Flightfax

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# Looking Forward:

## *Reversing the 4th Quarter Aviation Safety Trend*

**The Army closed fiscal year (FY) 2019 with the fewest manned flight fatalities on record, a reflection of the Aviation Branch's tenacious approach to safety and commitment to continuous improvement.**

Overall, aviation Class A-C mishaps continued a downward trend during FY19, with a nearly 40 percent reduction from FY18. Class A-C flight mishaps (64) and rates (5.63 per 100k flying hours) were the lowest in the past 10 years. Due to Army-wide emphasis, ground taxi mishaps fell from four Class A's in FY18 to zero. Most importantly, aviation mishap fatalities decreased from six in FY18 to two. These achievements conclude the safest five-year period in Army Aviation history and place us on a solid foundation as we begin the new decade.

However, we still have work to do. In the first quarter of FY20 alone, the Army experienced four Class A mishaps with five resulting fatalities. The fatality figures exceeds the total number recorded in FY19, and Class A mishaps are on track to surpass each of the past five years. This difficult start to the new year reminds us how quickly our environment can change and the need for continuous, ruthless adherence to risk management protocols at all echelons of our formations.

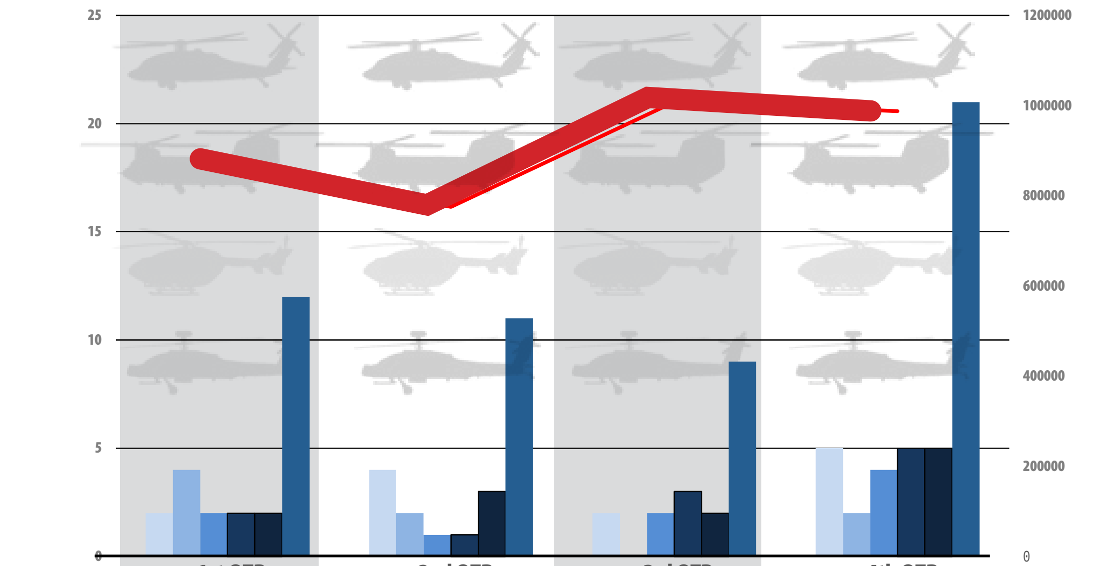
The U.S. Army Combat Readiness Center remains steadfast in its role of leading Army-wide loss prevention efforts and serving as your enduring "back-side" support. We continue to disseminate the latest mishap summaries, trend analysis, aviation near miss brief and other safety materials to your safety officers, as well as placing them on our website (https://safety.army.mil). Our goal remains the same — to get in front of mishaps through predictive analysis and drive them to zero.

With that in mind, I ask each of you to begin turning your focus to an alarming trend in Army Aviation that has, unfortunately, proven reliably consistent. The graph below depicts Class A mishaps relative to flight hours, by quarter, for each of the past five years.

As you can see, Class A mishaps have almost doubled during the fourth quarter of each fiscal year (with the exception of one) since FY15. In other words, we are experiencing roughly 40 percent of our Class A mishaps during the fourth quarter of every fiscal year. The graph also shows that flight hours for the fourth quarter remain relatively consistent with the other three quarters, so it is difficult to attribute this trend to increased OPTEMPO during the fourth quarter or end-of-year execution of unit flight hour programs.

The USACRC continues to analyze this problem from multiple perspectives. While fourth quarter mishap data from the past five years does not reveal any appreciable trends, this time period is ripe with risk factors that, when aggregated, present a complex situation increasing the chance for mishaps. We are looking closely at the impact of environmental and training factors, along with the summer permanent change of station and leader change of command cycles to see if personnel and leadership

## Aviation (Manned) Class A Mishaps




| | 1st QTR | 2nd QTR | 3rd QTR | 4th QTR |
|---|---|---|---|---|
| FY15 | 2 | 4 | 2 | 5 |
| FY16 | 4 | 2 | 0 | 2 |
| FY17 | 2 | 1 | 2 | 4 |
| FY18 | 2 | 1 | 3 | 5 |
| FY19 | 2 | 3 | 2 | 5 |
| Totals | 12 | 11 | 9 | 21 |
| Flight Hour Totals | 869284 | 775361 | 1008567 | 988170 |

turbulence, usually more pronounced later in the third quarter, has a residual safety effect in the fourth quarter.

We know from history and our own experience that risk increases significantly during transitions, whether it be the transition between distinct operations and phases or the transition from one leader to another. Seasoned Army leaders understand that establishing relationships and a shared understanding with supporting and supported units decreases confusion, misinformation and mishaps. Thus, we tend to be very deliberate in planning the transitions between commanders, ensuring sufficient time for onboarding briefings, touch points with certain staff functions, and even equipment inventories. But how deliberate are we with aviation safety officer (ASO) transition plans? Some recent feedback from the field indicates a lack of face-to-face handoff and, even worse, no continuity files for incoming ASOs. Personnel turbulence is nothing new in the Army, so we must anticipate and plan for it. If commanders emphasize, receive back-briefs on and make modifications to ASO transition plans, not only will the quality of those hand-offs improve, so will the unit risk profile.

As we think about leader transitions, particularly during periods of high personnel turbulence, consider that new leaders in positions of risk acceptance might be initially unable to holistically assess hazards in their new unit, installation or mission role. Limiting their risk acceptance authority the first several weeks as expectations are set and relationships built is one measure to ease the transition. Established ASOs and instructor pilots (IPs) can typically help the commander make good crew mix decisions, but those new to the unit will be unaware of numerous, potentially harmful, factors. In concert with the higher headquarters commander, it makes good sense for senior aviation officers, ASOs and IPs to limit new personnel as mission briefers and/or mission approval authorities for a pre- determined onboarding time and for scenario-based mission approval training, as programmed into the unit standing operating procedure. This will allow leaders to train the force on how to identify, assess and mitigate risk and ensure standardization of the mission approval process across the breadth of a formation. Finally, new commanders might consider implementing tactical and training imperatives, deliberate mission briefings and rehearsals at their level for a set amount of time to assess and appreciate the level of rigor within existing mission planning and risk management processes.

I hope these recommendations are the start of an engaging dialogue within your formations about how we prepare for success in the fourth quarter. We know the challenge is coming: We have a clear, established trend the past five years. However, the collective critical thinking, discussion and sharing of best practices within our community will allow us to reverse this trend… Winning matters! ■

***Readiness Through Safety!***

**BG ANDREW C. HILMES**
***Commanding General***
***U.S. Army Combat Readiness Center***

# Black Hawk Safety Performance Review: FY15-FY19

**In the five-year period FY15 – FY19 (1,739,289 flight hours), the H-60 series aircraft had 169 Class A - C mishaps recorded. There were 22 Class A, 21 Class B, and 126 Class C with a cost over $421 million in damage. There were 29 fatalities. The H-60 Class A flight mishap rate per 100,000 hours was 1.09. The Class A–C H-60 flight mishap rate was 7.13.**

- **H-60L:** While hover taxiing to parking, with the instructor pilot (IP) on the controls, the aircraft encountered a sudden wet microburst with a severe downdraft wind. The aircraft entered a left descending yaw which the crew was unable to stop.

- **H-60M:** During a shipboard landing, the main rotor system contacted the ship structure. The aircraft landed hard on the deck sustaining significant damage.

- **H-60L:** During combat maneuvering flight training the aircraft power to maintain flight exceeded the power available. The aircraft descended into the trees resulting in the aircraft being destroyed and serious injuries to two crewmembers.

- **H-60A:** During combat maneuvering flight training, the aircraft exceeded aircraft operational limits at an altitude insufficient to recover from the maneuver. Aircraft descended and struck a tree resulting in destruction of the aircraft and four fatalities.

- **H-60M:** During a dust landing, the aircraft touched down with the aircraft in a right drift causing the aircraft to roll over to the right. The aircraft was severely damaged and the crew suffered minor injuries.

***H-60M:** While ground taxiing near a forward arming and refueling point (FARP), the ground matting became unanchored and airborne. The matting contacted the cockpit, forward looking infrared (FLIR), aircraft structure, and other components resulting in damage.

- **H-60M:** While performing day, fast rope insertion operations, the fast rope was improperly released after troop insertion. As a result, the fast rope rebounded due to contact with terrain, then entered and compromised the main rotor system. The aircraft crashed resulting in four injuries and destruction of the aircraft.

- **H-60L:** While at 1,500 feet mean sea level and 140 knots in straight and level flight, the bond line between the TR pitch horn housing and the fiberglass skin of the torque tube section of the TR paddle disbonded and caused a severe vibration.

The vibration propagated to the opposing blade and caused stress to the spar until it failed and resulted in an eventual separation of the TR gearbox. The crew entered an autorotation and spun three times before contacting a tree and impacting the ground. The aircraft was a total loss with one fatality.

* **H-60L:** The aircraft was landing for a MEDEVAC mission when the crew reportedly experienced brownout conditions. The aircraft overturned upon contacting the ground.

* **H-60M:** During NVG two-ship formation training over water, the crew developed spatial disorientation (SD). The aircraft subsequently crashed into the water resulting in five fatalities.

* **H-60M:** During NVG overwater training, the aircraft experienced an engine failure at a hover. The aircraft settled into the water and submerged. One fatality.

* **H-60M:** During NVG live hoist training, the hoist cable developed significant oscillations. The flight medic on the hoist fell approximately 20-30 feet following severance of the hoist cable due to contact with the airframe forward of the main landing gear. One fatality.

* **H-60L:** While ground taxiing to the ramp for cold refuel, the aircraft's main rotor system contacted the airfield's control tower building resulting in significant aircraft damage.

- **H-60L:** During flight, the aircraft had an in-flight emergency (Np high side failure) and incurred damage during landing.

* **H-60M:** During NVG multi-ship brown-out landing, the aircraft encountered dynamic roll-over on touchdown. The pilot in left seat suffered fatal injuries and the aircraft was destroyed.

* **H-60M:** During an NVG infiltration training mission, a non-US soldier failed to exit the aircraft onto a rooftop successfully and fell 30 feet to the ground and sustained fatal injuries.

* **H-60M:** While conducting a landing to a dusty environment, the crew executed a go-around. A Soldier exited the aircraft while it was still airborne resulting in one fatality.

* **H-60L:** During an NVG MEDEVAC mission, the aircraft No.1 engine failed during approach to a helicopter landing zone (HLZ). The aircraft crashed and was destroyed. One fatality and three injuries.

**Engine failure/malfunction**

The H-60 had 30 Class A-C recorded mishaps for failures or malfunctions related to engine operations. Types of incidents included: total engine failures, overtemps (particularly on shutdown), malfunctions relating to overspeeds/ high side failures, and engine foreign object damage (FOD). Additionally, there were several failure to follow procedures incidents related to oil caps left unsecured and failure to remove engine inlet plugs.

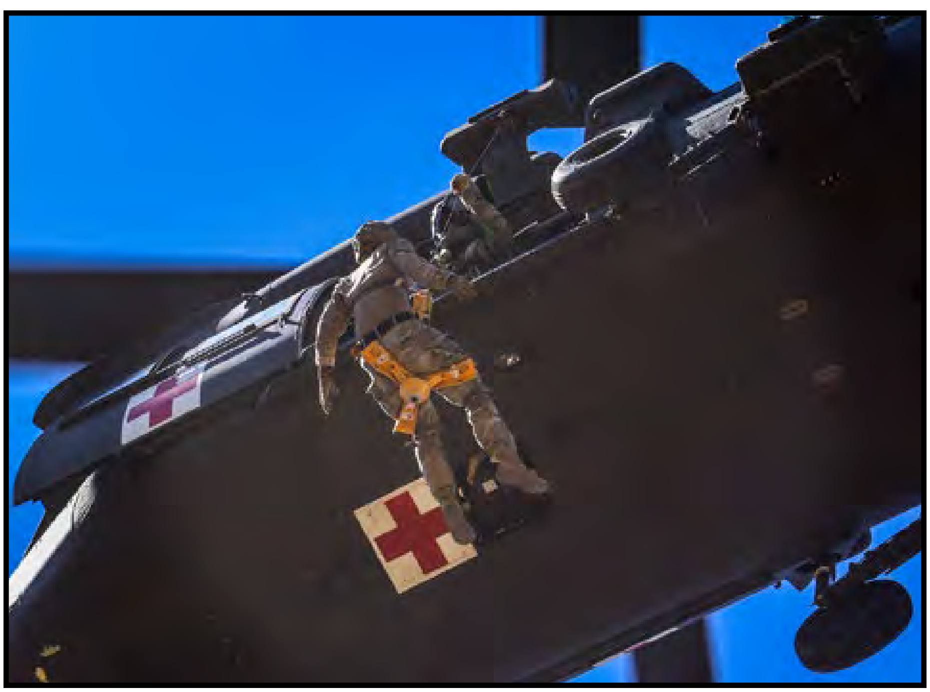
**External loads**

- The crew was conducting sling load operations while carrying a TRICON container, which contained an advanced aviation forward area refueling system (AAFARS). The load developed a continuous and uncontrollable spin during flight. The excess stress and friction created by the spin caused the sling legs to simultaneously fail resulting in separation of the load from the aircraft and impacting on a warehouse storage building. (Class C)

* During NVG external load operations, the crew reportedly experienced un-commanded release of the sling-load during set-up for final approach to the landing zone (LZ), from approximately 145 feet above ground level (AGL) and 48 knots indicated airspeed (KIAS). (Class C)

**Hoist**

- During hoist operations, the training block came off the ground and it struck the leg of a service member standing nearby resulting in injury. (Class C)



- The crew was conducting hoist reset when they experienced a hoist cable/motor malfunction, reportedly resulting in detachment of the cable from the hoist. The 600-lb concrete load descended to ground impact. (Class C)

*The nonrated crewmember (NRCM) who was operating the hoist lowered the medic (MO) to a grassy surface. On the last training iteration, the MO twisted his right knee. (Class C)

*A Soldier sustained a static electricity shock injury while being lowered by hoist from 100 feet AGL which reportedly knocked him out of the hoist upon contact with the ground. (Class C)

**Degraded Visual Environment**

There were 29 mishaps related to degraded visual environment (DVE) with 18 fatalities. Eight were Class A mishaps. Of the Class A's, five were associated with dust environments, two with IIMC, and one overwater SD. Most of the remaining Class B and Class C mishaps were brown out type events.

**Object Strikes**

*During a night, NVG, troop-insertion training mission the aircraft TR made contact with an obstacle on the LZ. Post-flight-inspection revealed damage to the stabilator as well as to the TR. (Class B)

- The crew was conducting nap-of-the-earth (NOE) flight training on an approved route when the aircraft contacted wires. Aircraft was landed without further incident. (Class B)

* The crew was conducting a roll-on landing during NVG, readiness level (RL) progression flight when the MRB made contact with the aircraft TR driveshaft cover. (Class C)

- The aircraft landed on a tree stump causing damage. (Class C)

* NVG – The aircraft forward looking infrared (FLIR) reportedly made contact with the ground during an NVG, VMC approach. (Class C)

- A bird entered the rotor disc vertically before the crew could take evasive action and it struck the red MRB tip cap causing damage and vibrations. The crew landed to an open field. (Class C)

- The aircraft TR made contact with concertina wire/ fence during landing. The aircraft sustained damage to the stabilator, intermediate gear box cover, and No. 2 engine hover infrared suppression subsystem (HIRSS). (Class B)

- The aircraft sustained tip cap damage upon MRB contact with a light pole during ground taxi to the FARP. (Class C)

* The lead aircraft, in a flight of two, sustained in-flight damage to the TR as the crew was returning from a local area orientation mission. Post-landing inspection revealed debris imbedded in the aircraft identified as a civilian DJI Phantom 4 quadcopter. (Class C)

- Ground taxi mishaps. There were 11 Class A – C object strikes associated with ground taxi mishaps. Increased vigilance by the aircrew is necessary to eliminate this preventable mishap category.

**Loss of Components/Open Cowlings**

- The aircraft was in flight when the left-side cockpit door came open resulting in separation of the Plexiglas window. The left-seat pilot suffered lacerations to the face and upper torso requiring treatment and quarters beyond the day of the accident as a result of flying shrapnel. (Class C)

- During post-flight inspection, the oil cooler door was found missing from the aircraft. Damage to one MRB and a SATCOM antenna was found also and is suspected they were damaged from oil cooler door separation in flight. (Class C)

- The No. 1 engine cowling separated from the aircraft at the mounting points. The separation resulted in contact with one MRB. (Class C)

**Miscellaneous**

- During aircraft run up, ice shed from the MRB and struck the back of a service member located at an adjacent aircraft. (Class C)

- While in flight, the crew chief stuck her right hand outside the gunner's window at approximately 120 KIAS causing an injury to her wrist. (Class C)

- The aircraft experienced a lightning strike while in flight. Post-flight inspection revealed damage to an antennae and one MRB. (Class B)

- A Soldier failed to conduct FOD check resulting in a tool being left in the engine causing the engine to be damaged. (Class C)

- The aircraft was flown without the TR inboard retention plate shims installed. Upon discovery and subsequent investigation, it was revealed one of the TR paddles was damaged beyond limits. (Class C)

- The crew was flying as lead in a flight of two aircraft in support of troop movement when they experienced flight control malfunction indications and performed a precautionary/emergency landing. Post-flight inspection revealed abnormal wear to the main rotor system swash plate assembly. (Class C)

- The crew landed subsequent to loss of No. 1 engine oil pressure during external-load training. Post-landing inspection revealed absence of the engine oil cap. The engine required replacement due to exceedance of 3.5-quart threshold for oil replenishment. (Class C)

- The No. 2 engine starter failed to disengage during the start-up sequence. A fire was discovered on the No. 2 engine and the crew activated fire bottles to extinguish the fire. (Class C)

- The crew was conducting dust landing iterations when debris was identified on the unimproved LZ. The crew chief (CE) exited the landed aircraft and 6 was in the process of collecting metal items when they were reportedly blown into the main rotor system, resulting in blade damage. (Class C)

- A moored and tied down aircraft sustained damage to the main rotor system when the airfield experienced reported wind gusts up to 57 knots. One MRB is reported to have separated and resulted in additional aircraft damage. (Class C)

**Summary**

Fourteen (64 percent) of the Class A mishaps occurred under night (N)/NVG conditions. Fifteen (37 percent) occurred while aircraft were deployed. In comparison to the five-year period FY10 – FY14, the H-60 Class A mishap rate remained relatively the same with FY10-FY14 at 1.04 and FY15-FY19 at 1.09 flight mishaps per 100,000 hours. The FY10-FY14 five-year period contained 22 Class A H-60 mishaps, equaling the 22 for the FY15-FY19 period. Additionally, there was a total of 161 Class A-C mishaps during FY10-FY14 compared to the total of 169 for the period of FY15-FY19.

For information that is more detailed, your safety officer can access it through the Risk Management Information System (RMIS) on the safety.army.mil website. Registration and common access card are required.

**Don't forget the Class Ds.**

Lessons learned from minor mishaps can be used to prevent more serious events in the future. There were 66 Class D mishaps reported. Often, these are similar to Class A, B, and C mishaps; having the same cause factors but resulting in a lower cost or reduced injuries.

**H-60 CLASS A – C Mishaps FY15 –FY19**

| FY | Class A | Class B | Class C | Class D | Class A Flt Rate | Fatal | Total Cost |
|---|---|---|---|---|---|---|---|
| 2015 | 7 | 9 | 21 | 20 | 2.05 | 13 | $123,028,564 |
| 2016 | 2 | 3 | 21 | 14 | 0.58 | 4 | $54,608,634 |
| 2017 | 7 | 2 | 34 | 12 | 1.72 | 8 | $167,414,460 |
| 2018 | 3 | 3 | 32 | 8 | 0.86 | 1 | $53,017,869 |
| 2019 | 3 | 4 | 18 | 12 | 0.28 | 3 | $23,704,661 |
| **Total** | **22** | **21** | **126** | **66** | **1.09** | **29** | **$421,774,188** |

**Mike model vs. steam gauges**

A comparison between the H-60M airframe and its non-digital counterparts shows:

**H-60M vs H-60A/L**

| Aircraft | Hours | Class A | Class B | FLT A Rate | FLT A-B Rate |
|---|---|---|---|---|---|
| H-60M | 786,881 | 12 | 5 | 1.27 | 1.91 |
| H-60A/L | 955,296 | 10 | 16 | 1.05 | 2.62 |

**Jon Dickinson**
*Aviation Division*
*Directorate of Assessment and Prevention*
*United States Army Combat Readiness Center*

# Littoral Attack Managing Risk in Maritime Operations

In 2018, the leadership of 4-2 Attack Reconnaissance Battalion (ARB) set about to design a culminating event that would challenge our crews to break from the counter-insurgency (COIN) mindset and re-engage in the deliberate planning process while expanding the capability of the battalion to support missions in the Republic of Korea area of responsibility (AOR). Executing a deep attack in an unfamiliar littoral environment provided an opportunity to holistically assess our organization's preparedness, identify capability gaps, and develop a plan of action for the coming year – building off our lessons learned. The October-December 2019 issue of Army Aviation Digest features details on the execution of the mission, but this article seeks to focus more on the scenario design and the steps taken by the leadership to identify and mitigate risk to enable safe execution during armistice conditions. While this training event was unilateral and included only assets organic to 4-2 ARB, much of our training occurs with our Republic of Korea partners in both combined and joint settings. Therefore, this article acknowledges the steps for risk management laid out in Department of the Army Pamphlet (DA PAM) 385-30, Safety Risk Management; however, we will focus more on our belief that tough, realistic training to prepare our formations for multi-domain operations (MDO) requires leaders to speak about risk management in terms utilized across joint/combined communities. Thus, as elements of the command team, we focus more on risk to mission and risk to force, while entrusting our company commanders, standardization pilots (SP), and aviation safety officers (ASO) to focus more on the principles of risk management.

**Defining Risk Management**

Risk management is an art, not a science. Joint Publication (JP) 3-0, Joint Operations, describes risk management as a "function of command and a key planning consideration that focuses on designing, implementing, and monitoring risk decisions" in order to help "commanders preserve lives and resources; accept, avoid, or mitigate (reduce or transfer) unnecessary risk; identify feasible and effective control measures where specific standards do not exist and develop valid COA's." (JP 3-0, III-16) This continuous process requires leader engagement, as managing risk is central to our role in the organization.

Understanding risk and ultimately mitigating risk goes beyond an assessed value on the risk common operating picture (R-COP) or deliberate risk assessment worksheet (DRAW). For those who have been doing this long enough, they may remember deployments where an R-COP produced a numerical value in an attempt to capture risk. While levels of risk clearly articulate final mission approval and ultimately the leader responsible for assuming risk, we should not let that final level deter us from seeking execution approval. While speaking to my Pre-Command Course at Fort Leavenworth in 2018, commanding general of the Combined Arms Center, LTG Michael Lundy, reiterated that assuming the necessary risk is part of what we do as commanders. He warned us that being risk-averse is dangerous, advising to focus on mission command, leader positioning and discipline to manage risk. Quite simply, leaders must not be risk- averse.

**Identifying Risk**

As previously stated, when framing a problem and

| RISK | REF | CRITERIA | LOW | MODERATE | SIGNIFICANT | HIGH |
|---|---|---|---|---|---|---|
| Risk to Mission | GEF TCP EXORD | Achieve Objectives (CCMD DailyOps) | Very Likely (81-100%) Can fully achieve all OBJs | Likely (51-80%) Can achieve all critical OBJs | Unlikely (21-50%) Can achieve only most critical OBJs | Highly Unlikely (0-20%) Potential failure; can't achieve critical OBJs |
| | CPG JSCP | Achieve Plan Objectives (Contingencies) | As Planned (Minimal Costs) | Limited Delays (Acceptable Costs) | Extended Delays (Substantial Costs) | Extreme Delays (Unacceptable Costs) |
| | CCMD | Authorities | Full authority provided to achieve all objectives | Sufficient authority provided to achieve most objectives, no critical shortfalls | Insufficient authority provided to achieve some critical objectives | Insufficient authority for key objectives, potential mission failure |
| | JCCA | Resources meet required timelines | As Planned (Minimal Costs) | Limited Delays (Acceptable Costs) | Extended Delays (Substantial Costs) | Extreme Delays (Unacceptable costs) |
| Risk to Mission & Force | CCMD & Service | Partnerships | Partnerships Effective | Critical Partnerships Effective | Critical Partnerships Partially effective | Critical Partnerships Ineffective, Potential Mission Failure |
| | | Messaging | Messaging Effective | Key Messages Effective | Key Messages Partially Effective | Key Messages Ineffective, Potential Mission Failure |
| | | DOTMLPF-P Capability vs. Threat Capability | Dominance | Superiority | Parity | Inferiority |
| Risk to Force | GFM | Meet CCDR Requirements (CCMD Daily Ops) | GFM Sourced ≥ 90% (Some shortfalls) | GFM Sourced ≥ 80% (No critical shortfalls) | GFM Sourced ≤70% (Critical shortfalls) | GFM Sourced ≤ 70% (Shortfalls cause mission failure) |
| | JCCA / GFM | Meet CCDR Requirements (Contingencies) | Full capacity to source all CCDR requirements | Shortfalls cause minor plan deviations (No critical shortfalls) | Shortfalls cause major plan deviations | Shortfalls cause plan failure |
| | JFRR & DRRS | Readiness (DRRS) | Full Spectrum C1 Full Capacity | Ready for MCO C1/C2 Some capacity shortfalls | Ready for Minor Armed Conflict Critical Capabilities C1/C2 Limited Capacity | Critical Capabilities ≤C2 Capacity shortalls cause mission failure |
| | GFM | Stress on AC Force | Minor Stress (DT > 1:2) | Moderate Stress (1:2 > DT > 1:1.5) | Major Stress (1:1.5 > DT > 1:1) | Extreme Stress (DT < 1:1) |
| | | Stress on the RC Force | Minor Stress (DT > 1:5) | Moderate Stress (1:5 > DT > 1:4) | Major Stress (1:1.4 > DT > 1:3) | Extreme Stress (DT < 1:3) |
| | JCIDS / CPR | Programmatic | Meets or exceeds schedule, IOC or FOC; incurred savings | Minor delays, milestone ≥ B Minor budget difficulty | Major Delays, milestone ≤ A Over Budget (Nunn-Mcurdy) | Program failure, Zeroed Out (De-funded) |
| | JCIDS / CJA | Force Development & Industrial Base | Meet all mission requirements | Meet priority mission requirements (no critical shortfalls) | Critical shortfalls cause major plan deviations | Failure to meet essential requirements causes mission failure |

understanding the associated risks to our unit, we speak in terms of risk to the mission (RTM) and risk to force (RTF). Such that, the military risk is the "estimated probability and consequence of the Joint Force's projected inability to achieve current or future military objectives (risk-to-mission) while providing and sustaining sufficient military resources (risk-to-force)" (Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3105.1, C-8.) While perhaps more applicable at the combatant command level, strategic leaders across echelons more and more speak in terms of RTM and RTF. This is critical for leaders viewing the world through the prism of the National Military Strategy (NMS) and seeking opportunities to better prepare their formations for the challenges of near-peer threat environments across MDO. Serving in Korea, RTM and RTF allow commanders at all levels to balance our "ability to attain steady-state, current operations and contingency plan objectives against the Services' abilities to support combatant command missions." (CJSCM 3105.1, C-8)

**Risks to Mission**

This article emanates from armistice conditions for which we identified and mitigated risk. However, as those who previously served in the Korean Theater of Operation (KTO) know, we remain ever ready to "Fight Tonight" and preparing our unit for combat operations remains paramount. Understanding RTM requires further exploration of its two subsets, future challenges and operational risk.

Future challenges risk. This risk reflects the future force's ability to achieve future mission objectives over the near and mid-term (0-7 years) and represents the genesis of this training event. Preparing our aviators to conduct littoral attacks "considers the future force's capabilities and capacity to deter or defeat emerging or anticipated threats." (CJSCM 3105.1, C-9) Replicating an anti-access/area denial (A2/AD) environment challenges our aviators to transform traditional attacks, such as maritime counter-special operations forces (MC-SOF) and deep attack, to meet future requirements to achieve success across MDO. Members of our command team each served multiple rotations here in Korea, as well as throughout the Central Command (CENTCOM) AOR. Transformation, not an incremental change to the MC-SOF mission is essential to enhance this unit's readiness over the near and long term. The deep attack was an opportunity to prepare our unit, as well as invest in our Soldiers and encourage them to embrace the challenges that future operating environments (OE) and near-peer threats present.

Operational risk. This risk reflects the current force's ability to attain current military objectives called for by the current NMS, within acceptable human, materiel, and financial costs (0-2 years) and better represents the challenges encountered during our armistice- training event. (CJSCM 3105.1, C-9) Specifically, the three areas of concern related to basing, capabilities, and civil considerations (agreements/permissions) presented operational risks which threatened to derail our training and required distinct mitigation measures to ensure they did not.

**Risks to Force**
Our problem was to design a training scenario that would prepare the unit for tactical risk (threat- based) while facing solely accidental risk (hazard- based). RTF at the combatant command (COCOM) level encompasses force management risk, which considers the ability to execute plans today (e.g., "Fight Tonight" on the Korean peninsula) to contingency missions (e.g., potential conflict arising over an economic exclusion zone or a disputed territory) in the near-to mid-term (0-7 years) and institutional risk, which reflects the ability of organization, command, management, and force development processes and infrastructure to plan for, enable, and improve national defense (0-20 years). (CJSCM 3105.1, C-9) Perhaps a bit macro or too strategic in scope, we view RTF in terms of hazards to our formation, "conditions with the potential to cause injury, illness, or death of personnel; damage to or loss of equipment or property; or mission degradation" - which in turn impact force management and long term impacts to the aviation enterprise or Army institution.

(CJSCM 3105.1, C-9) This was a training event and no unnecessary risk was worth launching our aircraft or endangering lives if the appropriate conditions were not in place. Experience matters when designing tough, realistic training, in that "managing risks related to such operations requires educated judgment, situational knowledge, demonstrated experience, and professional competence." (DA PAM 385-30) Routinely flying in littoral areas afforded us an understanding of hazards such as the corrosive effect of saltwater on our aircraft, bird strikes, and wire hazards in the vicinity of islands, varying sea states, and water temperatures impacting survivability and recovery, and unpredictable weather.

Extending beyond our normal training areas and flying longer routes took us beyond known safe landing areas (SLA's) and increased exposure to meteorological uncertainty due to a lack of weather sensors covering the West Sea. As an example, the authors encountered an un-forecasted snowstorm off the coast of Kunsan during the initial hazard surveys necessitating a special visual flight rules (SVFR) recovery for the team flight. Such an experience for a platoon or company would be much more significant and highlighted a need to mitigate appropriately.


Lastly, training as we would fight required our pilots to wear body armor on overwater missions, something many within our formation felt uncomfortable about due to perceptions that it would negatively impact their ability to egress and survive in the water.

Experience allows leaders to express risk in terms of probability versus severity. While the probability of an aircraft going into the water is low, the severity is high. As such, all overwater missions are moderate risk missions, a change implemented by this command team to ensure the highest risk flight profile based on severity (not probability) required the battalion commander's approval to ensure proper oversight, flight monitoring from the operations center, and prior notifications of theater personnel recovery (PR) assets. This represented a deviation from the 2nd Combat Aviation Brigade (CAB) standard operating procedures (SOP) which based risk approval on sea states and water temperature (impacting ability to survive and recover from the water).


**Mitigating Risk**

While our unit routinely flies over water, we had never flown routes of these lengths before, nor attempted to incorporate terrain to mask movements against an opposing force equipped with active air defense systems. Could our unit maneuver into a position of advantage, against an opposing force (OPFOR) equipped with Sentinel radar systems and simulated man-portable air-defense systems (MANPAD)? How long would we remain undetected with OPFOR scattered throughout the littoral islands? How would we respond to delays or contingencies during execution? This mission emphasized the importance of tough, realistic training, control measures, and leader locations during the fight. In order to mitigate risk, we focused on 1) incremental training, 2) parallel planning and rehearsals, 3) mission command.

**Provide a clear focus and end state to enable incremental train up**

During the initial phases of the exercise design, significant focus was placed on providing as much realism as possible. Designed to replicate potential real-world target sets, finding a suitable target area required stretching the range of the AH-64 to the maximum while simultaneously replicating the templated threat. Careful consideration was applied to the necessary performance planning to ensure that the routes could be flown with the necessary time on station projected to achieve the destruction criteria. Within the objective area, surrogates were selected that would replicate the type, quantity, and general performance characteristics of the real-world setting. This ensured that crews would have a clearly established parameter for mission success and ensured they would not be tempted to devolve into an open-ended fight. Partnership with our resident air defense brigade afforded us the opportunity to emplace a short-range air-defense (SHORAD) company with an organic Sentinel radar and Stinger platoon. Through the train-up, the battalion conducted progressive academic training on radar theory, aircraft survivability equipment (ASE) systems, and intelligence (S-2) briefs to familiarize crews with the real-world templates. We then applied similar performance constraints to the SHORAD company (who possessed superior capability) for their operations during the exercise.

During previous iterations of MC-SOF overwater operations, the battalion had at best deployed a platoon overwater simultaneously. In most cases, we were training team-sized formations in the conduct of our regular overwater flight training. The significant increase in the number of aircraft that would operate overwater for this scenario required an emphasis on training in basic overwater flight maneuvers with more than just a team. To this end, we increased the number of repetitions of platoon level flights with a focus on the formation of integrity and inadvertent instrument meteorological conditions (IIMC) response. There were also several iterations executed in the aviation combined arms tactical trainer (AVCATT) which incorporated littoral routes in order to prepare the companies for the battalion execution.

Parallel Planning and Rehearsal of Contingencies

Addressing basing concerns and civil considerations could mean altering our flight profiles to "fly friendly", which could come at a cost of training value and realism. Balancing the tactical and accidental risk, we flew down on several occasions to engage with local units and airspace controllers to ensure they understood our training objectives and had an opportunity to voice their concerns about our presence. From the beginning, the political sensitivity over the visual and audible signatures of our helicopters threatened to derail the training event, but fortunately, by engaging early and often, we built strong relationships and made concessions on altitudes and duration of training to appease the local community.

For leaders, visualization takes many forms but flying the routes, identifying the hazards, assessing your crews, and seeing the terrain allows you to confirm assumptions and ensures you understand the risks you will ask others to take. Control measures are a means of regulating forces or warfighting functions (Army Doctrine Publication (ADP) 6-0, Mission Command); control measures go beyond markings on a map. Leaders, who identify and mitigate risk, implement control measures in varying forms. Map and route reconnaissance identified safe landing areas (SLA), hazards, and known points of reference. For routes in areas of little visual reference, known points provided mitigation against Global Positioning System (GPS) degradation and low altitudes capitalize on minimal terrain relief for masking overwater.


We implemented hard decks along the routes for crossing known hazards and to minimize the impact on populated areas within company airspace coordination areas (ACA). These slight increases in altitude had the side effect of increasing the audible signature of our aircraft significantly within the littoral areas. While radar detection and acquisition were not affected due to terrain, the opposing force (OPFOR) heard the helicopters long before they reached their battle position. What we learned throughout:

Establishing separate weather minima for launch, enroute, and in the objective area is key

- Tough, realistic training expedites growth
- Control measures are essential to drawing down the risk
- Anticipate and coordinate to sustain the fight
- The plan lays the foundation, but rehearsals provide structure to keep the plan intact when things go awry

Throughout execution, sequencing all three companies through the forward arming and refueling point (FARP) remained our primary concern. It represented a chokepoint and integrating logistics planners early and incorporating them into all rehearsals proved vital to success. Our distribution platoon leader is an aviator, a deviation of the modified table of organization and equipment (MTOE) which continues to prove beneficial to our organization. Our forward support company (FSC) utilized two 3-point configurations to establish the FARP and a single point to facilitate observer-controller (OC) and PR aircraft. With more than 17,000 gallons in fuel capacity, the logisticians forecasted 12,000 gallons required to support each iteration. We allotted 25 minutes per company for refuel, but we acknowledge that arming aircraft would require an additional 20 minutes (45 minutes total) per company – something we plan to validate in future training events. Working with the Air Force base, we developed several holding areas in the event delays in the FARP or enroute caused overlaps between companies, which we rehearsed but did not have to execute.

**Emphasize Mission Command**

Based on the 240 plus kilometer (km) total distance and varying separation between formations, establishing over the horizon communications (OTH) and understanding our limitations for secure communication proved critical. Our communications section (S6) led by CPT Edwin Lee, spent a great deal of time conducting line of sight (LOS) analysis and integrating Gray Eagle planners to better understand their retransmit capabilities. Successful mission command for this mission-focused on basing, covered vulnerable periods of phasing and transitions between companies, and kept key leaders in continuous contact to assess and mitigate risk.

Focusing on those three elements of operational art, we employed three key command nodes:

- Standing tactical operations center (TOC) at home station led by the executive officer (XO)
- Forward deployed tactical command post (TAC) led by the operations officer (S3) and collocated with the FARP - 90 plus km from the TOC
- Battalion commander positioned with the lead company on the objective - 130 plus km from the TAC

From these locations and throughout execution, we learned a great deal about our reliance on satellite-based communications (SATCOM) and Blue Force Tracker (BFT), the need for high frequency (HF) radios, and additional capabilities of Gray Eagle companies. As highlighted, there were a number of concerns regarding risk in planning this mission. JP 3-0 states, "The commander determines the level of risk that is acceptable, with respect to aspects of operations, and should state this determination in commander's intent." (JP 3-0, III-16) As stated during our mission brief, our key tasks were:

1. Establish FARP on Kunsan AFB.
2. Integrate intelligence, surveillance, and reconnaissance (ISR) assets to capitalize on manned-unmanned teaming (MUM-T) capabilities and identify enemy assets prior to H-Hour.
3. Safely sequence all battalion (BN) aircraft into FARP in both day and night conditions and given restricted timelines.
4. Minimal disruption to the local populace throughout all phases.
5. Establish OTH mission command systems throughout all phases of the operation.

FARP and objective were significantly better. This highlighted both training and reporting gaps in the battalion's capabilities.

Each of these key tasks focused on areas of RTM or RTF, articulating to subordinates where our focus should remain as leaders. Additionally, we believe several areas enhanced success:

- Leaders must position themselves to best influence their formations

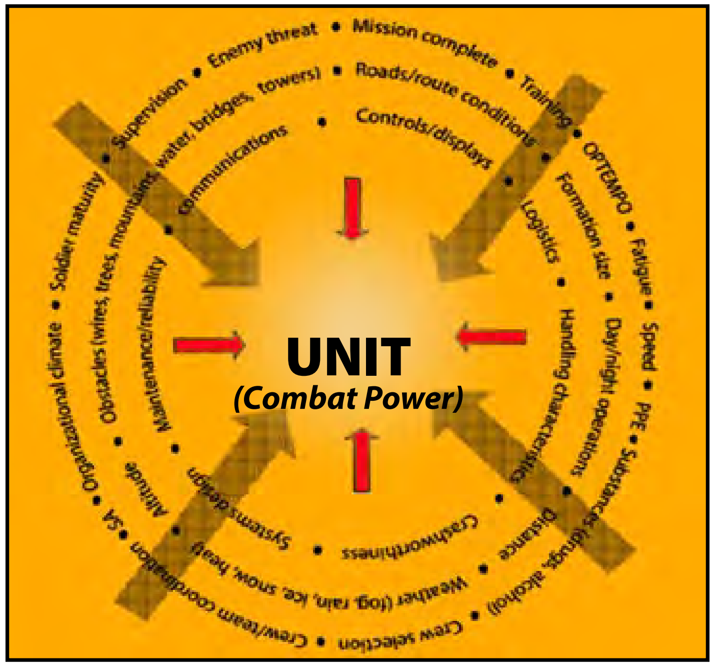



*Figure 1-1. Holistic approach of risk management*

- OTH communications enable mission command
- Exercise secure communications at every opportunity

**The Way Ahead/Conclusion**

Execution of the mission highlighted several risk factors that we had not properly classified or anticipated during our initial planning. First and foremost was the inability to accurately forecast weather across the depth of the mission. While we had informal observers at each land-based location, we had no fidelity on actual conditions for the lengthy overwater routes. As noted earlier, the un- forecast snowstorm and SVFR recovery by the authors remained with the crews preparing to execute.

During the first iteration, conditions were marginal visual flight rules (VFR) at departure and resulted in an aborted attempt even though conditions at the On the training front, we developed a set of degraded visual environment (DVE) training controls designed to encourage crews to train for marginal conditions in a safe manner. These controls were developed with terrain and recovery capabilities in mind and ensured that our crews could continue to build their comfort level in marginal environments. On the reporting front, we have researched the acquisition of remote weather reporting stations and encouraged the increased use of weather modeling applications for our crews to assist in their decision-making. While the staff weather office still provides our official forecasts, we have encouraged crews to arm themselves with as much information as possible to make informed decisions.

The second major observation with impacts on RTF and RTM was the incomplete transition into the MDO training mindset. The inclusion of live radar and MANPAD simulators was not fully appreciated by our crews in the first set of iterations. Several aircrews did not even turn their systems on and those who did generally ignored the indications they were receiving. There were gaps in fire discipline that would not normally occur with team level maneuver, resulting in several significant overkill situations. These issues were not fully discovered until the execution of the after-action review (AAR), where each aircraft and OPFOR video was played back for the crews in a synchronized fashion. The AAR was valuable in that it highlighted the importance of fully transitioning into the MDO environment and in training how we fight. Too often, when we simulate training events, we do not take them to their fullest implementation. Now it is becoming more commonplace in the battalion to regularly fly in weapons train mode with the aircraft and ASE systems armed but was not prior to our in-depth AAR format.

Our use of a live radar set also highlighted a critical capability gap with respect to counter radar maneuvers. With the 3900 series tasks still not fielded, our crews lacked a legal means to counter potential unexpected or unanticipated threats. In an MDO environment with larger formations and closer proximity to terrain (or water), this would represent significant RTF and RTM values. Once fielded and trained, units must develop 3900 training evolutions that focus on their templated area of operations and profiles. They must also challenge themselves to execute larger formation sizes and develop sound battle drills in order to mitigate the collision risk associated with the maneuvers. While it is acknowledged that detailed mission preparation and planning are the most important aspects of countering these threats, it would be foolish to not also prepare for the unknown throughout the mission planning and rehearsal process.

Transitioning to train for MDO requires a culture shift in a community dominated by COIN deployments. This is particularly true when we incorporate the additional hazards of the littoral environment. Gone are the days of permissive environments and "call-sign-frequency-grid" operations. A return to deliberate planning that starts with the scenario design itself is necessary if commanders expect proficiency to be developed. That all begins with the establishment of clearly defined training objectives set through self-evaluation of their units, the identification of weaknesses, and a firm understanding of where RTF and RTM exist. Scenario planners must coordinate appropriate resources, develop appropriate training, and validate their plans appropriately in order to provide the most realistic training environment possible given their constraints. Once the scenario is developed, deliberate mission planning and rehearsals must be enforced at each echelon. The strategic placement of Air Cavalry Leader's Course graduates will go a long way towards enhancing this mindset and training it throughout the formation. After each iteration, deliberate AARs must be conducted so that crews can learn from their (and each other's) mistakes in order to mitigate risk for future operations.

Risk exists in everything we do as Army aviators. As we continue the shift towards MDO we owe it to our formations to understand the varying forms that it may take, ensure that we create training environments that balance risk and complexity as much as possible, and develop tough, realistic sustainment training in order to mitigate the rest. ■

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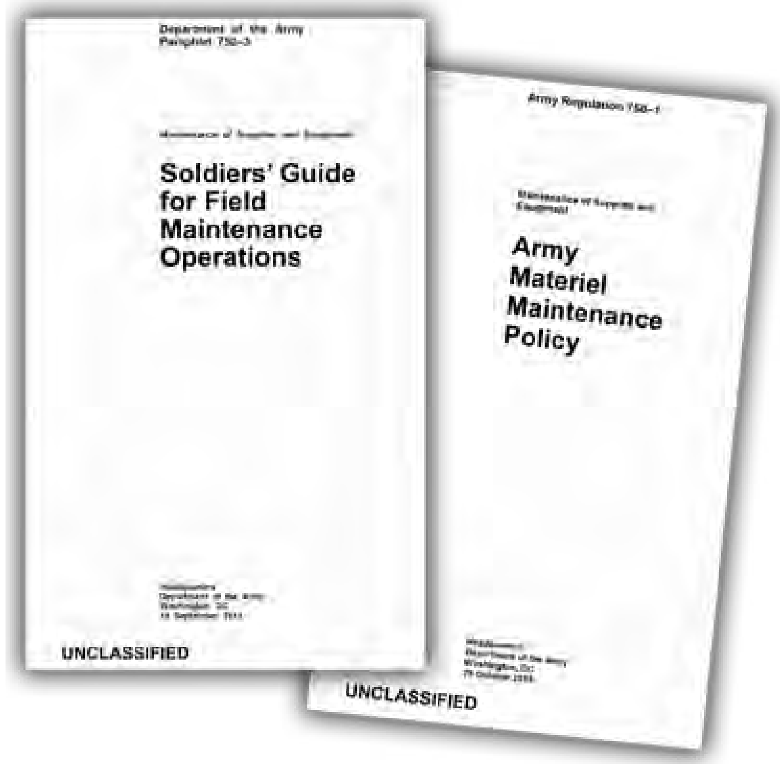
**LTC Ryan P. Sullivan**
***Battalion Commander***
***4-2 Attack Reconnaissance Battalion***
***2nd Infantry Division***

**CW4 Daniel J. Layman**
***Senior Warrant Officer***
***4-2 Attack Reconnaissance Battalion***
***2nd Infantry Division***

# I Know What Right Looks Like, Do You?

With the high operations tempo (OPTEMPO) of the Army over the last 18 years, we have lost a lot of experience and forgotten how to accomplish simple everyday tasks from conducting "motor stables" to proper "field recovery" of our equipment. Believe it or not, the Army has a manual and the unit should have a standing operating procedures (SOP) that cover each task and operation we conduct. The inherent problem is we don't always know where to look to find the information necessary to properly execute a task or procedural operation. The equipment operator's manual is the best place to start. If you are not able to find the correct answer there, I would refer to your unit's SOP. Too often Soldiers are cutting corners to accomplish tasks because they have not been shown what right looks like or have been trained improperly by leaders and supervisors who weren't properly trained. Shortcuts lead to putting yourself in a compromising situation which often leads to an accident that damages personnel, equipment, or results in a fatality.

Using the operator's manual will not mislead you and eliminates the chances of someone questioning what you are doing. Maintaining your equipment is essential for safe and effective operations and allows for operational readiness. The easiest way to safely conduct these preventative maintenance checks and services (PMCS) is to follow the step-by-step procedures outlined for the daily, weekly, monthly, and annual inspection. Army Regulation (AR) 750-1, Army Materiel Maintenance Policy and Department of the Army (DA) Pamphlet (Pam) 750-3, Soldiers' Guide for Field Maintenance Operations provide detailed information on the importance of a PMCS and following the procedures in manuals and SOPs.




**AR 750-1**
**Operator and/or crew maintenance**

Operator and/or crew maintenance is the first and most-critical operation of the Army maintenance system. It is the cornerstone of Army maintenance and starts with the operator and/or crew performing PMCS using the applicable technical manual (TM) 10 series (commonly referred to as the Dash Ten). The before and during PMCS concentrate on ensuring equipment is fully mission capable (FMC). Maintenance procedures normally assigned to operator and/or crew includes the following:

a. Performance of PMCS.

b. Inspections by sight and touch of accessible components per the TM 10 series and condition based maintenance indicators or instrumentation.

c. Lubrication, cleaning (including corrective actions to repair corrosive damage), preserving (including spot painting), tightening, replacement, and minor adjustments authorized by the Maintenance Allocation Chart (MAC).

d. Limited diagnosis and fault isolation as authorized by the MAC. This requires appropriate resources onboard the equipment or system to perform these tasks.

e. Replacement of combat spares (unserviceable parts, modules, and assemblies) as authorized by the MAC and carried onboard the equipment or system.

per AR 750–1. The maintenance SOP may be an annex to the unit's SOP, an annex to the unit's logistics SOP, or a stand- alone document. The purpose of the SOP is to formally describe the way a unit performs maintenance on weapons, vehicles, communication equipment, chemical, biological, radiological and nuclear gear, and other individual and unit equipment. The unit maintenance SOP will be written in enough detail to give recently assigned personnel, a firm grasp of how maintenance is to be accomplished in the unit. Personnel should have an opportunity to review it during in-processing. Training on the SOP should take place with new personnel and during scheduled unit training as a refresher. The training conducted followed by supervision of task is how you learn what right looks like.

Preventive maintenance checks and services
Preventive maintenance checks and services is the care, servicing, inspection, detection, and correction of minor faults before these faults cause serious damage, failure, or injury. The procedures and the category of maintenance to perform PMCS are found in the TM, Lubrication Order (LO), and Electronic Technical Manuals (ETM) XX–10 and XX– 20 series. You may often hear of supervisors talking about bringing equipment up to 10/20 standards. They are referring to executing the maintenance checks and services in these two ETM to have an FMC piece of equipment.

PMCS is the first line of defense against substandard readiness and operating faulty equipment. The ability of a unit to load out and deploy successfully to support the Army's mission starts at ground zero which is operator maintenance. This is just as important for your air compressors and shop equipment as it is your vehicles, primary movers, and aircraft. Taking the time to complete by the book maintenance on PMCS of equipment and vehicles allows your unit the ability to ensure your equipment is operable or you are able to identify defects and resolve the issue through maintenance or requisitioning of parts. The time to find out your equipment has a problem shouldn't coincide with deployment orders.

**DA Pam 750-3**

Need for standing operating procedures All units performing maintenance are required to have a maintenance SOP signed by the unit commander

I encourage every Soldier and leader to get back in the books and take time to learn what right looks like because it will save you in the end. Deferring or blowing off routine maintenance does not allow the system to work properly which results in delays and a loss of unit combat power. ■

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*Army Publishing Directorate (APD) https://armypubs.army.mil/*

*AR 750-1 Army Materiel Maintenance Policy*

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**CW4 Robert Moran**
***Aviation Accident Investigator***
***Aviation Division***
***Directorate of Assessments and Prevention***
***United States Army Combat Readiness Center***

# Mishap Review

# UH-60M Spatial Orientation

While performing duties as the air mission commander/pilot in command (AMC/PC), the AMC/PC departed in conditions that were less than the minimum weather requirements briefed. The aircraft encountered inadvertent instrument meteorological conditions (IIMC). The AMC/PC became spatially disoriented (SD) causing him to place the aircraft into an unrecoverable flight attitude. The aircraft crashed into the water at a high rate of speed/descent, resulting in 11 fatalities and catastrophic damage.

**History**

The mishap crew was conducting training operations at a coastal special operations training area. The mission was supporting Marine Special Operations Command (MARSOC) personnel in training for over water infiltration/exfiltration. Two aircraft supported the multi-day operation with two pilots and two crew chiefs each. The training used the crawl, walk, run methodology, with the first missions being in daylight and the run portion under night vision goggle (NVG) conditions. The crawl and walk portions were executed without any issues and the crews prepared to execute the NVG portion on the third training day.

On the day of the mishap, the crews staged from a training site near the overwater location. Both crews and the MARSOC personnel conducted ground rehearsals prior to overland daylight training of the mission tasks and followed this with overwater daylight execution. The crew and team then conducted mission reviews, ate, and prepared to conduct the tasks during night conditions. The third day the aircraft were enroute along the shoreline headed to the overwater drop zone (DZ). As the aircraft continued along the route, the visibility continually worsened due to a dense layer of fog.

Once the aircraft transitioned to over water conditions IIMC was encountered when the fog engulfed the mishap aircraft. The trail aircraft turned around and flew back to the staging area landing zone (LZ). The mishap aircraft crashed into the water west of the training DZ.

**Crew**

The PC had 3,474 hours in MTDS and 6,122 hours total time. The pilot (PI) had 1,782 hours in MTDS and 2,483 hours total time.

**Commentary**

The AMC/PC failed to implement risk mitigation and to follow approved mission briefing requirements. He allowed the two aircraft to depart for the NVG training with weather ceiling and visibility below the briefed requirements (briefing required the mission to have a minimum of a 1,000-foot ceiling and 3-mile visibility to takeoff and execute.) This failure to follow approved mission parameters resulted in the aircraft encountering IMC conditions. Once IIMC, the pilot became SD which caused the aircraft to be put in an unrecoverable attitude. The AMC/PC actions resulted from indiscipline and overconfidence.

Mission briefing requirements are put in place to mitigate risks to mission and crews. While situations with weather and threats can change, the briefed requirements do not. Aviation crews always have a desire to get the mission done, but crews should be cognizant of the risk they put their crew, passengers, and mission in when they violate the mission briefed parameters. Aviation personnel should be ready to accomplish the mission, but use sound judgment when parameters go outside of what they are briefed for, contact the appropriate briefer and final mission approval authority and re-brief. If the risks increase, then the appropriate actions should be taken to modify or abort the mission. Aviators need to leave that decision to the appropriate approval authority at the appropriate level and live to fly another day. ■

# Class A - C Mishap Tables

| | Manned Aircraft Class A – C Mishap Table | | | | | | | | | as of 27 Apr 20 |
|---|---|---|---|---|---|---|---|---|---|---|
| | Month | FY 19 | | | | | FY 20 | | | |
| | | Class A Mishaps | Class B Mishaps | Class C Mishaps | Fatalities | | Class A Mishaps | Class B Mishaps | Class C Mishaps | Fatalities |
| 1st Qtr | October | 1 | 1 | 4 | 0 | | 2 | 1 | 5 | 0 |
| | November | 0 | 0 | 3 | 0 | | 1 | 1 | 1 | 2 |
| | December | 1 | 1 | 2 | 0 | | 1 | 1 | 2 | 3 |
| 2nd Qtr | January | 1 | 1 | 0 | 0 | | 0 | 0 | 4 | 0 |
| | February | 2 | 0 | 0 | 0 | | 1 | 0 | 5 | 0 |
| | March | 0 | 1 | 5 | 0 | | 1 | 1 | 4 | 0 |
| 3rd Qtr | April | 0 | 1 | 3 | 0 | | 0 | 1 | 0 | 0 |
| | May | 2 | 2 | 6 | 1 | | | | | |
| | June | 0 | 0 | 5 | 0 | | | | | |
| 4th Qtr | July | 2 | 1 | 2 | 0 | | | | | |
| | August | 1 | 0 | 3 | 1 | | | | | |
| | September | 2 | 1 | 8 | 1 | | | | | |
| | Total for Year | 12 | 9 | 41 | 3 | Year to Date | 6 | 5 | 21 | 5 |
| | Class A Flight Mishap rate per 100,000 Flight Hours | | | | | | | | | |
| | 5 Yr Avg: 1.08 | 3 Yr Avg: 1.09 | | FY 19: 1.15 | | | Current FY: 1.16 | | | |

| UAS Class A – C Mishap Table | | | | | | | | | as of 27 Apr 20 |
|---|---|---|---|---|---|---|---|---|---|
| | FY 19 | | | | | FY 20 | | | |
| | Class A Mishaps | Class B Mishaps | Class C Mishaps | Total | | Class A Mishaps | Class B Mishaps | Class C Mishaps | Total |
| MQ-1 | 9 | 2 | 3 | 14 | W/GE | 3 | 0 | 2 | 5 |
| MQ-5 | 1 | 0 | 0 | 1 | Hunter | 0 | 0 | 0 | 0 |
| RQ-7 | 1 | 12 | 38 | 51 | Shadow | 0 | 6 | 10 | 16 |
| RQ-11 | 0 | 0 | 0 | 0 | Raven | 0 | 0 | 0 | 0 |
| RQ-20 | 0 | 0 | 1 | 1 | Puma | 0 | 0 | 1 | 1 |
| SUAV | 0 | 0 | 0 | 0 | SUAV | 0 | 0 | 0 | 0 |
| | | | | | | | | | |
| UAS | 11 | 14 | 42 | 67 | UAS | 3 | 6 | 13 | 22 |
| Aerostat | 1 | 1 | 1 | 3 | Aerostat | 2 | 0 | 0 | 2 |
| Total for Year | 12 | 15 | 43 | 70 | Year to Date | 5 | 6 | 13 | 24 |
| UAS Flight Mishap rate per 100,000 Flight Hours | | | | | | | | | |
| MQ-1C Class A | 5 Yr Avg: 9.56 | | 3 Yr Avg: 9.87 | | FY 19: 8.77 | | Current FY: 5.92 | | |
| RQ-7B Class A-C | 5 Yr Avg: 58.29 | | 3 Yr Avg: 69.64 | | FY 19: 109.84 | | Current FY: 91.53 | | |

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

FlightFax
REPORT of ARMY AIRCRAFT ACCIDENTS
October 1996 • Vol 25 • No 1

# The Challenges of Change

Change. The Army's gone through a lot of it in the past 5 years. We've become a new force, a smaller force, a force that not only defends the nation militarily but also takes on new, nontraditional missions. And much of the time, we conduct operations as part of a joint and combined force. We've transitioned from a forward-deployed, forward-defense, major-land-war Army to a CONUS-based, contingency-force-oriented, crisis-response Army that must prepare to react to uncertain threats.

**The new reality**

All this is now a reality. It's not just coming; it is here. The radical changes we're dealing with as well as those we have yet to face require corresponding changes in the way we look at doing our business. Why? Because, one thing has not changed; accidents are still a major threat. And, as the Army has shrunk in size even as our missions have grown, every accident has become more expensive not only in terms of manpower and money but in terms of readiness. Today, more than ever before, every mission requires precise evaluation, precise planning, and precise execution.

Risk management integration into all three is the key to protecting the force. We have a simple risk management process that we can apply to everything we do. All we have to do when we receive a mission is to work the hazards and controls in the five-step process:

**Step 1. Identify hazards.**

**Step 2. Assess hazards.**

**Step 3. Develop controls and make risk decisions.**

**Step 4. Implement controls.**

**Step 5. Supervise and evaluate.**


Simple, right? So how come we're not all doing it? It has to do with our culture.

**Our cultural dilemma**

Some aspects of Army culture effectively exclude the risk management process. After all, risk management leaves no place for:

- The 'Hooah Factor,' the 'We can do anything, anywhere, anytime, at any cost' attitude that's so much a part of our Army culture.
- The need to 'do more with less' mindset.
- Our inbred reluctance to say 'No.'
- Making decisions based on the way we've always done it.
- Letting 'somebody else' worry about the hazards involved in our missions.
- Doing only what we have to do and not giving a thought to what we ought to do, such as wearing flak jackets in all live-fire training even when it's not required by regulation. In other words, doing the harder right versus the easier wrong. The solution to this cultural dilemma seems to be pretty straightforward: change the culture.

**Can we change our culture?**

Absolutely we can. And it doesn't have to take forever. We've made some huge changes in our culture during the relatively recent past. We've seen:

- Yesterday's macho image of the hard-drinking, hell-raising soldier replaced by today's image of the responsible, self-disciplined soldier.
- Yesterday's attitude that accidents are simply the cost of doing the Army's business replaced by today's attitude that accidents are neither necessary nor acceptable.
- Yesterday's attitude that high risk is inherent in hard, tough, realistic training replaced by today's attitude that risk management enables us to train harder, train tougher and train even more realistically with less risk.
- Yesterday's acceptance, even celebration, of a Class A accident rate of 5, 8, and even 10 accidents per 100,000 flying hours replaced by today's attitude that a rate of less than one is still too high.
- So, no, cultural change is not impossible. But it's not going to be easy for a number of reasons.

**Barriers to cultural change**
Certain of today's realities stand in the way of our easily changing the way we do business. For example:

- Smaller Army with more missions. Doing more and more with less and less results in little or no time to learn the lessons of the last mission or to adequately prepare for the next. Leaders and their staffs are so busy that they are off planning the next mission while the troops are executing the current one. There's so much to do, we stay with what we know, 'the way we've always done it.'
- Personalities. We have leaders at all levels whose style it is to say, "I don't want to hear excuses; if you can't do the job, I'll find somebody who can." And there are soldiers of all ranks who simply don't have it in them to tell the boss something he or she doesn't want to hear. And so we are encouraged to stay with what we know, 'the way we've always done it.'
- Competition. It's a hard thing to point out a problem, especially when nobody else is complaining. Doing so could be perceived as whining and give our peers an edge over us. So we go along, staying with what we know, 'the way we've always done it.'

'

- Career aspirations. Today's Army consists of quality competing with quality. May heaven forbid that leaders become more concerned about their careers than about their troops, but the opportunity exists. We all have career aspirations and, therefore, walk a cautious line. As a result, we tend to stay with what we know, 'the way we've always done it.' The Army has experienced significant change, creating a cultural dilemma we must overcome.

**How do we do it?**
Leaders at all levels are responsible to protect the force. They are required to make unencumbered, conscious (vice unconscious) decisions to either eliminate hazards or accept risks. The mindsets previously discussed are encumbrances to clear decision making. A standard process linked to proactive leadership can be an effective means to overcome our cultural dilemma. Risk management is that process. When it comes to payoff versus effort, consistent use of the five-step risk management process offers an unparalleled win-win opportunity, a way to get any job done with a clear focus on hazards and controls to mitigate risks. The risk management process gives us a standard procedure, regardless of mission or force mix or location, to deal with today's realities of uncertainty and high optempo, which demand that.

- We know and perform to established standards, every time, in everything. Using our standard five-step risk-management process is a credible way to challenge and eliminate the 'That's the way we do it in this unit,' mentality and get everybody doing things right to Army standards.
- We make effective communication the norm up and down the chain of command. A by-product of the risk management process will be improved communication as we make it not only acceptable but expected for everyone involved at every level to articulate to the boss the hazards, controls, and resources required to mitigate the risk of every mission. Risk management becomes the standard way of doing business. It is linking a process with leadership; that's capturing the power of risk management. Consider how it is in the cockpit, where we stress aircrew coordination and cockpit communication. Every crew member is expected to speak up, which eliminates many of the inhibitors to effective communications: rank, age, experience, job, and so forth.

- Combining this idea with the risk management process outside the cockpit would improve communications throughout the chain of command.
- We make good decisions based on facts, not on fear of being perceived as weak or negative. If we all speak the same language and work the same process of risk management, everybody will understand and no one will mistake the articulation of hazards ("Here's the level of risk for this mission (or task), Boss, and I need your help to bring it down to an acceptable level and still accomplish the mission without any loss") for making excuses ("What's the matter? You can't do it?").
- We make it not just acceptable, but mandatory, to tell the boss "No, we can't do that" when risks are too high. If we work the five-step risk-management process at every level, the yes will come, but only after the risks have been controlled to an acceptable level or someone with the proper authority at the proper level makes a conscious, fully informed decision to accept that risk.
- We once and for all destroy the notion that we'll do things differently when the shooting starts, that we'll abandon standards and all that other 'training stuff.' Risk management is not only an enabler to realistic training, but its across-the-board methodical use will also be the best method we have of making sure that the only threat we face in combat is the enemy.

**Where do we start?**

We start by making risk management, identifying hazards, putting controls in place, the standard way we do business in the Army. So, how do we do that? We base it on doctrine. Doctrine is the engine of change in the Army; it drives change not only in training, equipment, and organization but also largely in Army culture, those attitudes and thought processes that make the Army what it is. This being the case, the catalyst for embedding risk management in our culture is already in our doctrine. FM 100-5: Operations, our keystone warfighting text, was significantly updated in 1993 to stress the principles we need to learn and understand to maintain the edge in future theaters of war. A key update was the addition of safety as a component of the protection element of combat power. Safety has also been included in joint-operations doctrine since 1995 (Joint Pub 3-0: Doctrine for Joint Operations). That doctrine specifies that protection of the force through the integration of safety into all aspects of planning and execution is crucial to successful operations. Just as doctrine and policy changes are capturing the top-down approach to risk-management integration, so too TRADOC is working the bottom-up approach through the integration of risk management into the officer, NCO, and civilian schools. All that's left is for the field to shoot to the middle and just do it, just integrate risk management into all that we do.

**Summary**

The Army has done remarkably well in reducing accidents, thus saving lives, especially in the past few years even as global responsibilities have increased. A combination of factors has had a direct impact on this success. First and foremost is proactive leadership at all levels. Second is the fact that we have clear and achievable standards for every individual and collective task soldiers are required to perform. Third is teamwork. It is the essence of how we do business. The fourth is the information flow to enhance communications between decision-makers. These four elements are institutionalized throughout our Army today. The fifth ingredient that needs to be institutionalized is a process, the risk-management process. Once embedded as a systems approach to business, we can consistently achieve world-class safety performance. We must embrace risk management as a sound investment in readiness, not as just another 'safety requirement' that has nothing to do with our real mission. The true cost of our failure to protect the force through risk management will be paid out of lives and equipment, and thus out of readiness. And that's a price we simply cannot afford to pay. ■

**BG Thomas J. Konitzer**
***Former Director of Army Safety***
***and Commanding General U.S. Army Safety Center***

# Mishap Briefs #87

**ROTARY WING**

**UTILITY**

**H-60**

**M Model**

- The aircrew encountered degraded visual environment (DVE) conditions and lost sight of the ground during landing at a landing zone (LZ). The aircraft's main rotor blades (MRB), while in a rolling motion, made contact with the ground. The aircrew performed an emergency shutdown in accordance with (IAW) the checklist. The aircrew did not sustain any injuries. (Class A)
- The aircraft experienced a hard landing which resulted in the forward looking infrared (FLIR) system contacting the ground and the main landing gear struts being damaged. (Class B)
- During the post-flight inspection of the aircraft, the crew noted damage to the underside of the blue MRB. The crew had just completed aerial gunnery operations. (Class C)

**H-72**

**A Model**

- During home station training, the crew was conducting a practice autorotation. The aircraft tail stinger and vertical stabilizer struck the ground when the aircraft was allowed to get too low during the task execution. The crew was able to hover the aircraft to the parking ramp and shutdown without incident. (Class C)

**UNMANNED**

**MQ-1**

**C Model**

- The unmanned aerial system (UAS) encountered thunderstorm cells while conducting operations. The UAS was maneuvered around the thunderstorms and continued the mission. During the UAS post-flight inspection, extensive composite damage to the UAS was noted. (Class C)

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## AIRCRAFT MOORING

Something as small as slack in the ropes and chains can tell you a lot about the person that installed them on the aircraft as well as the culture in the unit if you see other aircraft looking the same. Not only is not establishing and enforcing standards contagious, it can be costly. When aircraft are not properly secured in accordance with (IAW) Technical Manual (TM) 1-1500-250-23, General Tie-Down and Mooring on all Series Army Models AH-64, UH-60, CH/MH-47, UH-1, and OH-58 Helicopters, Change No. 5 dated April 2009, it increases the chance for aircraft damage. This manual supplements, clarifies, standardizes the tie-down and mooring procedures in the TMs for all these series helicopters to the maximum extent practical. When a conflict exists between the aircraft TMs, TM 1-1500-250-23 shall be followed.

Technical Manual 1-1500-250-23 became necessary because of the apparent ineffectiveness of tie-down and mooring procedures, or lack thereof. In the spring of 1989 Army aircraft at Ft. Hood and Ft. Polk experienced extensive and costly damage as a result of very high winds. In each instance, severe storm warnings had been issued and the then-current procedures were followed within available time and capabilities. Despite these measures, serious damage to aircraft and losses to the Army in combat readiness and resources occurred. According to TM 1-1500-250-23, if aircraft are not to be flown, they shall be left tied down and moored.

In November 2017, three new CH-47F helicopters based in Huntsville, AL, were damaged when a microburst hit the airfield resulting in $458,863.00 in damages. These aircraft were not secured IAW TM 1-1500-250-23 and that led to the severity of this accident. A bent pitch control link is just some of the damage to one of the CH-47Fs. These aircraft sustained rotor blade, head damage, and other airframe damage, all because individuals failed to follow the standards that are published. If someone sees a standard that is not being followed and no action is taken to correct it, they are contributing to the failure.

### Mooring on non-paved surfaces

How many times has your unit gone to the field and never secured their aircraft? Believe it or not, it is recommended for all tactical environments (non-paved surfaces) to use the Ground Anchor Kit National Stock Number (NSN) 8340-00-951-6423. FEDLOG cost per kit shows $184.51. These kits are a one-time use product, meaning you are not able to remove them from the ground unless they are dug up.

### Additional Info

The TM for tie-down and mooring is full of information that aviation crews and support personnel should be very familiar with. We all can make a difference in protecting our combat aircraft. Maybe some support personnel didn't know that the tie-down and mooring TM tells H-60 and H-64 to set their horizontal stabilator in the neutral position or zero degrees. Were you aware the CGU-1B, 5,000-pound capacity nylon tie-down strap, NSN 1670-00-725-1437, is only authorized when hardstand-mooring points are not available and the field mooring kit is used? For tie-down lines to main rotor blades, the line shall be taut but use care that you ensure the blades aren't deflected below the static jacking, droop position as stated in your aircraft TMs.

## 5 Questions

1. **Are you required to tie-down and moor your aircraft when they are not to be flown? Yes or No?**
2. **There is no way to moor your aircraft when in the field? True or False?**
3. **H-64 and H-60 stabilator should be set to zero degrees when?**
4. **When can the CGU-1B tie-down be used?**
5. **Where can you find the static jacking, droop position for your aircraft blades?**

TIE-DOWN and MOORING
UNITED STATES ARMY
TM 1-1500-250-23
ON ALL SERIES
UH-1 AND OH-58 HELICOPTERS
HEADQUARTERS, DEPARTMENT OF THE ARMY
24 AUGUST 1990
Make sure you moor it like the TM-1-1500-250-23 instructs.
Tie it down IAW your -10.
Protect your aircraft like lives depend on it... BECAUSE THEY DO!
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