Flightfax
Number 79 July 2019 Online Newsletter of Army Aircraft Accident Prevention

Seven Steps for Wire Strike Prevention

Aircraft Struck Guy Wires Continuing VMC in IMC

1. SOPs, TSPs, and directives. Standard operating procedures (SOP), training support packages (TSP), and directives related to terrain flight should reflect the safest possible procedures for the types of missions being flown. Detailed responsibilities for the pilot at the controls, pilot not at the controls and other crewmembers should be specified. Then the responsibilities and procedures should be reinforced regularly at aviation safety and training meetings.

2. Supervision. Commanders and supervisors must ensure that pilots adhere to established procedures. All missions should be planned and all aircrew members should know the plan. Immediate corrective action should be taken regarding any violation of flight discipline.

3. Hazard maps. Wires and other obstacles that pose a threat to terrain flight should be accurately depicted on hazard maps and aircraft situational awareness (SA) systems symbology. In areas, such as Europe, where the prominence of wires would unduly clutter the map, major wire hazards and wires that are located in unlikely areas should be plotted. Aircrew members should also be made aware of other unplotted wire locations. All wires should be plotted if they do not compromise the usefulness of the map and the SA systems. Crewmembers should be thoroughly briefed on wire strikes before every terrain flight mission.

4. Wire marking. Whenever possible, all wires around potential takeoff and landing sites on and off military reservations should be marked. Certainly, all wires around frequently used sites should be marked. While pilots should know when to expect wires, markers make them easier to see. Wires noted as unmarked and near frequently used training areas for helicopter operations should be annotated on the hazard map and brought up as an issue to the unit safety and standardization council.

5. Plan for terrain flight. Most wire strikes occur

Aircraft Struck Wires during Terrain Flight

during terrain flight in the contour mode or on takeoff or landing. Unless planned and required by the mission, terrain flight should be avoided if unnecessary and unplanned. Aircrew members should also be extremely careful and ensure a low recon is conducted when landing in or taking off from confined areas. Be wary of becoming complacent when in known areas, and always conduct the low recon. New wires and towers are being erected each day so beware.

6. Maximum crew coordination. The more crewmembers actively engaged in spotting wire hazards on any given flight, the less the risk of wire strikes. When flying in an environment with wires, maximum coordination among all crewmembers is needed. During terrain flight, the pilot should give full attention to flying the aircraft. Navigation, setting radio frequencies, and monitoring instruments should be a function of another crewmember. If pilots must direct attention away from flying, they should land or climb to a higher altitude. During combat operations in high-threat air defense system areas of operation, wire strike prevention must be part of the mission planning process. Certain situations may not allow the pilot to land or climb (e.g., actions on contact, combat maneuvering flight, and flight during target designation or handoff).

7. Go slow when you go low. The slower the airspeed, the more time pilots will have to identify and react to an unforeseen obstacle in their flight path. Assuming good visibility, if two aircraft are approaching wires and one is at 80 knots (KT) while the other is at 40 KT, the pilot of the faster aircraft will need to spot the wires at a distance of more than 1,650 feet to react and avoid them. The pilot of the slower aircraft will have ample time to react if the wires are noted from a distance of 600 feet. One mistake, such as flying down a river or valley at speeds which don't allow hazard detection and evasion time, getting lost, or failure to update your hazard map, is all it takes for you to be a wire strike fatality. Unit commanders, operations officers and platoon leaders share some of the responsibility for wire strike mishaps but the **final responsibility lies with crewmembers in the cockpit.** Slower airspeed during terrain flight doesn't necessarily mean slowing down to a certain airspeed, it entails crewmembers flying the helicopter at an airspeed that allows seeing and avoiding hazardous wires or towers. Other factors are based on tactical flight and tactics necessary to avoid or evade threat infrared and radar systems. Solid preflight route planning and staying alert for the unexpected wire is consistent with a safely completed mission. **Go slower when you go lower.** ■

Aviation Division
Directorate of Assessments and Prevention
U.S. Army Combat Readiness Center

Crew Failed to Mark Wires on Map

Surviving in the Wire Environment

Terrain flight proficiency has become a basic combat skill. It increases the effectiveness, as well as the survivability, of our actions in a hostile environment. In other words, to protect ourselves in a combat environment we accept the more manageable risks of the wire environment. How well have we adjusted to the demands of this challenging form of flying?

The wire strike mishaps we have each year show we pay a needlessly high price for the learning process. Seventy-six wire strike accidents involving damage were reported over the past five years. Ten people were killed and 22 injured in these accidents. Twelve aircraft were destroyed. The total cost of these accidents was nearly $21 million.

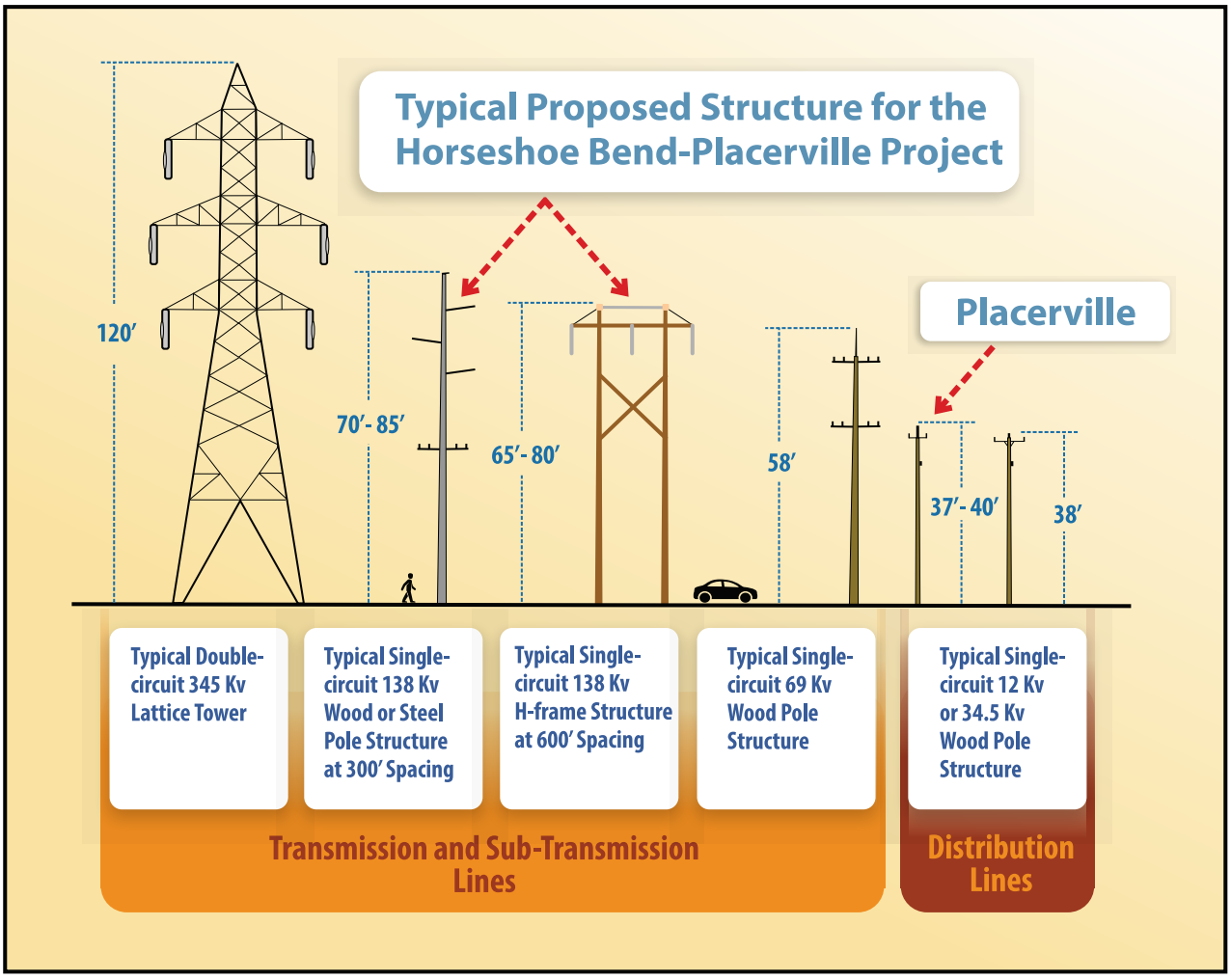
If there is a common denominator in these accidents, it seems to be a lack of awareness of how little room for error there is in the terrain flight mode. Any corner-cutting or compromise in the preparation and conduct of these flights can produce disastrous results. The validity of this observation can be judged in a review of two recent wire strike accidents.

Wire Strike One

Black Hawk crewmembers were on a night vision goggles (NVG) tactical training flight. It was a dark, clear night without a moon. The three crewmembers were wearing goggles. Three passengers were on board.

The pilot in command (PC) was navigating from the left seat. The co-pilot was flying from

Common Types of Power Transmission Lines



https://www.signs.org/codes-regulations/federal-regulations/power-line-safety

the right seat. The route was being flown at 80 KT about 150 feet above ground level. The PC was using the infrared searchlight whenever he anticipated wires plotted on his hazard map. One-half mile from where the Black Hawk flew over one set of wires marked on the map, a 150-foot power-line tower appeared unexpectedly. The PC pushed the collective down and told the co-pilot to go under the wires.

As the helicopter descended, the co-pilot started a right turn and raised the nose. While the helicopter was in the turn, the main rotor severed four bottom wires that were more than three-fourths-inch thick. The UH-60 hit the ground on its right side and came to rest upright. After the crew and passengers exited, a post-crash fire destroyed the helicopter.

The error-inviting compromise that set the stage for this mishap is easily identified. The PC had not transcribed all the power lines displayed on the wire hazards map in the operations office to his own map, despite having the time and opportunity.

When the UH-60 flew over the first set of wires, the PC thought these were the wires marked on his map. There were no other wires marked on his map in the immediate area. He had not yet reached the wires marked on his map, which were one-half mile away. When the UH-60 reached the set of wires marked on the map, crewmembers were not prepared for them.

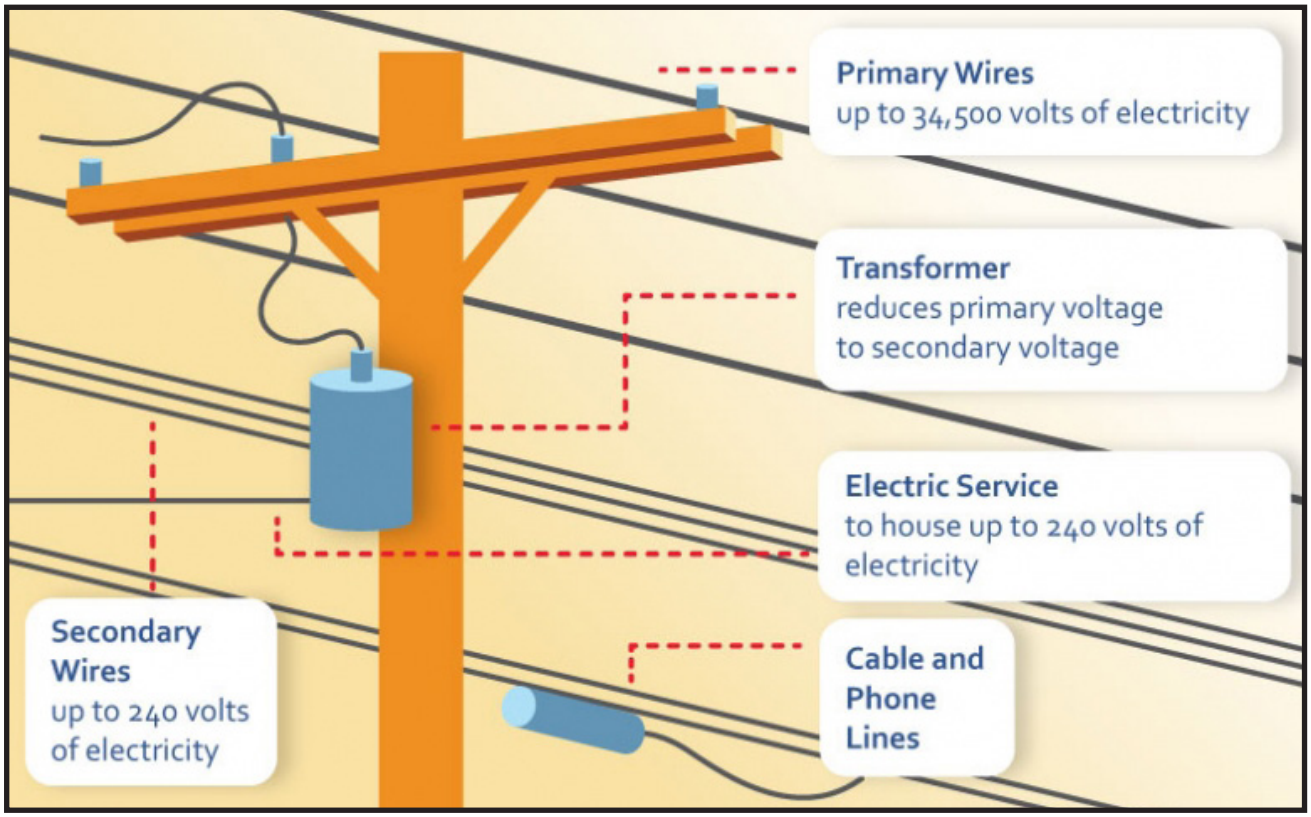
The PC was a standardization instructor pilot (SIP) with almost 5,000 hours of flight time and three years' experience in the theater of operations. He had flown over the same area in the daytime but did not recall seeing the wires the helicopter hit.

Rank, age and experience do not make anyone immune to errors. Experience is no substitute for compliance with standard operating procedures (SOP) in the preparation and performance of missions.

Wire Strike Two

Another wire strike mishap killed three crewmembers. It involved the No. 4 aircraft in a seven-ship formation of aircraft returning to home station after a five-day training exercise.

Common Electrical Distribution Lines



https://www.signs.org/codes-regulations/federal-regulations/power-line-safety

The flight proceeded in loose trail formation with three to five rotor disk separation. Visibility conditions were poor, with ceilings estimated at 400 to 600 feet. Airspeed varied between 50 and 70 KT as the flight paralleled a main highway on the left.

The flight crossed several sets of power lines. Before crossing each set, the flight would climb from a cruising altitude of just above the trees to an altitude that would allow the wires to be crossed at the towers. Once the towers were crossed, each aircraft would descend individually to cruising altitude. Visibility was reduced significantly when climbing to cross the towers. The aircraft crossed over the towers at varying heights, with several aircraft in the flight crossing at less than the 50-foot clearance required by the unit's SOP.

As the flight of aircraft approached the wires at the mishap site, the flight lead, the No. 2 and No. 3 aircraft slowed to about 50 KT and crossed the tower with less than the 50-foot clearance required. The No. 4 aircraft descended onto the tower while returning to cruising altitude and crashed inverted. The height of the tower was 163 feet.

The co-pilot was flying the aircraft. Since leaving flight school, he had accumulated only 15.8 hours. His formation flying ability had been criticized by the other pilots in the unit, especially his lack of smoothness in crossing wires.

His attention may have been so focused on the aircraft in front of him that he failed to ensure he had cleared the tower. It is also possible that fear of going inadvertent instrument meteorological conditions (IIMC) in the reduced visibility above the tower prompted a premature descent.

The 50-foot crossing height was not enforced by several leaders in the flight: the air mission commander, who was the flight lead; the flight platoon leader in the No. 2 aircraft; the unit IP in the No. 3 aircraft; and several other PCs. In fact, it had become an accepted practice in this unit to cross wires at less than the required 50-foot clearance. These two accidents underline the critical importance of 10 key wire strike prevention actions:

- Make sure that thorough hazard and obstacle briefings are conducted before every terrain-flight mission.
- Mark all wires in the areas you will operate.
- Ensure all wires are posted on the hazard maps (update daily).
- Go slow when you go low.
- Commanders must enforce SOPs. Procedures for all missions must be clearly spelled out in the SOP, and these procedures should be reinforced regularly at aviation safety and training meetings. Breaches of flight discipline should be corrected immediately.
- Operations officers must schedule compatible aircrew members who have attained the desired state of training as weighed against the complexity of the mission. Operations officers must maintain a daily updated hazard map and brief aviators on wire hazards.
- Aviation safety officers must closely monitor flight crew scheduling, briefings, debriefings, posting, availability and use of wire hazard maps while promoting wire strike prevention awareness in safety meetings.
- IPs must practice, teach, and reinforce wire strike prevention criteria and common-sense rules for detecting and avoiding wires. You set the example.
- Co-pilots and crew chiefs must be assigned specific cockpit tasks and duties. Open lines of communication must exist between the pilot at the controls and those navigating and/or clearing the aircraft in all quadrants.
- Every Army helicopter pilot must remain conscious of basic wire strike prevention measures and continuously consider wires while flying in the terrain-flight mode. Everyone on the team shares the responsibility for wire strike mishaps, but the final responsibility still belongs to the people in the cockpit.

Because of the wire strike protection system, we are not losing as many aircraft to wire strikes as we once did. However, wire strikes are still occurring, just with less catastrophic consequences. A team effort is required to prevent wire strikes. ■

Aviation Division
Directorate of Assessments and Prevention
U.S. Army Combat Readiness Center

Centralized Aviation Flight Records (CAFRS):
Record Status Report (RSR) – Medical Status

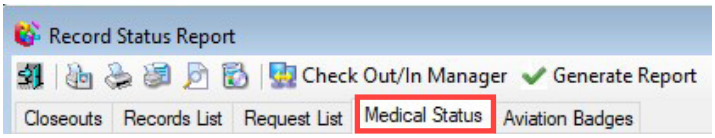
CAFRS v4.0.3.6, which was released in February 2018, allows users to create a Department of Defense Form 2992, Medical Recommendation for Flying or Special Operational Duty, to replace the Department of the Army Form 4186. With this release, a DA Form 4186 can no longer be created in CAFRS. Prior to the release of CAFRS v4.0.3.6, users had to create a DA Form 4186 based on information issued by the flight surgeon or aviation physician's assistant (APA) on a DD Form 2992 (between January 2015 and February 2018). The data input into CAFRS from the DD Form 2992 contains the same information recorded on the DA Form 4186 even though the forms were different.

The DD Form 2992 is fully functional in CAFRS. The form can be filled out in accordance with DA Pamphlet 40-502, and other Aeromedical Policy Letters and Aeromedical Technical Bulletins. The DD Form 2992 can also be signed in CAFRS. A few units have made CAFRS available to their flight surgeon and APAs so that the DD Form 2992 process can be completed in CAFRS.

Having said all this, let's examine the medical status report in the CAFRS RSR, which displays information from the DD Form 2992. The goal of this article is to share everything that the CAFRS team put into this report. U.S. Army Aeromedical Activity (USAAMA) at Fort Rucker gave us feedback throughout the development of this report and the CAFRS DD Form 2992.

First, how do you get to this report? After you log into CAFRS, click the **RSR button**.

This will open the **Record Status Report** window. You will need to click on the **Medical Status** tab first, then click **Generate Report**.



The medical status report generates seven categories of medical information. They are, in order from top to bottom: **No Current Medical Exam, DNIF (Down), Expiring in the Next 30 Days, Under Extension, Current Medical Exam, FFD (Up), and Future.** The intent is to put possible issues at the top of the report for the commander to see. Each category will only appear on the report if you have an aviation crewmember (ACM) with that medical status. For example, if every ACM has a DD Form 2992 that represents a current flying duty medical examination (FDME)/flying duty health screen (FDHS), the **No Current Medical Exam** category will not display on the medical status report.

Let's look at the first two categories: **No Current Medical Exam** and **DNIF (Down)**.

Name	Birth Month	Unit	Effective Date	Expiration Date	Status
No Current Medical Exam					
* Betances, 1LT Dellin March	Mar	E CO Task Force	02-Sep-2015	31-Mar-2016	
* Gamel, 1LT Ben May	May	E CO Task Force	02-Sep-2015	31-May-2016	
Nova, 1LT Ivan January	Jan	E CO Task Force	N/A	N/A	
DNIF (Down)					
* Betances, 1LT Dellin March	Mar	E CO Task Force	N/A	N/A	Expired Medical Exam
* Gamel, 1LT Ben May	May	E CO Task Force	N/A	N/A	Expired Medical Exam
Eovaldi, 1LT Nathan February	Feb	E CO Task Force	26-Jul-2017	26-Aug-2017 (ESTIMATED)	Aircraft mishap
Nova, 1LT Ivan January	Jan	E CO Task Force	N/A	N/A	No Medical Exam

No Current Medical Exam

The **No Current Medical Exam** category displays a list of ACMs who either have no DD Form 2992 marked as "Cleared After Flight Duty Medical Examination" or whose last medical exam has expired. If the ACM's most recent

medical exam has expired, the **Effective Date** and **Expiration Date** of the medical exam are listed. The asterisk means that the last medical recommendation form entered into CAFRS was a DA Form 4186. The top two ACMs in the above image do not have a current DD Form 2992 that represents a FDME/FDHS. The third ACM, 1LT Nova, has never had a FDME/FDHS entered into CAFRS.

DNIF (Down)

The **DNIF (Down)** category displays a list of ACMs who are currently restricted from flying duties due to a medical/dental reason, as indicated on their current DD Form 2992. The reason for the medical/dental restriction is given in the **Status** column, and the **Effective Date** and **Expiration Date** of the restriction are also displayed, if applicable. The top two records in the **DNIF (Down)** category in the above image are the same two from the **No Current Medical Exam** category; their status reads *Expired Medical Exam*, which is why they are **DNIF** (Duties Not Including Flying). 1LT Eovaldi is **DNIF** for a month due to an aircraft mishap. 1LT Nova from the **No Current Medical Exam** category has a status of *No Medical Exam,* which is why he is **DNIF.**

Now we will move on to **Expiring in the Next 30 Days** and **Under Extensions.**

Name	Birth Month	Unit	Effective Date	Expiration Date	Status
Expiring in the Next 30 Days					
* Goody, 1LT Nick July	Jul	E CO Task Force	01-Aug-2016	31-Jul-2017	5 days remaining
* July, CW2 Pilot NMN	Jul	E CO Task Force	01-Aug-2016	04-Aug-2017	9 days remaining
Under Extension					
Clemente, CPT Roberto NMN	Jun	E CO Task Force	01-Jul-2017	31-Jul-2017	26-Jul-2017

Expiring in the Next 30 Days

The **Expiring in the Next 30 Days** category displays a list of ACMs whose current FDME/FDHS or extension will expire within the next 30 days. The date of expiration of the medical exam or extension is displayed in **RED** type in the **Expiration Date** column. The number of days until expiration is displayed in the **Status** column. The icon indicates whether the expiring DD Form 2992 represents a FDME/FDHS (person in lab coat) or a FDME/FDHS extension (red flag).

Under Extension:

The **Under Extension** category displays a list of ACMs whose medical exam expiration date has been extended and the ACM is currently within the extension period. The **Effective Date** and **Expiration Date** of the extension are displayed. The **Status** column displays the date of the DD Form 2992 for FDME/FDHS extension that was issued by the flight surgeon or APA. In the image shown above, CPT Clemente was issued an extension on July 26. His FDME/FDHS expired June 30, and since he has a June birth month, he should probably have received this on June 26 instead of July 26, as shown in the **Status** column. It is a good idea to verify the date and to make sure this was not a typographical error.

Current Medical Exam

Name	Birth Month	Unit	Effective Date	Expiration Date	Status
Current Medical Exam					
* Goody, 1LT Nick July	Jul	E CO Task Force	01-Aug-2016	31-Jul-2017	
* July, CW2 Pilot NMN	Jul	E CO Task Force	01-Aug-2016	04-Aug-2017	
Barnes, 1LT Matt June	Jun	E CO Task Force	12-Jun-2017	30-Jun-2018	Vision correction devices required
Eovaldi, 1LT Nathan February	Feb	E CO Task Force	03-Jul-2017	28-Feb-2018	

The **Current Medical Exam** category displays a list of ACMs with a current FDME/FDHS. This list includes those whose exams expire within the next 30 days, but it does not include those on FDME/FDHS extension once they are past the expiration date of the original annual FDME/FDHS. The **Effective Date** and **Expiration Date** of each ACM's exam are displayed, along with a statement indicating whether the ACM is required to wear corrective lenses or carry extra spectacles, if applicable, in the **Status** column. If the ACM's month of expiration is not the same as their birth month, the expiration date will be highlighted in yellow as an alert to the user, flight surgeon, APA, and commander. Notice CW2 July's expiration date is past the end of his birth month. 1LT Barnes is required to wear corrective lenses. This is also a good way to stay on top of who needs inserts for their mask.

FFD (Up)

Name	Birth Month	Unit	Effective Date	Expiration Date	Status
FFD (Up)					
* Goody, 1LT Nick July	Jul	E CO Task Force	30-Aug-2016	31-Jul-2017	Termination of Medical Disqualification
* July, CW2 Pilot NMN	Jul	E CO Task Force	25-Jul-2017	31-Jul-2017	Termination of Temporary Medical Suspension
Barnes, 1LT Matt June	Jun	E CO Task Force	12-Jun-2017	30-Jun-2018	Medical Exam
Clemente, CPT Roberto NMN	Jun	E CO Task Force	01-Jul-2017	31-Jul-2017	Extension; Other: See remarks

The **FFD (Up)** category displays a list of ACMs who are qualified to perform flying duties. The **Effective** and **Expiration Date** of their medical exam displayed, along with the justification displayed in the **Status** column. The top two ACMs were previously DNIF, but are currently FFD (Full Flying Duties), as indicated by the remark in their **Status** columns. 1LT Barnes has not been DNIF for his ATP period. CPT Clemente is on an extension; notice that he is not on the list for a **Current Medical Exam**.

Future

Name	Birth Month	Unit	Effective Date	Expiration Date	Status
Future					
* Goody, 1LT Nick July	Jul	E CO Task Force	01-Aug-2017	31-Aug-2017	
Barnes, 1LT Matt June	Jun	E CO Task Force	01-Aug-2017	01-Sep-2017	
Betances, 1LT Dellin March	Mar	E CO Task Force	02-Aug-2017	31-Mar-2018	
Eovaldi, 1LT Nathan February	Feb	E CO Task Force	01-Aug-2017	28-Feb-2018	

The **Future** category displays a list of ACMs who have a FDME/FDHS, extension, upslip, or downslip with an effective date in the future. The date in **BLUE** type is an indicator that the effective date is in the future. 1LT Goody is still on his current FDME/FDHS, but will be on an extension once August begins. He may have scheduled Part II of his flight physical late. The remaining entries need to be verified for accuracy.

Features

Right clicking on the name of an ACM in any category will allow you to open that ACM's associated DD Form 2992. Clicking on the column headers will allow you to change the sort order of those columns, giving you the ability to customize the report. The default order of the medical status report is alphabetical by last name. Clicking Birth Month changes the order of the report to January – December; clicking **Birth Month** again reverses the order of the report to December – January. Working sets can be used to customize reports. ■

Contact

CAFRS website - https://www.jtdi.mil/group/ACMC_CAFRS

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Mishap Review - AH-64D Longbow Wire Strike

While conducting a deliberate attack in an AH-64D Apache helicopter, the pilot in command (PC) on the controls had a breakdown in visual scan. The PC was focused on locating his wingman (Gun 2), over his left shoulder. As a result, the aircraft struck wires and impacted the terrain, causing minor injuries to crewmembers. The aircraft was a total loss.

History

Mishap crewmembers were conducting training operations in support of an armored division. The mishap crew was part of a four-aircraft mission supporting the ground commander while providing attack by fire (ABF) support for a breach force. Crewmembers conducted mission planning and a risk assessment and the mission was approved. While conducting the mission, aircrew members were utilizing their pilot night vision systems, night vision goggles, and the target acquisition and designation system. The PC was seated in the back seat utilizing flight symbology during the mishap phase. A system failure in the laser system required the mishap aircraft, Gun 1, to move forward of the ABF ridgeline and manually pass target information to Gun 2. As the battle developed, Gun 1 maneuvered to seek cover and concealment from enemy forces. While doing so, the Gun 1 PC maneuvered the aircraft while instructing the pilot (PI) to stay inside and maintain situational awareness on the enemy targets. The PC was concerned with Gun 2's location, so he remained outside, looking over his shoulder even though Gun 2 had called clear of Gun 1. After Gun 1 rolled out of consecutive turns, the PI of the aircraft announced wires just prior to impacting extra-high-voltage transmission lines. The aircraft made a forced landing, impacting the ground. There were no injuries to crewmembers.

Crew

The PC had 2,733 hours in mission, type, design, and series (MTDS), and 2,813 hours total time. The PI had 411 hours in MTDS and 495 hours total time.

Commentary

The aircraft struck wires due to the PC being fixated on "gaining visual contact" with Gun 2 while Gun 2 had called clear and no factor. The PC failed to maintain airspace surveillance as directed in the aircrew training module (ATM). Additionally, crewmembers hadn't properly managed their crew endurance and did not have hazard data information in the aircraft. A culmination of deviations from standard operating procedures and the ATM led to the transmission line mishap.

Even with the state-of-the-art information systems available on Army aircraft and the systems available for operational planning, errors can still lead to mishaps. It is important for commanders and leaders to maintain situational awareness of what is occurring in their units in relation to how accurately aircrew members are managing their crew endurance, application of base ATM standards (airspace surveillance), and the basics of pre-mission flight planning. In our high operational tempo decisive action training environments, the culmination of deviations from standard is an easy indicator of the lead-up to a mishap. While leaders have oversight, the crews are at the sharp end and responsible for keeping leaders informed so they can make risk decisions based on the most accurate information. Studies demonstrate that personnel exhibiting fatigue tend to fixate on cognitive tasks and their ability to address multiple tasks is reduced. Additionally, crewmember monitoring may help personnel effectively spot the first signs of fatigue. Crews are eager to execute the mission and it is paramount they don't let this desire to execute dampen their actual endurance and flight time tracking which results in leaders not having the correct information to use in risk assessing the crew for the mission. ■

Class A - C Mishap Tables

	Manned Aircraft Class A – C Mishap Table as of 5 Sep 19									
	Month	FY 18					FY 19			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities
1st Qtr	October	1	2	7	0		1	1	4	0
	November	0	1	4	0		0	0	4	0
	December	1	0	8	0		1	1	2	0
2nd Qtr	January	1	1	4	2		1	1	0	0
	February	0	0	2	0		2	0	0	0
	March	0	1	11	0		0	1	5	0
3rd Qtr	April	1	2	4	2		0	1	3	0
	May	1	0	5	0		2	3	5	1
	June	1	1	5	0		0	0	5	0
4th Qtr	July	1	0	6	0		2	1	2	0
	August	3	1	8	1		1	0	2	1
	September	1	1	8	1		1	0	0	0
	Total for Year	11	10	72	6	Year to Date	11	9	32	2
	Class A Flight Accident rate per 100,000 Flight Hours									
	5 Yr Avg: 1.23		3 Yr Avg: 0.97			FY 18: 1.19			Current FY: 1.21	

	UAS Class A – C Mishap Table as of 5 Sep 19								
	19								
	FY 18					FY 19			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	3	1	3	7	W/GE	8	2	3	13
MQ-5	1	0	0	1	Hunter	1	0	0	1
RQ-7	0	7	20	27	Shadow	1	13	35	49
RQ-11	0	0	0	0	Raven	0	0	0	0
RQ-20	0	0	0	0	Puma	0	0	1	1
SUAV	0	0	0	0	SUAV	0	0	0	0
UAS	4	8	23	35	UAS	10	15	39	64
Aerostat	4	2	1	7	Aerostat	1	1	1	3
Total for Year	8	10	24	42	Year to Date	11	16	40	67
UAS Flight Accident rate per 100,000 Flight Hours									
MQ-1C Class A	5 Yr Avg: 9.56		3 Yr Avg: 9.87		FY 18: 3.52			Current FY: 8.60	
RQ-7B Class A-C	5 Yr Avg: 52.84		3 Yr Avg: 52.31		FY 18: 43.34			Current FY: 110.84	

Blast From The Past: *Articles from the archives of past **Flightfax** issues*

ARMY AIRCRAFT MISHAP PREVENTION DATA
FLIGHT FAX
ORVAL RIGHT
Chief Advisor on
Matters of Aviation
VOL. 34, NO.1. 2 Jan 2006
A USAAAVS PUBLICATION

Situational Awareness and Spatial Disorientation in the Fight

While conducting a low-level night mission, the pilot in command (PC) flew the aircraft into wires suspended across a river that were known and depicted on the wire hazards map. The aircraft was destroyed and both crewmembers fatally injured.

Some would say the cause of this accident was overconfidence, bad planning, or maybe just bad luck. The root of these two deaths, however, was a loss of situational awareness. Many factors led to this crew being unaware of the wires that killed them, but at least some could have been foreseen and dealt with. One small change could have broken that accident chain of events and saved the aircrew.

In another accident, the aircrew failed to maintain the briefed and authorized minimum altitude of 300 feet above ground level (AGL) and went through a four-cable mineshaft ore transport system suspended 156 feet above the ground. The aircraft was destroyed and the two crewmembers suffered fatal injuries.

Two men died because they did not follow their own briefing and the local flying orders. In this case, the hazard was marked on the map but had not been specifically briefed because it was too low to be an issue—or so it was thought. The crew's situational awareness was degraded by a combination of poor planning and poor execution.

The list of accidents involving an aircrew that lost situational awareness and flew their aircraft into wires is depressingly long. Every pilot who has flown in Iraq knows the wires in that country seem to have been designed for the express purpose of snagging unwary aviators. The wires are often a rusted brown color, as are the support poles, and are camouflaged against the desert. At night, the wires are very difficult to detect through night vision devices (NVDs) because of their small circular reflecting surfaces.

The U.S. Army Aeromedical Research Laboratory (USAARL) is currently conducting a study of situational awareness and spatial disorientation in operations during the War on Terror. There is no way to prevent every accident, but here are some reminders on how to keep your situational awareness and your life intact:

- Don't bust your minimum altitude; it's usually there for a good reason.
- Use hazard maps whenever you brief and keep them up to date.
- Risk assess (do I need to be flying this low or this fast?) and keep reassessing throughout the flight.
- Don't become the next cautionary tale.

The second area of concern from the survey is spatial disorientation. A very experienced standardization pilot described half of his dust landings in theater as "Hail Marys." Even the sky gods don't have the ability to see through a brownout, and you cannot fly by the seat of your pants.

Brownout accidents, by definition, occur close to the ground and are slow. That has limited most of the damage to the machinery rather than the crew. However, there have been deaths, and nearly all of those were preventable. There are three sets of circumstances that have come up time and again:

- **Not enough power to climb out of the dust cloud:**
  - — Poor power available calculations during the planning phase.
  - — Bad placement of forward arming and refueling points (FARPs) with respect to wind direction and physical obstacles such as sand berms.
  - — Choosing to take off out of wind and never getting above or ahead of the dust cloud.
- **Hitting an unseen obstacle on the ground:**
  - — Poor power available calculations during the planning phase.
  - — More than $30 million in damage has been caused to aircraft over the last three years by impacting obstacles on the rollout, most occurring on reconned and known landing zones. Again, this planning and briefing is critical to being forewarned — forearmed on an objective.
- **Lateral drift in the final stages of landing:**
  - — This has happened more than a dozen times in the last three years, almost always ending with the aircraft on its side. Crewmembers have died as a result.

There is no golden bullet for dust landings, but every crew runs the risk of spatial disorientation if they get enveloped in the cloud. Crew coordination is a critical item used to minimize error and alert crewmembers to flight - critical information. Utilize crew coordination with crew experience to manage the hazards of dust landings — stay ahead of the cloud, communicate, use symbology if you have it, and use instruments if you can. However, don't be afraid to throw away a bad approach; bad approaches don't get better at the bottom.

Based on this survey, we conclude that conducting better flight planning, thinking ahead of the aircraft, following standing operating procedures, and conducting composite risk management saves lives. ■

Fly safe!

LTC IAN P. CURRY
United States Army Aeromedical Research Laboratory

Forum

Op-ed, Opinions, Ideas, and Information

(Views expressed are to generate professional discussion and are not U.S. Army or USACRC policy)

On the topic of Army aviation maintenance …

I would just like to say I agree that the utilization of working days required to complete maintenance is a terrible way to track maintenance; I completely agree that man-hours are the way to go. In all of my travel to combat aviation brigades (CAB), I have noticed many commonalities:

- **Lack of phase team continuity and supervision** – Many CABs are not protecting their phase teams. They are using the phase teams as a ready pool of Soldiers, available for detail work simply because they are in the hangar and accessible at short notice.
- **Lack of experienced supervision or leadership in charge of phase teams** – Training often consists of throwing the phase team leader "into the fire" and walking away. This is notable in production control (PC) meetings. How many times have you gone to a PC meeting and there is a specialist briefing from a clipboard. When asked a simple question, they cannot answer or make a decision. Afterward, you find the platoon sergeant and ask why the Soldier was briefing and you're told it was "training." Training is letting the Soldier brief but being available to step in and help conduct a productive discussion.
- **Lack of direction** – We tend to have PC meetings because that is what we always do and there is not a lot of production to them. I have also seen a large majority of the meetings end and, after the meeting, still have no idea what the priority for the day is or what needs to be accomplished (the primary reason for a PC meeting).
- **Deferred maintenance follow up** – Logbook reconnaissance goes a long way in maximizing efficiency. We find that most units have adequate recon sheets but have never actually completed the recon. It is a paperwork drill that tends

to get pencil whipped with the assumption that someone else will do the work and do it correctly.

- **Parts ordering** – ULLS-A does not "talk" to GCSS-A. ACN may do so, but when you go to tech supply and check a document number, it may show the part is on order. However, it may have never made it through Z-PARK. Rollover document numbers have to be correlated back to the unit document number and checked to ensure they are on order (we have seen this over and over again). This is a very simple task that can save so much downtime and remove a lot of reliance on aircraft on the ground requisitions.

Every unit I visit states "We are so busy." After further investigation, yes, the units are busy. However, units are busy redoing a maintenance task to get it right or they are stopping work on an aircraft to correct Soldier military occupational specialty training deficiencies. We, aviation maintenance, do not complete the basics well and we are not consistent with our routines. We can debate this point all day long; however, I've been in aviation maintenance 29 years and I have seen it. The decline in basic skills, whether it is an institutional deficiency (Advanced Individual Training) or a lack of Soldier personal progression, has caused us to redo the same work over and over again to get it right. First published in July 2018, Training Circular 3-04.71 will help if implemented at units and taken seriously.

Lastly, commands are not integrating maintenance into their operational planning. We have to get back to synchronizing maintenance with the operations and training plan! Our mission is to support Soldiers on the ground, but we must take care of our aircraft and ourselves first in order to support this mission. ■

CW5 Rob Devlin
Directorate of Evaluation and Standardization
Directorate Maintenance Examiner

Mishap Briefs #79

ROTARY WING

Attack

H-64

E Model – Aircraft descended to ground impact following takeoff from forward arming and refueling point. Damage to main and tail rotor system, target acquisition designation sight pilot night vision sensor, and fuselage was reported. (Class A)

UNMANNED

MQ-1

C Model – Crewmembers executed a go-around after nose of aircraft was observed to make contact with the ground on initial touchdown. Aircrew members subsequently performed an emergency landing. Nose landing gear was reported as sheared halfway up the strut, and payload turret was reported as damaged. (Class B)

C-ER Model – Unmanned aircraft system (UAS) sustained damage from unforecasted weather/hail while in flight. (Class C)

RQ-7BV2

– During recovery, the air vehicle (AV) experienced a hard landing and bounced over the arresting pendants and barrier net. The AV continued to roll, impacting a hand rail and sustaining significant damage. No personnel were injured. (Class B)

- Aircraft experienced ram air turbine (RAT) temps beyond limitations and immediately returned to base (RTB). Tactical automatic landing system (TALS) would not accept aircraft for the recovery due to low airspeed. Aircraft crashed in open field and terminated on a road. (Class B)

– Aircrew members reportedly lost link with the aircraft during flight and it impacted off post. Post-crash fire ensued. (Class B)

– The AV was yawing right after the decision point. Upon touchdown, the AV veered off the left side of the runway. Aircraft contacted the arresting gear during landing and subsequently crashed off the runway. The AV suffered significant damage and no personnel were injured. Aircraft was recovered. (Class C)

– Aircraft was landed to a flight landing strip (FLS) with the recovery chute following reported TALS and alternative portable ground control station connectivity failures. Aircraft was recovered with approximately $100,000 in damage. (Class C)

– Crew reportedly experienced multiple system failure readings during climb-out. Recovery chute was deployed and aircraft was recovered by local national authorities. (Class C)

– Crewmembers reportedly lost link with the aircraft while in TALS mode and aircraft crashed off the airfield. It was recovered with significant damage. (Class C)

– Aircraft crashed after touchdown approximately 100 feet off the runway during TALS landing with no reported success at programmed "wave off" attempts by operators. (Class C)

– Following a handoff, the AV experienced a propulsion failure. The flight termination system (FTS) was successfully initiated and the AV has been recovered. (Class C)

– During climb-out, the AV experienced a propulsion failure. The FTS was initiated and the AV was recovered. (Class C)

– During the mission, the AV experienced a propulsion failure. The parachute was deployed and no personnel were injured. (Class C)

– Aircraft reportedly touched down hard and bounced, missing the arresting gear and barrier net during recovery phase and struck an obstacle before coming to rest. (Class C)

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PRE-ACCIDENT PLANNING

AR 385-10, The Army Safety Program, dated 24 February 2017 and DA PAM 385-90, Army Aviation Accident Prevention Program, Rapid Action Revision (RAR) Issue date 24 February 2010 are two of the primary publications that address the pre-accident planning requirement for aviation units.

AR 385-10, Chapter 15, Aviation Safety Management, states that:

a. A unit emergency plan will be prepared and maintained according to DA Pam 385–90 and DA Pam 385–10.

b. The unit pre-accident or pre-emergency plan will be rehearsed, reviewed, and its adequacy documented. The degree of response by elements in the emergency plan for a rehearsal can vary; however, an exercise requiring all elements to respond physically must be conducted at least annually.

c. The unit pre-accident or pre-emergency plan should include procedures for response to, and investigation of, accidents where contractor maintenance supporting unit operations is involved in the accident and the Government has assumed all or some of the risk of loss in the contract.

DA PAM 385-90, Chapter 1, *General*, 1-4, provides the following responsibilities to the following personnel: Commanders - Commanders provide the following functions: **Pre-accident plans**, including immediate actions, investigation procedures (see DA Pamphlet (Pam) 385-40), reporting and records (see AR 385-10), and corrective responsibilities; Operations officers – prepare and maintain the unit **pre-accident plan** for the commander. The expertise of the ASO and other applicable elements is used in accomplishing this task. Rehearse, review, and document the adequacy of the unit **pre-accident plan**. This must be a systemic review and is conducted at least quarterly. The degree of response by elements in the pre-accident plan can vary; however, an exercise requiring all elements to physically respond must be conducted at least annually (this is also a function of the ***Aviation safety officer***). Flight surgeon – should ensure that the medical portion of the pre-accident plan is adequate.

Additionally, Chapter 2, *Aviation Safety Program*, 2-9, **Pre-accident planning** states that commanders will ensure - the development of detailed, written, **pre-accident plans** specifying duties, responsibilities, and immediate actions for personnel involved in accident notification procedures, search and rescue, accident investigation, and equipment recovery. The unit operations officer develops and administers the pre-accident plan with the technical assistance of the unit ASO (additional guidance on **pre-accident planning** may be found in DA Pam 385–10).

Pre-accident plans will — (1) Interface with airfield/installation and higher headquarters plans. Units/facilities on non-Army and non-DOD airfields will ensure plans are coordinated with appropriate local authorities and comply with applicable Army and DOD requirements. (2) Focus on organized rescue of personnel, protection of property, preservation of the accident scene, and notification of appropriate personnel. (3) Address both garrison and field/deployment operations. (4) Address actions for both aviation and ground accidents. The systematic rehearsal and review of pre-accident plans is as follows:

(1) **Pre-accident plans** will be systematically rehearsed and reviewed for adequacy quarterly at a minimum.

(2) Frequent non-tenant user flight crews will be fully knowledgeable of the host installation pre-accident plan.

(3) An example of a unit aviation pre-accident plan is located in appendix C, DA Pam 385-90.

Appendix C, *Sample Documents*, **Pre-accident plan**, says that the operations officer should be responsible for establishing, implementing and accomplishing the **pre-accident plan**, including:

(1) Coordinating with all personnel.

(2) Familiarizing all unit personnel with the crash alarm system and the provisions of AR 420–1, AR 385–10, and DA Pam 385–40.

(3) Conducting regular (minimum quarterly) documented tests of the plan.

(4) Ensuring air crash search and rescue (ACSR) or local crash grid maps and/or crash grid overlays are distributed and maintained by each activity listed on the primary and secondary crash alarm systems and in all medical ambulances.

(5) Ensuring DA Pam 385–40 and AR 420–1 are used as guidance.

(6) Ensuring that plans are developed and coordinated to fulfill all Army requirements when operating as a tenant activity on a non-Army or joint use airfield.

This appendix serves as a functional example for existing units. It is not intended to be construed as the standard for all units. Use of the example pre-accident plan in appendix C of DA Pam 385-90 is not mandatory unless supported by regulation. The requirement to have a pre-accident plan and to rehearse the plan, is stated, as shown above, in AR 385-10. This appendix is a good starting point for your plan.

5 Questions

1. A pre-accident plan exercise, requiring all elements to respond physically, must be conducted annually? True or False
2. According to DA PAM 385-90, who prepares and maintains the unit pre-accident plan for the commander?
3. How often, according to DA PAM 385-90, should the operations officer and the ASO conduct a systemic review of the pre-accident plan? Monthly, quarterly, semi-annually?
4. When operating and conducting operations on a non-Army and/or a non-DOD airfield, should a pre-accident plan be coordinated with appropriate local authorities and should it comply with applicable Army and DOD requirements?
5. Which appendix in DA PAM 385-90 has a sample pre-accident plan with duties and responsibilities?

WIRES & TOWERS are Killers

Follow the Seven Steps for Prevention

- Follow your TSPs and SOPs for Terrain Flight Operations
- Leader supervision - Enforce the standards in the TSP and SOP
- Daily updated operations master hazard map and updated software for aircraft map applications
- Mark wires and understand the pitfalls of wires through low barrier areas and flying in unfamiliar terrain
- Use terrain flight altitudes when necessary and avoid excessive speeds at low altitudes
- Maximize crew coordination and use every set of eyes
- Slower as you go lower, give yourself and crew time to identify the wires coming up

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