Flightfax
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AH-64 Mishap Review Fiscal 2013-18

In the five-year-plus period of fiscal 2013 through June 2018 (1,033,833 flight hours), 74 Class A-C- AH-64 mishaps were recorded. Of those, 65 had identified or suspected cause factors.

Nine of the mishaps had unknown or not yet reported cause factors. A breakdown shows there were 21 Class A mishaps (18 flight, one flight-related and two aircraft ground); 14 Class B (13 flight, one flight-related); and 39 Class C (30 flight, four flight-related, five aircraft ground). There were 14 Army fatalities and a cumulative mishap cost of more than $427 million. The Class A flight mishap rate per 100,000 hours was 1.74. Class A-C rate was 7.16. A review shows human error was the primary cause factor in 50 (76.9 percent) of the mishaps with a reported cause factor in 13 (20 percent) materiel failures; and 3.1 percent environmental related.

The following is a breakdown of mishap event types:

Object Strikes

Object strikes account for nearly 36.3 percent of the Class A and 24 percent of the total Class A-C mishaps. There were eight tree strikes recorded in the 74 incidents, five resulting in Class A and B damage. Other types of object strikes included three wire strikes (two Class A, one Class C); three ground taxi/aircraft run-up incidents (two Class A, one Class B); and seven incidents involving striking the ground (three Class A, two Class B, two Class C). Examples of object strike mishaps include:

Scenario 1

The aircraft was Chalk 2 in a flight of two, conducting mission training when it descended into a wooded area and crashed. The crewmembers were extracted with treatable injuries, and the aircraft was reported as destroyed. (Class A)

Scenario 2

While conducting night vision system (NVS) confined area operations, the aircraft drifted into trees. The aircraft came to rest on its side with potential Class A damage. (potential Class A)

Scenario 3

The aircraft contacted a ground obstacle during a movement-to-contact maneuver. The crew subsequently executed a controlled landing. (Class A)

Scenario 4

The crew was executing an approach to mountainous terrain in conjunction with readiness level progression training. The aircraft's tail wheel contacted the edge of the terrain shelf that comprised the designated landing area. (Class C)

Power Management

Power management/aggressive flight maneuvering was involved in five of the Class A and B mishaps for the five-plus-year time period. There were also three Class C incidents. Summaries of some of the power management mishaps include:

Scenario 1

The crew reportedly experienced a tailwind and airspeed/rotor droop once airborne from refuel, followed by loss of tail rotor effectiveness. The aircraft descended to ground impact, rolled and came to rest on its left side. The crew was able to egress with minor/superficial injuries. (Class A)

Scenario 2

The aircraft, as trail in a flight of two, lost altitude while on final approach at approximately 100 feet above ground level (AGL) and contacted the ground with the tail wheel. The aircraft sustained damage to the tail and left main landing struts and the gun turret and rear airframe mounts. (Class B)

Scenario 3

The crewmembers experienced a low-rotor warning as they were repositioning on the taxiway for incoming aircraft while performing a HIT check. (Class C)

Maintenance error

There were three (one Class A, two Class B) human error mishaps involving incorrect/incomplete procedures being followed during aircraft maintenance. Summaries of some of the maintenance error mishaps include:

Scenario 1

While reinstalling the No. 5 tail rotor driveshaft, the bolts were not properly torqued and subsequent inspections failed to identify the problem. Consequently, the No. 5 tail rotor driveshaft vibrated and caused the aft hanger bearing coupling to shear, resulting in the loss of tail rotor thrust. The aircraft landed hard with damage. (Class B)

Scenario 2

The crew reportedly experienced a loud report, followed by a nose-down pitch and right yaw of the aircraft during flight. The crew executed an emergency landing to an open field. A post-landing inspection revealed the tail rotor came off in flight due to incorrect torque procedures conducted on the tail rotor retention bolts. (Class B)

Scenario 3

While in flight, the aircraft experienced a catastrophic failure of the main rotor system and crashed, resulting in two fatalities. (Class A)

Materiel failure

Materiel failure was the primary cause factor in 13 (17.6 percent) of the Class A-C mishaps with reported cause factors. Summaries of some of the materiel failure mishaps include:

Scenario 1

The crewmembers were participating in night operations when they detected a smoke odor in the cockpit caused by a No. 2 generator bearing failure. While conducting an emergency landing, the crew experienced an electric power outage in the cockpit and loss of night vision systems. During the unaided landing to a dusty environment, the main rotor blades contacted the ground and the aircraft came to a rest on its side. (Class A)

Scenario 2

Crew had just completed 'hot' refuel and were at approximately 100FT AGL when they noted a loud report from the #2 engine area, followed by a LOW ROTOR audio indication. Aircraft touched down 'hard' as the crew attempted to land the aircraft on a firing pad. (Class A)

Scenario 3

The pin assembly securing a main rotor blade to the main rotor head sheared, causing catastrophic

failure of the main rotor system. The aircraft crashed, resulting in two fatalities. (Class A)

Scenario 4

The aircraft's lateral servo actuator malfunctioned due to suspected contaminants in the hydraulic system. This resulted in the lateral servo actuator back driving the flight controls through the mechanical control input connected to the servo. As a result, the cyclic moved uncommanded to the left, rolling the aircraft approximately 60 degrees and causing an impact with the ground. The aircraft was destroyed with no significant injuries to the crew. (Class A)

Scenario 5

Failure of the outboard strap pack bolt retainer nut resulted in the failure of the strap pack assembly and loss of the main rotor blades. The aircraft crashed, resulting in two fatalities. (Class A)

Scenario 6

The crew reportedly experienced aircraft anomalies during takeoff, followed by a No. 1 Engine-Out indication. Upon landing, the No. 1 engine TGT reading was at 999°C, and No. 2 engine indicated a torque-exceedance reading (125 percent> <130 percent). (Class C)

Scenario 7

The crew reportedly experienced a torque split and high TGT indication exceedance on the No. 1 engine while on approach. The crew landed the aircraft and, upon shutdown, identified an engine No. 1 NG overspeed >102.2. (Class C)

Other

Scenario 1

The crew chief came out to recover the aircraft and observed the nacelle door open. He noticed both handles were extended in the open position and indicated to the pilots the door was open as they shut down. (Class C)

Scenario 2

After the flight was completed, the crew conducted a post-flight inspection and discovered a missing panel and damage to two main rotor blades and a tail rotor blade. (Class C)

Scenario 3

A post-maintenance test flight revealed metal debris on the transmission deck as residual damage from in-flight separation of a torque tube from its mounts. (Class C)

Scenario 4

The aircraft start-up was attempted with the No. 2 engine inlet plug still in place. Inspection criteria required engine replacement. (Class C)

Scenario 5

Six rotor blades stacked outside the hangar blew over from a passing aircraft's rotor wash, causing non-repairable damage to two blades.

Scenario 6

The crew of aircraft No. 1 was conducting assault training with a sister ship when it collided with another aircraft on a separate mission conducting aerial recon of an objective in the vicinity. Both aircraft crash-landed, and crewmembers suffered no significant injuries. (Class A)

Summary

Looking at the fiscal 2008-12 time period, the numbers remain generally consistent with the most recent time period. The AH-64 Class A- C mishap rate was 7.12 with 85 incidents versus the 7.16 rate with 74 mishaps for the latter time frame. Mishap types are also similar, with object strikes, overspeed/overtemp/overtorque and power management events as the most prominent.

Typically in manned aviation mishaps, human error is the primary contributing factor in 75-80 percent of mishaps. Whether operating or maintaining the aircraft, strict adherence to established standards and procedures, coupled with good supervision, remains the most effective countermeasure in the reduction of human error mishaps. ■

Door Gunnery - Soldier and Systems Protection

When I was a 2,000-hour UH-60 Black Hawk crewmember in an assault helicopter battalion, my unit deployed to Camp Speicher, Iraq, in support of Operation Iraqi Freedom. My crew was on a simple daytime ring route mission from Balad to Baghdad, then back to base. On the final leg passing across the Tigris River, a single insurgent with an AK-47 engaged the lead aircraft as the flight was making a right turn north to continue home. As soon as my crew heard our sister ship announce over the radio that it was taking fire, I pointed my weapon to the 10 o'clock position and searched for the enemy.

The pilot in the left seat and I found him, and my pilot in command gave me the order to engage. The insurgent was shooting from behind a retaining wall. As soon as my bullets started toward him, he ceased fire on our lead aircraft, ducked behind the wall and we lost him in his crop field. The flight leader decided to continue past the threat because we still had passengers onboard and the lead aircraft had suffered damage and the crew was unsure of the extent.

Two Soldiers from A Company, 2nd Battalion, 1st Aviation Regiment load ammo cans inside a UH-60 Black Hawk helicopter while in flight. The aviators conducted live fire door gunnery training at targets up to 900 meters while wearing there NBC protective mask. Photo by SPC Stephen Baack.

When we landed at the nearest base, we found that bullets had scattered all the way around the left gunner's window, into the engine compartment and the tail boom. If my crew had not laid down suppressive fire, who knows how many bullets would have found their way into our sister ship, or worse, its crew. The ability to return effective fire and suppress the enemy's fire is paramount to Soldier and system protection for Army aviation cargo and utility aircraft. Door gunners provide that protection.

Door gunners are any non-rated crewmembers (NRCM) that volunteer to put themselves in harm's way to defend the passengers and crew aboard a CH-47 Chinook or UH-60 Black Hawk. A door gunner is typically the 15U (Chinook helicopter repairer) crew chief/flight engineer or 15T (Black Hawk helicopter repairer) crew chief, but can be any other non-MOS Soldier that volunteers for the position for combat deployments.

To be considered for a door gunner, Soldiers must go through a rigorous training program consisting of both academic and flight training. Of course, they must qualify on the weapon system, progressing through the gunnery tables in accordance with

the Training Circular (TC) 3-04.45, Combat Aviation Gunnery.

The door gunner training program

Various publications outline the academic and flight training requirements for non-rated crewmembers, including TC 3-04.11,Commander's Aviation Training and Standardization Program; aircrew training Modules (ATM) for the CH-47 and UH-60 aircraft; and TC 3-04.45. First and most importantly, the door gunner must satisfactorily pass a Class III flight physical per Army Regulation (AR) 40-501 and be placed on flight orders per AR 600-106. Once they meet the flight physical requirement, unit standardization personnel can start the academic requirements for door gunners. I say this to ensure instructors don't waste their time on Soldiers that cannot pass that physical. Unit NRCM flight instructors (FI) and standardization instructors (SI) are the primary trainers for the door gunner training program. Although they can be assisted by instructor pilots (IP) and standardization instructor pilots (SP).

Door gunners should start their academics with aircrew coordination training (ACT). ACT instructs the crewmembers on how to interact as a crew, focusing on effective communication, positive interaction and defining the sequence of actions for all crewmembers so they can perform effectively, reducing accidents and increasing mission effectiveness. The ACT principles and objectives are a common standard inherent in every ATM task. This course can be facilitated either by unit standardization personnel or through the Army Enterprise Lifelong Learning Center (ELLC) blackboard online course. The fiscal 2017 Initial ACT & NRCM Qualification Training Distance Learning module will also cover the other required initial academics for all newly assigned NRCMs. Units can find instructions on how to self-enroll to this course at https://www.us.army.mil/suite/files/46564294.

SPC James E. Lambus, a crew chief with A Company, 2nd Battalion, 1st Aviation Regiment, fires the M-60 machine gun from a grounded Black Hawk at Wildflecken Range Oct. 18 . Photo by SPC Stephen Baack

The door gunner must also complete the night vision goggles (NVG) training support package (TSP). This course of instruction is critical to knowing how to mount, adjust and use the NVG properly during missions flown at night. Since many of our combat missions are flown at night, one can understand how this is a part of the base academics for any NRCM. This TSP is managed by the Night Vision Devices Branch at Fort Rucker, Alabama, and can be found here at https://www.us.army.mil/suite/files/25258291.

Combat aviation gunnery

Door gunners must complete the gunnery tables in accordance with (IAW) TC 3-04.45 starting with Gunnery Table (GT) I.3. This encompasses the base academics and gunnery skills test (GST) required semi-annually for active and mobilized National Guard units. The academics cover subjects from the basics of the M240H weapon system to first aid. The initial exam covering those subjects is a 50-question test. The gunner must also receive instruction on theater threat/allied weapons and vehicle identification and complete a 20-question exam. Both exams have an 80 percent passing score. Once the academics and GSTs are complete, the gunner can start with the ground live-fire familiarization table hands-on training. All rated aviators and NRCMs are required to complete the GT I.3 academics and GST.

The GT I.3 ground live-fire familiarization event centers on the gunner completing training on the weapon system prior to firing from a moving, unstable platform. Ground units qualify on the M240 weapon system by following the fundamentals in TC 3-22.240, Medium Machine Gun. That is not the intent of GT I.3, as those fundamentals are useless when firing from a moving helicopter. When in combat, the ability to fire, clear the weapon, reload and re-engage quickly is critical. Therefore, this ground training focuses on repetition.

Gunners receive 100 rounds of AB79 ball

Aviators from 3rd Battalion, 126th Aviation Regiment, Massachusetts National Guard, conduct aerial gunnery at the Krivolak Training Area in the Republic of Macedonia. The gunnery is taking place over three weeks Aug. 1-18. Photo by Capt. Patrick Enriquez.

ammunition divided into five 10-round belts and one 50-round belt for each M240H firing mode. The M240H modes are ground (egress kit) mode and air (spade grip) mode. Gunners shoot each 10-round belt in its entirety so they can feel, hear and get the timing of a 10-round burst. The gunner then clears the weapon properly, rides the bolt forward so they can reload into the "loaded" weapon status and then engages the next 10-round belt. The gunner repeats this through all five 10-round belts and then is given the 50-round belt. The gunner uses the 10-round burst technique to fire five bursts expending the 50-round belt.

The air mode using the spade grip is best conducted using a static aircraft. This gets the gunner better familiarized with his firing position in the aircraft. If a static aircraft is not available, cabin mock-ups can be built and used. If either are not feasible, firing both the egress kit and air mode kit from a ground fighting position still meets the training intent of this gunnery table. The GT I.3 ground live-fire familiarization training is required to be completed by modification table of organization and equipment (MTOE)-assigned door gunners and MTOE-assigned PCs annually.

Once the gunner completes GT I.3 individual training, he can progress to the crew training tables, beginning with GT II, Aircrew Proficiency Course. This course is optimally conducted in the Non-Rated Crew Member Manned Module (NCM3). The NCM3 simulator is specifically designed with NRCMs in mind and is a great tool to conduct different types of training, not just door gunnery. One of the better features of conducting this training in the NCM3 is the ability for the training targets to shoot back. That added effect will have a higher impact on training by highlighting the urgency of the door gunner's ability to detect, identify, decide, engage and assess (DIDEA) quickly and efficiently.

If the NCM3 is not available, 200 rounds of A111 blank ammunition is allocated to complete this training gate. If blank ammunition is not feasible, units can conduct this table dry. When conducting this table dry, weapons will be mounted on the aircraft without live ammunition so the focus is on the crew coordination aspect of engaging targets. The PCs are the primary trainers. Their role is to call out targets for their door gunners to locate and using appropriate call and response techniques, direct clearance to engage.

Scenario-based training

With the remainder of the crew-level gunnery tables (GT III through GT VI), the rated crewmembers have an increased role in the gunnery training. Before the gunners even get to the aircraft, a thorough brief must be conducted. The PC briefs the gunners on the flight route and mission situation, to include probable friendly and enemy encounters. This will set up the scenario the unit master gunner and door gunner SIs have built. Scenario-based training is what drives the program in the right

direction. Otherwise, you're just burning blade time and throwing lead downrange. With this scenario, crews get a better feel for what combat gunnery encompasses.

The PCs will be directing the crew during the mission and, with help from a script, call out targets they encounter on the battlefield. Using the crew coordination principles learned during academics and readiness level progression, the crew responds to the threat and the PC gives the clearance to fire. Meanwhile, an onboard FI or SI acts as an observer and grader, ensuring the gunner actions the weapon properly when told and engages the correct target in a timely and accurate manner. Following each completed scenario, the grader gives feedback to the gunner on how they can improve setting them up for the next scenario-based table.

Each gunnery table is conducted in day and night conditions, ensuring door gunners master engagements in every mode (day, night and aided) we operate in. The crew-level GTs are also structured so new gunners experience the crawl-walk-run methodology that has proven itself over years of aviation training. When a gunner first shoots live ammunition from a moving helicopter, they start with short-range targets at slower speeds and progress to longer-range targets at higher speeds. This culminates with the challenging day and night qualification table of different types of targets at mixed ranges and varying flight modes.

Collective gunnery training

Once the crew is GT VI qualified, they can progress through the collective GTs, which are the capstone events for a successful gunnery program. Collective GTs are designed to train air mission commanders, platoon leaders and company commanders to fight alongside their maneuver elements in support of unified land operations. Additionally, collective GTs test the unit's ability to maximize the lessons learned during the aircrew phase of gunnery, applying the knowledge to successfully execute tactical combat scenarios at team and platoon levels.

Collective training leans heavily on simulated training. Each collective gunnery gate starts with simulated training conducted in the aviation combined arms tactical trainer (AVCATT) and paired with the NCM3. With the AVCATT/NCM3 combo, crews can fly together in the digital environment and recreate almost any condition to better prepare crews to fly and fight in the real world.

For the door gunner, simulated and live collective training exercises the skills mastered during crew training and adds multi-aircraft situational awareness to the list of tasks put on our back-seaters. Collective training can be as simple as two cargo/lift aircraft flying down a route and providing suppressive fires from enemy contact to more deliberate operation tactical flying with different types of aircraft and live troops. Not only are the gunners looking out for their own aircraft, they're also keeping situational awareness of the entire multi-aircraft flight. This training provides an added measure of risk reduction for combat missions conducted by utility and cargo aircraft which unarmed aircraft are not afforded.

The door gunner in combat

Current uses of the door gunner in combat are mostly limited to defense of the aircraft while en route to and from its intended destinations. Most units limit utility and cargo aircraft to suppressive fires when engaged by the enemy and then modify the route to bypass the threat when able to minimize the risk to crew and passenger. The job of neutralization or destruction of the enemy and their equipment is left to our attack aircraft. However, we have been utilized, when warranted, in the offensive capacity from time to time with success.

Since combat situations will not always allow the suppress-and-bypass technique, we must stay vigilant in our jobs, and commanders must continue to strive to increase the training intensity of our home station gunnery events. Just as intense training for operating in degraded visual environments reduced our flight mission risk, intense training for aerial gunnery provides a reduction in risk to crew and aircraft when engaged by enemy weapons systems.

Questions on door gunner requirements or training techniques should be directed to the Aviation Gunnery Branch at usarmy.rucker.avncoe.mbx.atzq-tdd-g@mail.mil or (334) 255-1897. ■

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Mishap Review - AH-64 Tail Rotor Driveshaft Break

While conducting a post-phase general maintenance test flight (MTF), while at a hover taxi, the No. 4 driveshaft bolts unfastened, compromising the driveshaft continuity and resulting in loss of tail rotor thrust. The aircraft yawed to the right and spun 1.25 times about the mast before striking the ground.

History

During the conduct of a 500-hour phase maintenance inspection, the maintainers improperly installed and inspected the No. 4 tail rotor driveshaft section bolts.

The maintenance test pilot (MTP) conducted multiple vibration analysis runs. Intermittent acceptable and unacceptable readings led the MTP to believe the problem was a false indication from a malfunctioning accelerometer.

After replacing the accelerometer, the MTP, continued ground runs. Based on inconsistent trends via the MSPU, the MTP conducted troubleshooting of the vibration analysis wiring and accelerometers.

Later during a hover less than 10 knots indicated airspeed, the aircraft began a right yaw. The right yaw increased rapidly, with the aircraft rotating 1.25 times prior to making contact with the ground. The aircraft came to rest upright on the main landing gear and tail boom.

Crewmember Experience

The MTP had 50 hours MTP time, 722 hours in series and 1,284 hours total time. The pilot had 210 hours in series and 1,167 hours total time.

Commentary

Aviation is unforgiving of mistakes. Human factors contributed to the damage of this aircraft. Fortunately, no personnel were injured. Lessons derived from this mishap and the factors involved show that maintenance personnel failed to follow proper procedures and policies in place to prevent these mishaps from occurring.

By-the-book maintenance is a tried-and-true concept. But leaders must be aware this is not only for the maintainer executing the maintenance task. This is for the whole maintenance chain — from wrench turner to commander. Operations tempo are high for maintenance personnel. To maintain the Army operational readiness rate requires supervision and the proper procedural guidance be in place and enforced.

As personnel rotate in and out of units in deployed locations, there are times when MTPs may arrive with minimal test flight time and require mentoring and advice from those MTPs who have higher test flight time and experience supporting Army aviation. MTPs and maintenance personnel should also keep in mind that it is easy to become focused on electronic diagnostic equipment when the survey results are inconsistent. Before conducting flight and blades turning, a thorough review of the logbook and preflight of the aircraft is paramount to ensuring the crewmembers who engage the starter switch are able to safely complete the flight. No question on paperwork or during preflight of the aircraft should be left to chance. Track down the quality assurance personnel and get the answer. There is no room for guess work in Army aviation. Use the expertise you have available in your supporting maintenance personnel. ■

Class A - C Mishap Tables

	Manned Aircraft Class A – C Mishap Table									as of 6 Sep 18
	Month	FY 17					FY 18			
		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities		Class A Mishaps	Class B Mishaps	Class C Mishaps	Fatalities
1st Qtr	October	0	0	7	0		1	2	7	0
	November	1	0	4	0		0	1	3	0
	December	1	0	4	2		1	0	7	0
2nd Qtr	January	1	0	3	0		1	1	3	2
	February	0	1	4	0		0	0	1	0
	March	0	1	6	0		0	1	11	0
3rd Qtr	April	1	0	6	1		1	2	4	2
	May	1	0	7	0		1	0	5	0
	June	0	2	5	0		1	1	5	0
4th Qtr	July	0	1	8	0		1	0	6	0
	August	3	3	4	6		3	1	4	1
	September	1	1	7	1					
	Total for Year	9	9	65	10	Year to Date	10	9	56	5
	Class A Flight Accident rate per 100,000 Flight Hours									
	5 Yr Avg: 1.14		3 Yr Avg: 1.09			FY 17: 0.99			Current FY: 1.46	

UAS Class A – C Mishap Table									as of 6 Sep 18
	FY 17					FY 18			
	Class A Mishaps	Class B Mishaps	Class C Mishaps	Total		Class A Mishaps	Class B Mishaps	Class C Mishaps	Total
MQ-1	10	2	4	16	W/GE	3	1	3	7
MQ-5	5	0	1	6	Hunter	1	0	0	1
RQ-7	0	18	39	57	Shadow	0	7	17	24
RQ-11	0	0	1	1	Raven	0	0	0	0
RQ-20	0	0	0	0	Puma	0	0	0	0
SUAV	0	0	0	0	SUAV	0	0	0	0
UAS	15	20	45	80	UAS	4	8	20	32
Aerostat	6	0	1	7	Aerostat	4	2	1	7
Total for Year	21	20	46	87	Year to Date	8	10	21	39

Flightfax Forum

Op-ed, Opinions, Ideas, and Information

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

FAA Airspace

The Automatic Dependent Surveillance System-Broadcast (ADS-B) is an environmentally friendly technology that enhances safety and efficiency, and directly benefits pilots, controllers, airports, airlines, and the public. With ADS-B, pilots for the first time see what controllers see: displays showing other aircraft in the sky. Cockpit displays also pinpoint hazardous weather and terrain, and give pilots important flight information, such as temporary flight restrictions.

ADS-B Facts

Starting Jan. 1, 2020, you must be equipped with ADS-B Out to fly in most controlled airspace.

If you fly in this airspace, you must be equipped with ADS-B

Airspace	Altitude
A	All
B	Generally, from surface to 10,000 feet mean sea level (MSL), including the airspace from portions of Class Bravo that extend beyond the Mode C veil up to 10,000 feet MSL (i.e., SEA, CLE, PHX)
C	Generally, from surface up to 4,000 feet MSL, including the airspace above the lateral boundary up to 10,000 feet MSL
E	Above 10,000 feet MSL over the 48 states and District of Columbia, excluding airspace at and below 2,500 feet above ground level (AGL)
	Over the Gulf of Mexico at and above 3,000 feet MSL within 12 nautical miles (nm) of the U.S. coastline
Airspace within 30 nm (Mode C veil) at all Class B locations from the surface up to 10,000 feet MSL	

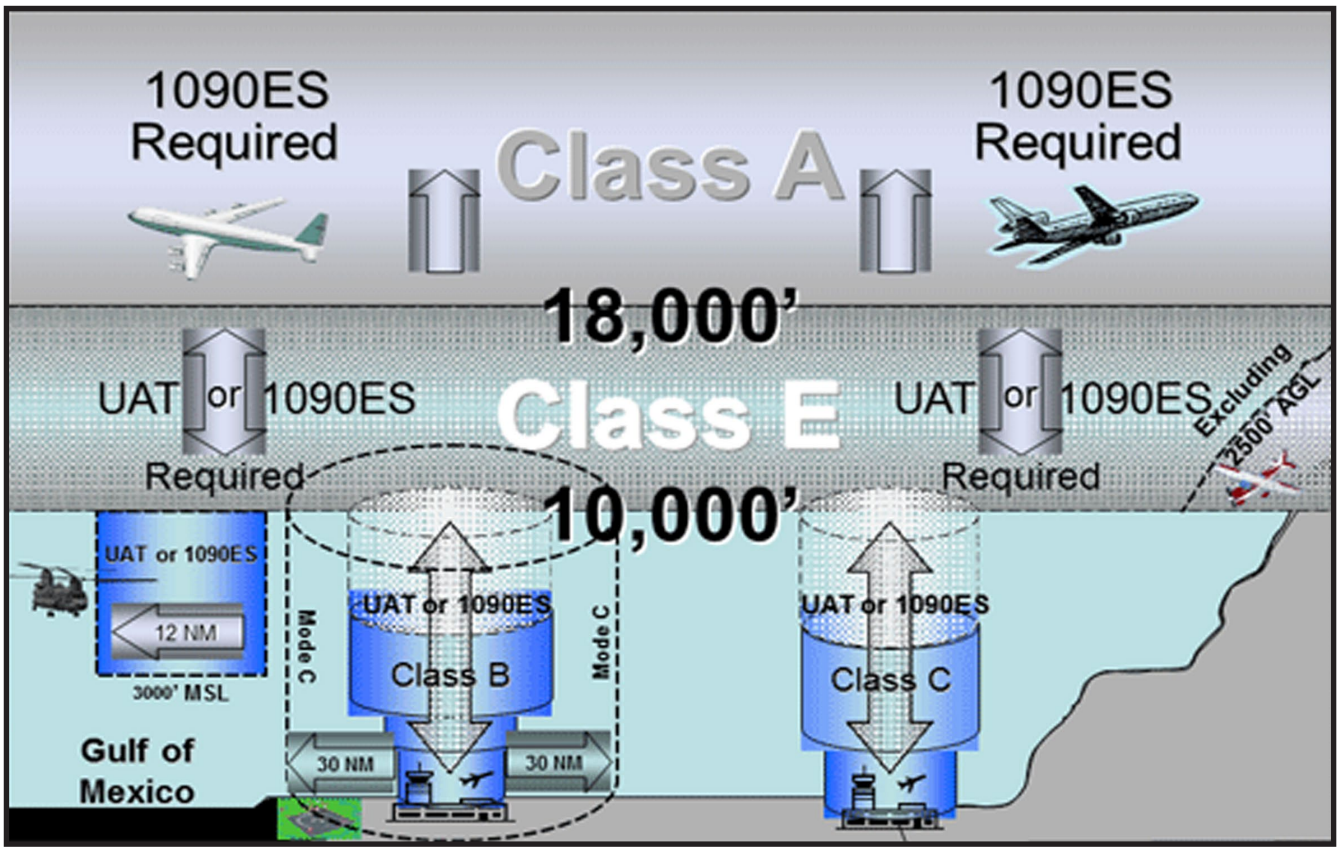
Any airspace that requires the use of a transponder today will on Jan. 1, 2020, also require the aircraft be equipped with a Version 2 ADS-B Out system. This can be either a 1090ES (DO-260B) or a UAT (DO-282B) ADS-B system.

For aircraft operating above FL180 (18,000 feet) or to comply with ADS-B mandates outside the United States, you must be equipped with a Mode-S transponder-based ADS-B transmitter. For aircraft operating below 18,000 feet and within the United States ADS-B rule airspace, you must be equipped with either a Mode-S transponder-based ADS-B transmitter or with UAT equipment. Download the Equip ADS-B Google Earth map at Media/2020ADS-BAirspaceMap.kmz to look at the location of ADS-B rule airspace at your home base and where you fly. Pan and zoom to different locations and turn on the various capabilities the map includes:

- 3D depictions of rule airspace, airports and temporary flight restrictions in real time.
- Overlays of ADS-B surveillance coverage — airspace where ATC can see aircraft transmitting ADS-B Out information at altitudes of 500, 1,500, 3,000, 5,000 and 10,000 feet AGL.
- Non-radar airspace where aircraft transmitting ADS-B can be seen by ATC.

Need help? Watch the Google Earth demo video (WWW.faa.gov/tv/?mediaId=1207) by typing "Google Earth" in the search box and take a look at the instructions (media/googleEarthMapinstructions.pdf) for how to download and view the Equip ADS-B Google Earth map.

Reference: https://www.faa.gov/nextgen/equipadsb/research/airspace/



Interactive ADS-B Airspace Map

Hot Topics

STACOM Message 18-04

Clarification and Amendment of TC 3-04.45, TC 3-04.11 and TC 3-04.9

This STACOM is a clarification and amendment to the TC 3-04.45, TC 3-04.11, and the TC 3-04.9. As directed by the commander USAACE the following issues are being clarified and updated. Individuals who have questions should contact DOTD: USAACE, ATTN: ATZQ-TDT-F, Fort Rucker Alabama 36362-5000 or email usarmy.rucker.avncoe.mbx.atzq-tdt-f@mail.mil.

ISSUE: TC 3-04.45, Para 2-35 thru 2-38 (85% rule). These paragraphs will be updated in the upcoming change to the TC 3-04.3(.45).

CLARIFICATION: Replace paragraphs 2-35 thru 2-38 with the following:

2-35. Active duty and mobilized NG/RC rotary-wing attack and reconnaissance units will —
- Annually qualify company/troop aircrews on GT-VI.
- Annually qualify company/troop aircrews on GT-IX.
- Annually train company/troop aircrews on GT-XII.

2-36. Active duty and mobilized NG/RC cargo and utility units will —
- Semi-annually qualify RL1 NRCMs on GT-VI.
- Annually qualify RL1 NRCMs on GT-IX.
- Annually train RL1 NRCMs on GT-XII.

2-37. Active duty and mobilized NG/RC UAS units will —
- Annually qualify company/troop crews on GT-VI.
- Annually qualify company/troop crews on GT-IX.
- Annually train company/troop crews on GT-XII.

NON-MOBILIZED NG/RC
2-38. All non-mobilized NG/RC attack, cargo, utility, and UAS units will qualify company/troop aircrews on GT-VI within the designated training period as prescribed by applicable regulations and/or directives by the NGB or USARC.

ISSUE: *TC 3-04.11, chapter 6, Aviation Mission Survivability Training & TC 3-04.9, Para 4-11 thru 4-12, 4-37 &* 4-38. AMS Table 2 - Crew Training includes maneuvers that require advanced training and understanding by instructors/trainers. Presently, the conventional aviation force lacks sufficient qualified trainers to train and evaluate all of the required maneuvers. The AMS Tables 2 (Task 2900) and 3 (Task 3900) are required to be conducted semi-annually however, the multi-ship tasks are not yet complete to support this table.

CLARIFICATION: Units are not required to comply with the AMS Table 2 (Task 2900) ATP requirements until 180 calendar days after the release of the 2018 version of the TC 3-04.11. Until further notice and implementation guidance, AMS Table 3 (Task 3900) will only be for familiarization and not required or evaluated as part of the unit's ATP. Table 3 familiarization will be conducted in accordance with BDE CDR's guidance and should only occur after each unit's successful completion of tables 1 and 2 (Task 2900). The table 3 (Task 3900) familiarization should include lessons learned during table 2 training. Additional guidance will be provided for AMS table 3 (Task 3900) training standards in future doctrinal standardization publications.

NOTE: Units will continue to be assessed, tracked, and reported by the FORSCOM ARMS and DES teams as they implement effective programs towards completion of AMS Table 2 (Task 2900) training to meet targeted compliance goals.

This STACOM will remain in effect until rescinded.

The POC for this STACOM is the Directorate Standardization Officer, at 334-255-1582 DSN (558) or email lynwood.t.saville.mil@mail.mil.

Standardization communications (STACOMs) are prepared by the Directorate of Evaluation and Standardization (DES), U.S. Army Aviation Center of Excellence, Fort Rucker, AL 36362-5208, DSN 558-2603/9098. Information published in STACOMs may precede formal staffing and distribution of Department of the Army official policy. Information is provided to commanders to enhance aviation operations and training support.

JEFFERY J. BRAGG LTC(P), AV
Director of Evaluation and Standardization

H-60 Crew Station Working Groups

**Please note, all TDY expenses associated with attending CSWGs are "NO-COST" to units and are paid by the Test Organization/Program Manager.*

Crew Station Working Groups (CSWG) are events hosted by the Advanced Prototyping and Experimentation (APEX) Lab within the Aviation and Missile Research Development and Engineering Center (AMRDEC). The CSWG simulates missions to exercise the proposed pilot-vehicle interface, conducts after-action reviews with pilots post mission, and administers workload, situational awareness (SA) and usability questionnaires. The purpose is to address issues reported from the field and integrate new technologies/capabilities with the intent to solve problems and incorporate new capabilities while optimizing workload and SA.

After the CSWG concludes, AMRDEC personnel analyze the questionnaires and observation data, brief all stakeholders on the feedback received on the proposed design(s) and address design changes as needed. This information is vital for MEDEVAC as well as the entire Black Hawk community. CSWGs help define the latest products that are delivered as part of the H-60 aircraft.

Below are the upcoming Black Hawk and MEDEVAC-related CSWGs.

- Helmet mounted display/degraded visual environment: 22-26 Oct
- DVE control head unit: 5-9 Nov.
- Improved turbine engine CSWG: 4-7 Nov.

If interested in participating contact the TRADOC Capability Manager-Lift POC:

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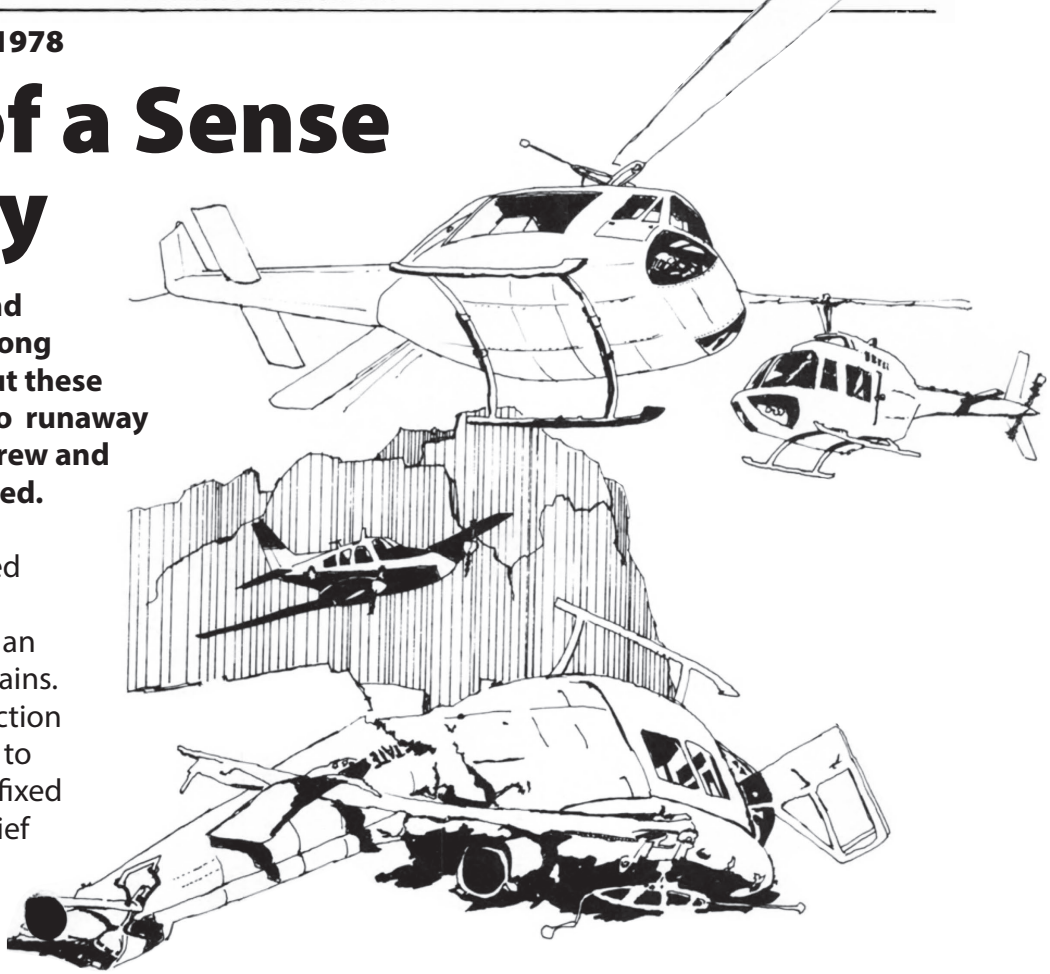
Blast From The Past: *Articles from the archives of past **Flightfax** issues*

VOL. 6, NO. 46, 6 September 1978

Because of a Sense of Urgency



The very nature of search and rescue missions produces a strong sense of obiligation to carry out these missions. This can easily lead to runaway and illogical reactions where crew and aircraft capabilities are exceeded. Consider the following:

• The aviation unit S-3 launched a search and rescue mission to look for the injured personnel of an overturned vehicle in the mountains. In the meantime, the aviation section commander decided on his own to participate in the search using a fixed wing aircraft. He and his crew chief took off, crossed a 7,000-foot ridgeline, and started circling over a canyon. He then turned left and flew south up the canyon. The weather was 2,000 feet broken with good visibility, and there were rain showers in the vicinity. The wind was estimated to be from the south at 15 knots with gusts to 25 knots and density altitude of 9,100 feet. Nearing the top of the canyon, the pilot made a left crosswind turn to fly back over the ridgeline. Unable to clear the 8,600-foot ridgeline, he continued the steep left tum downwind either to fly down the ridge and cross at a lower elevation or to fly back down and out of the canyon. The aircraft crashed into the mountainside in a left wing-low attitude. The pilot was killed on impact. The crew chief, although injured and unable to walk, managed to get out and crawl away from the burning aircraft.

This pilot violated regulations by participating in the search without approval; failed to maintain adequate terrain clearance for the existing conditions; and violated mountain flying techniques ... because of a sense of urgency to search for the injured.

• In another case, the pilot-in-command approved a search and rescue mission to look for a downed helicopter and eight injured persons in the

mountains. After a fruitless 2-hour search at night, the crew returned to home base because of bad weather. The aircraft was refueled and shut down to await further developments.

About an hour and a half later, ground personnel near the site reported that the weather was improving and that three of the survivors were seriously injured and three were unconscious. It was requested that a helicopter be sent to the site.

The crew of four, after filing a VFR flight plan, again attempted the mission. While the crew was en route to the site, ground control personnel tried to tell the pilot that the weather at the crash site was bad and that he shouldn't attempt the rescue.

Because of excessive self-motivation and a sense of urgency to rescue the injured, the pilot, instead of landing, continued on. Nearing the crash site, the pilot inadvertently went IMC, lost control of the aircraft, and crashed. Three crewmembers were killed and the other seriously injured.

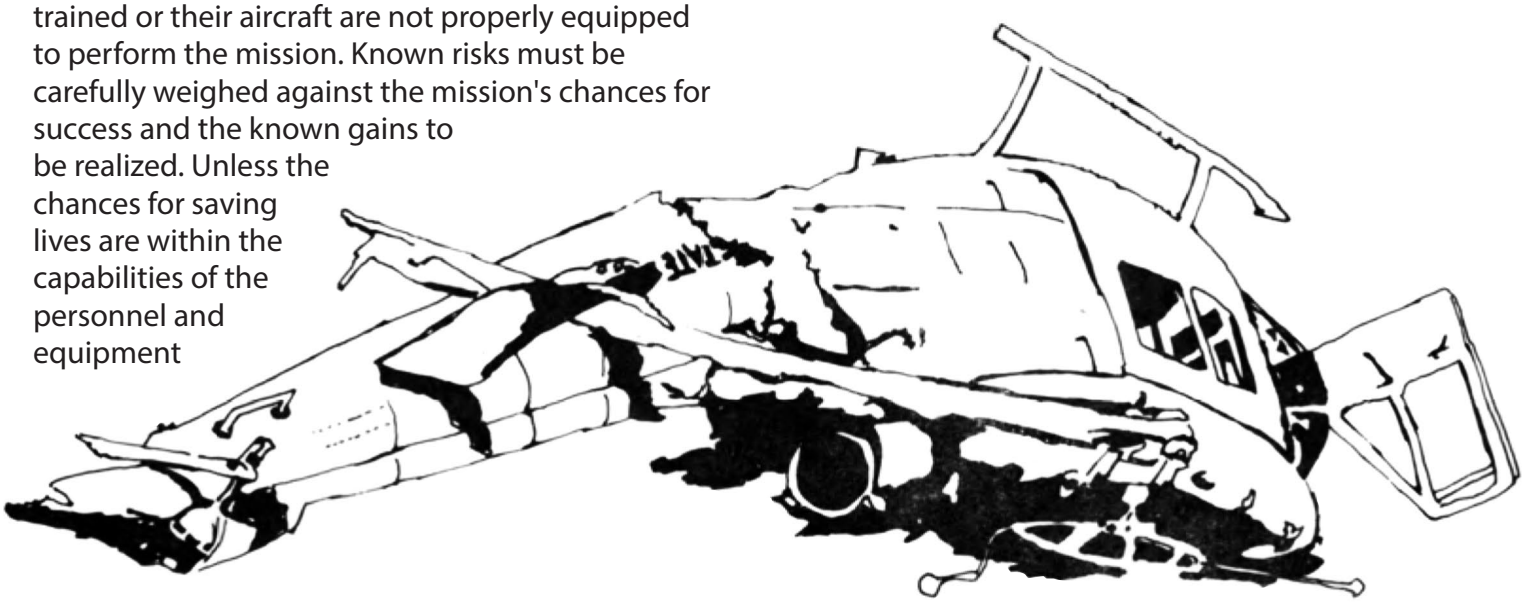
Why did the PIC, rather than a higher unit authority, approve the mission? The unit SOP established the first up PIC as the controlling agent for missions. This procedure gave the PIC on duty the responsibility and authority to accept or reject missions without review by higher authority. Had this mission been questioned, reviewed, or approved by an operations officer, site commander or section leader, it is possible that it would not have been undertaken or else the PIC's actions might have been modified.

Search and rescue missions generate a sense of urgency. But this does not justify jeopardizing crews and aircraft when crews are not properly trained or their aircraft are not properly equipped to perform the mission. Known risks must be carefully weighed against the mission's chances for success and the known gains to be realized. Unless the chances for saving lives are within the capabilities of the personnel and equipment available, aviation resources should not be committed. A good example of such a situation was the assignment of only one aviator to a mission to search for a drowning victim. Being the sole occupant, the pilot had to fly the aircraft while simultaneously looking for the victim. The helicopter hit wires and crashed into the water. Fortunately, only the aircraft was lost. The pilot managed to get out of the helicopter and was picked up by a boat.

While the Army does not maintain organizational rescue units, each unit must have as a secondary mission a SAR capability to support its own operations. But when tasked for SAR support, units must provide aircraft and crews within their capability as long as the SAR doesn't interfere with their primary mission.

AR 500-2 clearly states that installation commanders are responsible for insuring that personnel assigned SAR duties are instructed and trained in the procedures and techniques of the National Search and Rescue Manual (AFM 64-2, CG-308, FM 20150, NWP-37(B)). This manual is a complete and comprehensive guide for planning and conducting SAR operations and also serves as a training and operational manual. In addition, installation commanders should insure that their units establish and publish supporting local SAR operating procedures and instructions so that their missions can be accomplished successfully.

Above all, commanders must insure that the capabilities of the crews and aircraft are not exceeded and that aviators do not violate flight discipline due to a sense of urgency. ■



Mishap Briefs of August 2018

Attack Helicopters

AH-64

D Model – Aircraft landed hard during night training and overturned onto its side. Crew was able to egress w/o injuries. Post-crash fire destroyed the aircraft. (Class A)

D Model – Main rotor blade dipped forward striking the TADS/PNVIS while landing in the FARP. (Class B)

D Model – Aircraft was Chalk 2 in multi-ship Night, NOE flight when it made contact with trees. Aircraft was landed w/o further incident and inspection revealed damage to the stabilator and one main rotor blade. (Class C)

D Model – Post flight inspection revealed damage to the #2 nose gearbox (NGB) cowling, following suspected bird strike. Preliminary ECOD is $53K. (Class C)

Utility Helicopters

UH-60

M Model – Hard landing. (Class A)

Cargo Helicopters

CH-47

F Model – Aircraft were ground taxiing for refueling at the FARP when Chalk 1 was struck from the rear by the forward rotor blades of Chalk 2. (Class A)

Fixed-Wing Aircraft

C-12

D Model – Over-heating condition identified on aircraft brakes upon landing, following flight for braking system MOC. (Class C)

W Model – Aircraft experienced 'loss of pressurization' in flight and returned to base (RTB). Post-flight inspection revealed damage to the fuselage nose section, three propellers on the #2 engine and one propeller on the #1 engine. FOD picked up on the runway is suspected to have caused the damage. (Class C)

C-35

A Model – Post-flight inspection captured an in-flight N1 over-speed of 103.03 for 1.97 seconds. (Class C)

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