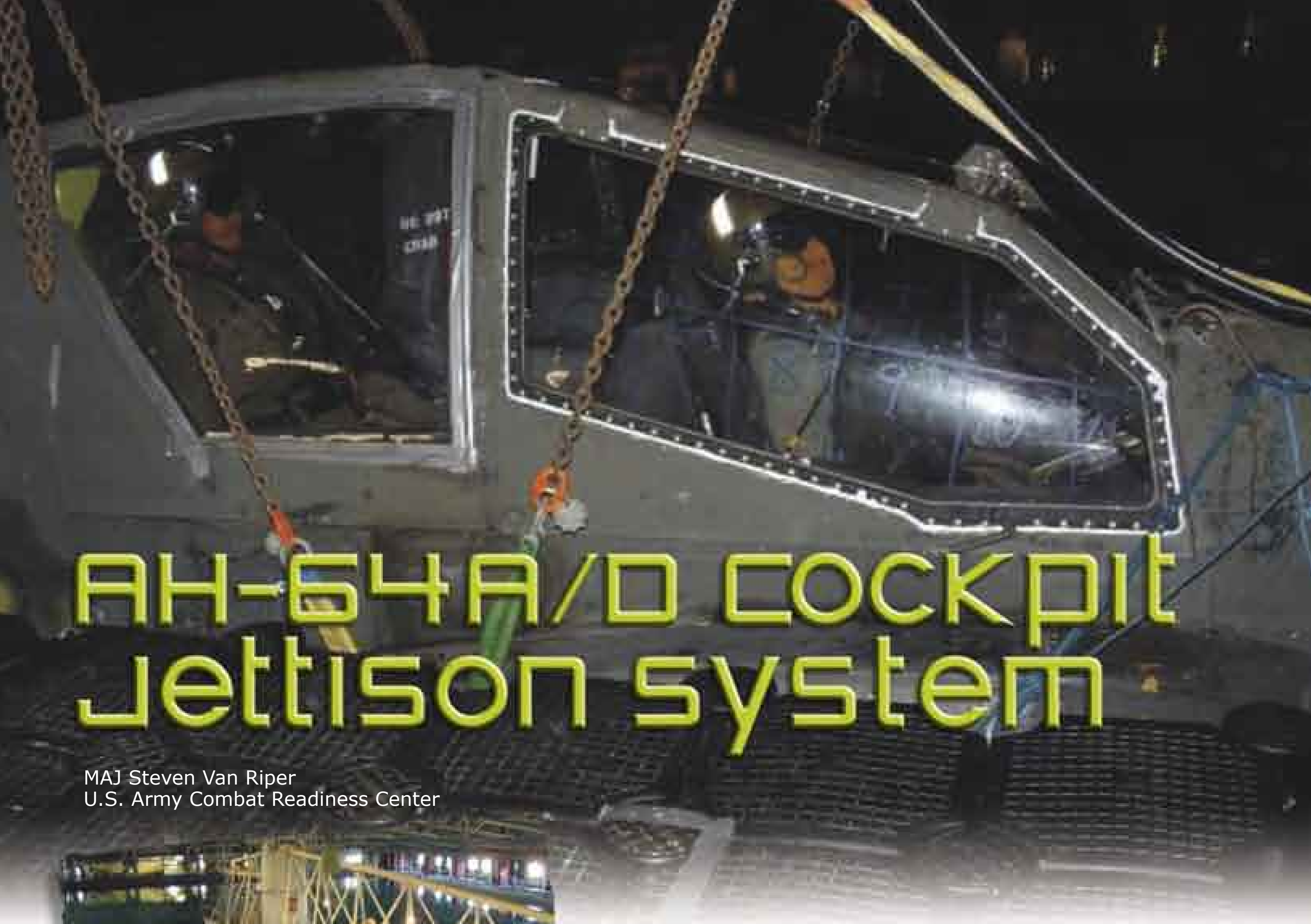
■ **UH-1 Huey** (6%). A collision with the ground on a day single-pilot UH-1M flight resulted in one fatality.

Summary

Crew coordination failures and loss of situational awareness are a recurring theme in the majority of these accidents. Due to the enemy threat in the CENTCOM AO, aircraft are operating in pairs. This places both aircraft in the same airspace and increases the risk of an aircraft collision. Wire strikes continue to plague the helicopter community. Trying to maintain VFR under IMC is a deadly mistake that continues to claim Soldiers' lives every year. Improper preflight planning, failure to take appropriate action when first encountering deteriorating weather, and failure to immediately and correctly execute the IIMC procedure upon entry into IMC conditions have proven very costly. ♦

Editor's note: These statistics are current from the USACRC database as of 11 July 2005. Delayed reports and follow-up details on preliminary reports could change the statistics, figures, and findings.

—Ms. Lyle is an Engineering Research Psychologist at the U.S. Army Combat Readiness Center. She may be contacted at DSN 558-2091 (334-255-2091), or e-mail charisse.lyle@us.army.mil.



AH-64A/D Cockpit Jettison System

MAJ Steven Van Riper
U.S. Army Combat Readiness Center

Joint U.S. Army and United Kingdom Ministry of Defense testing has demonstrated that the AH-64A/D Canopy Jettison System (CJS) will function underwater; however, its safe use cannot be assumed because of the potentially lethal blast levels created by activation of the detonation cord and the rapid sink rate induced as a result of the flooded cockpits.

Test results

The testing confirmed that the CJS will function when the aircraft is submerged and the crew stations are full of water; BUT initiation of the CJS, when the crew stations are full of water, generated a pressure wave that would be fatal to the crew. Even in instances where the crew stations are only partially filled with water, the shock wave could propagate through the water and affect any submerged body parts. Depending on the overall level of crewmember submersion, this could also prove fatal. Additionally, immediately after activating, the CJS pieces of the cockpit transparencies were forced into the crew stations by the inward water pressure. Some of these pieces were large enough to impede egress and would have to be moved to allow crewmembers to escape.

Further testing showed that the rapid cockpit flooding due to the activation of the CJS is likely to sink the aircraft more rapidly then previously thought, reducing the possibility of a successful crew egress.

During initial testing the canopy was jettisoned prior to impact with water. The crew stations quickly filled with water and once the initial impact motion had ceased, the aircraft sank to a depth of 57 feet (18 meters) within approximately 11 seconds.

During follow-on testing the canopy was not jettisoned; i.e., transparencies intact. The testing revealed the cockpit remained above the water for 5 seconds with a nose high attitude, before tilting backwards. The cockpit remained partly submerged for another 9 seconds, becoming fully submerged after a total of 14 seconds. After 16 seconds, one of the cockpit windows imploded with the crew stations quickly filling with water (later testing demonstrated that at depths of 7 to 10 feet [2 to 3m], one of the four cockpit transparencies will naturally implode due to water pressure). The aircraft then sank to a depth of 57 feet (18m), approximately 26 seconds after initial impact.

Findings

The preliminary report's two primary findings stated that the CJS cannot be used once the crew stations are partially filled or completely filled with water. Units employing the AH-64A/D for overwater missions should reconsider current training procedures and programs to ensure awareness of the potential effects (potentially fatal shockwave and rapid sinking) when the CJS is activated underwater.

Recommendations

In response to these findings, the Attack Helicopter Program Manger's Office has completed DA Form 2028 to add the following warnings and caution to the AH-64A/D Operator's Manual.

WARNING

Activation of the Canopy Jettison System with the cockpit partially full or submerged full of water will generate a pressure wave that may result in crew injury and/or death.

WARNING

If the Canopy Jettison System has not been activated prior to ditching in water, the external water pressure may cause the canopies to implode (collapse inward) as the aircraft sinks beyond 2 to 3 meters. The cockpit will flood almost immediately and the aircraft will begin to descend rapidly in an uncontrolled manner; canopy sections may also block the egress route.

CAUTION

If the Canopy Jettison System is operated underwater, the canopies are likely to implode (collapse inward) due to the external water pressure. This may hinder egress and/or block escape routes.

The Directorate of Evaluation and Standardization (DES) has reviewed and concurred with these recommended warnings and caution and supports the proposed changes to the operator's manual.

The system safety engineers at the U.S. Army Combat Readiness Center and in the program manager's office will continue to explore engineering and design solutions that will improve crewmember survival probabilities should the aircraft ditch into water. Current options include:

- Installation of a breakout tool on all aircraft.
- Modifying or replacing the detonation cord to achieve an acceptable noise/blast level combination.
- Modifying the aircraft with an additional floatation capability. ♦

Editor's note: The warnings and caution in this article are for information purposes only. This article does not officially change any portion of the operator's manual or act as training guidance. If overwater flight is commonplace in your unit or only an occasional event, until the aforementioned warnings and caution are formally approved, be aware of the findings of these tests and understand the consequences of your actions.

For more information, contact the following individuals:

Mr. Bob Frazier
Contracted System Safety Manager (256) 313-4202
Bob.Frazier@peoavn.redstone.army.mil

CW4 Duane Crawford
AH-64A/D Standardization Pilot, DES (334) 255-2531
Duane.Crawford@rucker.army.mil

Mr. Bill Ramsey
System Safety Engineer
U.S. Army Combat Readiness Center (334) 255-2932
William.Ramsey@safetycenter.army.mil

MAJ Steven Van Riper
Accident Investigator
U.S. Army Combat Readiness Center (334) 255-2131
Steven.Vanriper@us.army.mil

A New Look at AWRs

James Procyk
USARDEC

The two most frequent airworthiness release (AWR) feedback statements are "Where did you bury the restrictions?" and "How am I supposed to put this wad of AWRs in the logbook?" Both indicate poor communication of safety information. Well, there's good news ahead because someone listened…

The Aviation Engineering Directorate is implementing a new AWR format intended to improve communications of restrictions and operating instructions, warnings, cautions, and notes as well as other important information. To begin with, application information, AWR authorization, and point of contact information is now located on page one. You can find the operating and safety information starting on page two instead of in the middle of the document hidden behind the references, scope, configuration, and installation instructions.

The new format was devised to get vital information to the right people promptly to operate, maintain, and install the equipment. The new design also allows the operationally pertinent authorization, restrictions, and operational information be carried in the logbook. This will significantly reduce the bulk of papers representing AWRs for a given aircraft, thereby making operational safety information much easier to find.

Other information, such as the maintenance and inspection instructions, is typically used only once and can be filed for later use. Installation instructions, normally a one-time or once-per-special season event, are moved to a separate appendix instead of at the front of operations and restrictions, obscuring information used every flight.

By using the document name rather than a list number, most references will be recognized without referring back and forth to the formal reference list. Below is a side-by-side comparison with the shaded areas indicating sections carried in the logbook. A full copy will still be required to be kept on file.

Concurrently we are initiating other subtle communication improvements; e.g., ensuring we write warnings and cautions using the same technical manual definitions you use to interpret them.

Looking forward, a new evolving feature has been added to the end of Appendix A called the Commander's Corner. The intent is to provide information unique to the AWR configuration that may be helpful in mission planning and risk management. As envisioned, it may contain uncertainty and risk information on this and alternative methods, equipment, and environments. Customer feedback on this feature will determine its future form or demise.

Black Hawk and Apache Divisions in the Aviation Engineering Directorate are starting to issue AWRs in the new format. All Army aircraft AWRs will be issued in the new format after 1 October 2005. Older AWRs are still valid and will be reformatted as they come up for revision after October. ♦

—For more information on AWRs, contact James Procyk, Process Standardization Manager for Aviation Engineering Directorate, Redstone Arsenal, AL. He may be contacted at DSN 897-8408 (256-313-8408) or e-mail james.procyk@amrdec.army.mil.

Old All-in-one Format	New Partitioned Format
1. References	1. Scope (what and why)
2. Scope	2. Validity (supersedes and terminates)
3. Configuration	3. List of appendices
4. Operations and restrictions (including installation)	4. Point of contact
5. Special inspection and instructions	Signature
6. Logbook entries	A. Restrictions and operation information
7. Termination	B. Configuration and installation details
8. Point of contact	C. Inspection, maintenance, and logbook entries
Signature	D. References
Logbook Form 2408-13-1	**Logbook Form 2408-13-1**

Check Your Rope Ladders!

Rivet & Webbing Detail Notice

➔ ATTENTION ➔

Ladders must conform to this type of webbing and stainless steel rivet/washer assembly for live use. Any ladders of alternate materials must be immediately pulled from service.

Recently our U.S. Air Force (USAF) brethren were flying an HH-60 in support of a survivor rescue mission when their rope ladder broke, injuring three pararescuemen (PJs). The rope ladder in question is made by Randon Tech Manufacturing of Scottsdale, AZ, and the model number is ELD 800PD. Normally, the life limit on these ladders is 6 to 8 years; this particular rope ladder was 17 years old.

Randon Tech and the HQAFSOC are developing a new Operator's Manual for this ladder system with specific inspection and use criteria. The Army Combat Readiness Center is proactive in joining the USAF in creating a joint publication. As an interim measure the following is offered:

- Check rivets … anything made after 1994 should have stainless steel rivets and washers. WARNING: Aluminum rivets and washers should not be used.
- Check nylon webbing for tears, nicks, fraying or the "fuzzies"; nylon material that is unraveling should be taken out of service.
- Check webbing carefully. If it looks smooth like the seatbelts in your car, it was made prior to 1989 and should be removed from service.
- Check for dirt, mud, and mildew.
- Do not store when wet.
- If used in saltwater, rinse with fresh water and dry prior to storage.

For more information, contact Randy Salo, Randon Tech Manufacturing, 480-998-2335 or e-mail randontek@aol.com. Air Force contact is SMSgt Robert Foster, HQ AFSOC/DOV DSN 579-7791.

—Article submitted by Bob Giffin, Aviation Systems Safety Manager, USACRC, DSN 558-2381 (334-255-2381), or e-mail bob.giffin@us.army.mil.

2005 ALSE User's Conference

Commanders, aircrew life support equipment (ALSE) officers, and other interested personnel are invited to attend the 2005 Army ALSE User's Conference in Huntsville, AL. The conference will be held 23-25 August 2005 at the Holiday Inn Select.

For conference registration, please contact Melanie Barksdale at e-mail Melanie.Barksdale@peoavn.redstone.army.mil. For hotel reservation, call (256) 533-1400.

—For more information, contact Bill Grubbs at William.Grubbs@peoavn.redstone.army.mil or John Jolly at John.Jolly@peoavn.redstone.army.mil.

ACCIDENT Briefs

Information based on preliminary reports of aircraft accidents

AH-64

A Model

■ **Class C**: The No. 2 engine overtemped on startup following a hot refuel operation. TGT reported at 967ºC for 2 seconds.

■ **Class E**: The No. 1 generator failed on run-up. Three attempted resets with no results. Maintenance replaced the No. 1 generator.

■ **Class E**: During flight under night vision systems (NVS), the pressurized air system (PAS) was momentarily interrupted for approximately 2 seconds. No caution warning lights were noted. Approximately 5 minutes later, the MASTER CAUTION and SHAFT DRIVEN COMPRESSOR (SDC) lights illuminated. During the landing (less than 30 seconds later), smoke filled the cockpit. The aircraft landed without further incident and an emergency engine shutdown was conducted. Postflight inspection showed the SDC badly charred. The SDC was replaced and the aircraft returned to flight. *Late report*.

■ **Class E:** During cruise flight, the crew smelled smoke, followed by the illumination of the SDC light. On short final, the OIL PSI ACC GRBX light illuminated. The aircraft was landed safely and the crew performed an emergency shutdown. Upon postflight inspection, a large puddle of oil was found under the aircraft. Maintenance concluded the SDC had a ruptured O-ring seal due to fair wear and tear (FWT). *Late report*.

■ **Class E:** During flight, the SDC failed, causing smoke to enter the cockpit, reducing visibility. The environmental control unit (ECU) was turned off and the smoke cleared. The SDC light illuminated and the crew made a MAYDAY call. The crew conducted an emergency landing at a local airport followed by an emergency engine shutdown. The fire department was called with no further incident. *Late report*.

■ **Class E:** During level flight at 1,000 feet and 90 KIAS, Chalk 4, of a flight of five, detected a burning odor in the cockpit. Chalk 5 reported seeing smoke coming from Chalk 4's aircraft. On short final, the SDC CAUTION/WARNING light illuminated and the cockpit filled with smoke. After landing, the pilot completed an emergency engine shutdown and the aircrew egressed the aircraft. The aircrew saw smoke coming from the turtleback area and dispensed a handheld fire extinguisher. There was no fire, only smoke coming from oil leaking from a cracked SDC case onto the hot components. Post incident analysis determined SDC failed due to FWT. *Late report*.

CH-47

D Model

■ **Class A**: The crew received a low fuel pressure indication followed by a dual engine flameout. The crew entered autorotation and the aircraft landed hard.

■ **Class C (Damage):** A CH-47D aircraft sustained damage from the rotor wash of a second aircraft. As the first aircraft was being shut down, its forward rotor blades contacted and damaged the tunnel cover as the second aircraft was landing in the vicinity.

■ **Class C (Damage)**: The crew experienced a split torque (Nr) reading during hovering flight. Maintenance downloaded the No. 1 engine DECU and confirmed a No. 1 engine speed exceedance, requiring a fore and aft transmission replacement.

■ **Class C**: The crew experienced a series of engine torque splits during flight (No. 2 engine low). Postflight download of the No. 1 engine DECU confirmed that the engine did exceed limitations. Maintenance determined that both the fore and aft transmissions needed replacing. Engines were sent to CCAD for analysis.

OH-58

A Model

■ **Class C**: During startup, the PI inadvertently rolled the throttle off after releasing the starter. The crew let the engine cool down and then attempted a second start. This time the PI concentrated on not holding down the idle release button. When the engine exceeded TOT limits, the throttle was closed but the PI failed to motor the starter, causing a hot start to 1,000°C. *Late report*.

DR Model

■ **Class C**: Maintenance revealed an NP exceedence following manual throttle operations. Engine replacement required.

■ **Class C**: The engine experienced engine overspeed and overtemp conditions upon transitioning to FADEC from manual throttle control.

TH-67

A Model

■ **Class A**: While conducting day instrument flight training, the aircraft began an uncommanded right yaw. The IP entered a left descending autorotation. The aircraft crashed and was destroyed. The IP was fatally injured and the two pilot trainees received injuries.

UH-1

V Model

■ **Class E**: During cruise flight at 100 knots and 900 feet AGL, the engine oil pressure started fluctuating between 10 and 60 PSI. The engine oil temperature climbed to 110°C for a few seconds, and then up to 130°C where it stabilized. Other indications were normal. The PC declared an emergency and landed. The crew performed an emergency engine shutdown. Ground personnel observed smoke coming from the engine during the final approach.

UH-60

A Model

■ **Class C**: The crew was conducting a high performance hoist (MEDEVAC) RL progression training when the hoist disengaged from the uppermost attaching point from inside the aircraft and fell to the ground. The hoist is deemed destroyed and the aircraft was slightly damaged.

■ **Class C**: The aircraft tail wheel strut failed, resulting in the loss of the tail wheel during a landing to the sod.

■ **Class E**: While conducting traffic patterns to a field site, the aircraft rotor RPM increased to 108 percent. The crew reduced the PCL on the No. 2 engine to get the rotor RPM back to 100 percent and landed safely without incident.

■ **Class E:** The aircraft was taking off when the No. 2 HYD PUMP CAUTION light illuminated with a corresponding MASTER CAUTION light, followed by the illumination of the BACKUP PUMP ON advisory. The crew initiated the emergency procedures and returned to the airfield without further incident. Maintenance inspected the No. 2 hydraulic pump and determined there was no output pressure from the pump. The cause of the failure is unknown. The pump was replaced and the aircraft returned to flight.

■ **Class E**: While flying straight and level, a bird struck the top right-side greenhouse window, breaking the window. The crew determined the aircraft had no adverse effects in handling or flight control and reduced airspeed to 100 KIAS, returning to home base with no further incident. *Late report*.

L Model

■ **Class C**: The copilot was flying the aircraft at 200 feet AGL while the PC was inside the cockpit tuning radios. The PC looked up and said, "Birds at 12 o'clock!" and subsequently took the controls and applied aft cyclic to try to climb over the flock. The aircraft struck 16 birds, damaging two main rotor blades, one tip cap, and the front avionics compartment. The PC returned to home base. *Late report*.

DHC-7

■ **Class E**: The aircraft was on a training flight when during descent, the MASTER CAUTION and No. 2 ENGINE OIL light illuminated. The crew confirmed the oil pressure was below minimum and shut down the engine. The crew continued the descent, approach, and landing without further incident. Maintenance replaced the No. 2 engine propeller blade seal and the aircraft was returned to service.

RC-12

D Model

■ **Class E**: The fireguard gave the crew an abort start signal when he saw sparks coming from the No. 1 engine compartment. The transformer ground fault burned through the left-hand firewall assembly due to two of the four grounding bolts had worked loose, causing an electrical arc.

■ **Class E**: During cruise at FL 140 and 160 KIAS, the crew noticed a sudden drop in the No. 1 oil pressure gauges. Emergency procedures were performed and a descent was initiated. A precautionary landing was made at home station and the aircraft was shut down without further incident. Maintenance replaced a faulty oil pressure transducer and the aircraft was released for flight.

P Model

Class E: During climbout, fuel was observed venting from the right-hand wing fuel vent located in the aileron alcove. Aircraft landed safely. Maintenance discovered sand in the fuel vent. *Late report*.

RQ-11

■ **Class C:** Contact was lost with the aerial vehicle (AV) during flight mode and could not be regained. AV crashed and has not been located.

■ **Class C:** Contact was lost with the AV during the recovery phase. AV crashed and has not been located.

■ **Class C:** Ground control linkage was lost with the AV shortly after launch. Efforts failed to guide the AV back and subsequently crashed. AV was not recovered.

RQ-7A

■ **Class B**: AV operator attempted command chute deployment without success and the GCS lost control of the AV at 800 feet causing it to crash. The AV was completely destroyed.

■ **Class B:** The AV experienced a generator failure and possibly an ignition failure during flight. This caused the engine to quit and the vehicle crashed. The AV was a total loss.

RQ-7B

■ **Class B:** Suspected failure of the data interference box at the ground control station. Control of the aircraft was lost and it crashed after the recovery chute deployed.

■ **Class B**: AV was returning home when the operator received an engine failure warning. The RPM then dropped to zero and AV crashed.

Editor's note: Information published in this section is based on preliminary mishap reports submitted by units and is subject to change. For more information on selected accident briefs, call DSN 558-9552 (334-255-9552) or DSN 558-3410 (334-255-3410).

Why CRC?

The CRC is the Army's focal point for analyzing accidents, serious incidents, and combat loss reports, identifying lessons learned and tactics, techniques, and procedures (TTPs) to mitigate and prevent future losses.

The CRC is the knowledge center for ALL losses:

Accident • Combat • Medical • Criminal