THE FORGOTTEN MISSION-ESSENTIAL TASK:

Soldiers conduct a downed aircraft recovery team (DART) exercise at Hunter Army Airfield, Georgia. U.S. Army photo by SGT Andrew McNeil.

Reprioritizing Army Aviation's Battle Damage Assessment, Repair, and Recovery in Contested Environments

By CPT Caleb M. Kifer

Introduction

Several challenges exist in effectively training and executing battle damage assessment and repair (BDAR) and dedicated recovery operations. These challenges include inconsistency in doctrine and evaluation, difficulties in effectively training maintainers, and task organizing for these operations. As with any complex problem, there is no one-size-fits-all solution; Army Aviation must take a multifaceted approach that addresses each deficiency to effectively equip the force to maintain its combat power in a contested environment.

By the Numbers

The U.S. ranks first globally in military helicopter fleet size, with over 5,500, followed by Russia with over 1,500 (Global FirePower.com, 2026). Of the U.S. helicopter fleet, approximately 4,000 are assigned to the U.S. Army. The U.S. Army ranks fourth, according to the World Directory of Modern Military Aircraft's (WDMMA) Global Air Powers Ranking 2026. The only nation with a higher ranking than the U.S. Army in this metric was the Russian Air Force, which ranked third; the U.S. Air Force and Navy ranked first and second, respectively (WDMMA, 2026). With the U.S. Army having the largest military helicopter fleet in the world, and with more than twice as many helicopters as the next-largest fleet, it is reasonable that the Army Enterprise has a vested interest in effectively recovering or salvaging downed aircraft.

The Downed Aircraft Recovery Team's Purpose

When a U.S. Army helicopter is unable to return to its home station, the owning unit typically mobilizes a downed aircraft recovery team (DART). The team's purpose is to assess the fault or damage and then perform one of two functions: repair the aircraft to enable self-recovery, or set conditions for an alternate form of recovery to friendly control for repair (Department of the Army [DA], 2021). These teams are a standing package that can conduct battle damage assessment and battle damage repair. Battle damage assessment and repair is, by definition, non-standard maintenance (DA & Marine Air-Ground Task Force Training Command, 2025).

The U.S. Army's organic capability to tactically recover aircraft is atypical. While the U.S. Air Force has a Crashed, Damaged, or Disabled Aircraft Recovery program, its focus is on recovering aircraft from on or near airfields rather than from austere tactical environments (Carter, 2017). Neither the U.S. Coast Guard nor the Royal Canadian Air Force has dedicated, organic aircraft recovery teams. While this list is not comprehensive, it demonstrates the unique capabilities Army Aviation possesses to maintain combat power in a contested environment.

The challenges these teams face will be exacerbated in large-scale combat operations (LSCO). Large-scale combat operations will involve non-contiguous battlefields and an unprecedented concentration of intelligence, surveillance, and reconnaissance (ISR) assets, alongside the constant threat of loitering

munitions and effective artillery fire. As the U.S. Army pivots from counterinsurgency to LSCO, it must understand and adapt to the expanding challenges posed to preserving aviation combat power.

Inconsistency in Doctrine and Evaluation

The first challenge stems from apparent indifference to the DART and BDAR missions, as evidenced by the absence of lessons learned and inconsistencies in Army Aviation doctrine. "Perform Downed Aircraft Recovery Missions" is a mission-essential task (MET) assigned to aviation maintenance companies (AMC) (DA, 2024a). Despite being core to Army Aviation's maintenance capability, the dialogue concerning aircraft recovery and repair operations remains deprioritized. I submitted a request for information (RFI) to the Center for Army Lessons Learned (CALL) in July 2025 to obtain lessons learned from DART operations over the past decade.[1] The responses received offered few clear lessons learned; instead, the sources provided were either challenges units face in deploying their repair/recovery teams or anecdotes from a sustainment perspective on how vital DART will be to conserving combat power. One of the only pertinent references found was an excerpt from CALL's *Updated Leader's Guide to Maintenance and Services*, which stated, "aviation maintenance company *[sic]* consistently arrive at [the] National Training Center unequipped and untrained in their two most critical METs, downed aircraft recovery team (DART) and battle damage assessment and repair (BDAR)" (CALL, 2024, p. 40). This evidence suggests that Army Aviation does not prioritize downed-aircraft repair and recovery training and that AMCs remain unprepared to perform a fundamental MET.

> ***"[aircraft] Recovery in decisive action is the greatest challenge."***
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> **-Army Techniques Publication 3-04.13, 2021, p. vii**

Looking beyond the limited discourse on operational lessons, the U.S. Army Training and Doctrine Command demonstrates a similar lack of prioritization of the downed aircraft repair and recovery mission set. Since 2020, it has significantly reduced its publications on aircraft repair and recovery operations. Army Techniques Publication 3-04.13, *Helicopter and Small Aircraft Battle Damage Assessment, Repair, and Recovery* (DA, 2021), has been trimmed to nearly half of the content of the two previous versions (now rescinded), reducing the length from 92 pages to 50 pages as published in both 2008 and 2018, then titled, *Aircraft and Recovery Operations*. The 2021 version omits valuable information that helped define recovery types and provided checklist examples units could use to build their internal DART standard operating procedures, such as the 11-Line Downed Aircraft Recovery Report and Pre-Execution Check/Inspections Checklists (DA, 2018, p. B-3; DA, 2021). While inconsistencies existed in previous versions, such as the disconnect between the "Fallen Angel" Procedure and the 11-Line Report, they nevertheless provided a foundational understanding of DART roles, responsibilities, and operations to junior officers and noncommissioned officers.

Maintenance Training Difficulties

Army Aviation units face specific challenges in training and standardizing DART and BDAR tasks and exercises. Since the Army adopted the Aviation Maintenance Training Program (AMTP), many units have struggled to ensure that the program accurately reflects the real-world experience their maintainers gained prior to its implementation. This program documents the experiences and evaluations of tasks listed on a maintainer's individual critical task list (ICTL), justifying a maintainer's maintenance level (ML), which ranges from ML0 (*Apprentice*) to ML4 (*Master Repairer*) (DA, 2024b, p. vi). Maintenance-level ratings authorize maintainers to conduct, supervise, or inspect specific aircraft maintenance tasks. The AMTP's implementation

A U.S. Soldier performs DART training during a National Training Center rotation, Fort Irwin, California. U.S. Army photo by SPC Jordan Leroy.

[1] CALL RFI submitted by author on July 4, 2025: Requesting any information regarding "Downed Aircraft Recovery Team" (DART) or general aircraft recovery operations lessons learned in the last 5-10 years. Specifically, if any data is captured regarding DART/aircraft recovery in a contested environment (near-peer) and/or in austere environments (swamp, arctic/muskeg, overwater/shore, etc.).

U.S. Soldiers recover a simulated downed Black Hawk that was rigged by the DART at Fort Drum, New York. U.S. Army photos by SPC Mason Nichols.

created a backlog of paperwork and experience validation that had to be manually captured across the branch to keep wrenches turning. Battle damage assessment and repair and DART operations are not required to progress to any ML; however, ML records serve as focal points during the 2- to 3-year Aviation Resource Management Survey inspection cycle (DA, 2024b, p. 3). As a result, DART and BDAR training were often deprioritized in AMC annual training to focus on meeting the Army's AMTP intent.

A concurrent challenge with training BDAR is its reliance on field-expedient, non-standard maintenance practices. Non-standard repairs are typically improvised, essential repairs intended to enable the aircraft to fly for a "limited duration" (DA, 2021, p. 1-1). The goal is to return the aircraft to a one-time flight status, allowing it to self-recover to the nearest maintenance facility for standard repairs (DA, 2021). In a garrison or training environment, commanders are highly unlikely to assume the risk associated with non-standard repairs. This inability to simulate realistic BDAR operations creates a training gap, leaving maintainers unable to practice developing creative solutions to maintenance problems.

If a repair to enable self-recovery is not feasible for a downed aircraft, dedicated recovery operations, either aerial or ground-based, may be undertaken. These dedicated recovery techniques require maintenance procedures that are rarely trained in realistic conditions. A combat aviation brigade's (CAB) aerial recovery package includes the Unit Maintenance Aerial Recovery Kit (UMARK), developed and tested from 1992 to 1998 to recover disabled aircraft using medium to heavy-lift helicopters. The UMARK was developed when the UH-1 Huey, AH-1 Viper, and OH-58 Kiowa were still in service (Bielefield, 1998). While UMARK rigging procedures exist for the UH-60, CH-47, and AH-64, they require significant maintenance to ensure the aircraft are correctly rigged and meet weight requirements. These procedures are rarely trained in garrison due to the risk of airframe, blade, or pylon damage. Training hulls are a helpful training aid; however, they are not available at every installation. Because of limited training aids and the risks of training on actual aircraft, aviation maintainers across the Army have limited opportunities to train in aerial recovery.

Required Task Organization

The only Army Aviation units with doctrinal capability to conduct both

BDAR and DART are general support aviation battalions and aviation support battalions (ASB); however, in practice, most recovery missions within a CAB, whether aerial or ground-based, are executed through task-organized formations drawing personnel and equipment from multiple battalions. General support aviation battalions can independently conduct aerial recovery because they field both an air mission command element and heavy-lift aircraft, while ASBs provide the majority of maintainers and ground recovery vehicles under their modified table of organization and equipment (MTOE). Assault and attack battalions retain limited BDAR capability but lack the resources to conduct recovery operations independently.

As Army Transformation Initiative efforts reshape CAB structure, there is little indication that future formations will be resourced to enable every battalion to conduct DART independently. Instead, recovery operations will continue to rely on brigade-level task organization. The principal operational challenge, therefore, is not the employment of task-organized forces itself but the complexity it introduces for collective training, certification, and mission rehearsal. Without structural or resourcing changes that institutionalize recovery capabilities across battalions, CABs will remain responsible for integrating disparate elements into cohesive recovery teams, a requirement that demands deliberate planning and sustained training emphasis at the brigade level.

Conclusion

The challenges confronting AMCs may include some or all of the issues discussed; nevertheless, the Army Aviation community will benefit from a candid assessment of its BDAR and DART capabilities. No single reform will resolve every deficiency, but units must take ownership of local challenges and pursue innovative solutions that preserve combat power.

Aviation maintenance doctrine should provide a stronger foundation for developing unit BDAR/DART standard operating procedures. Standardized tools, such as a downed-aircraft recovery report that can be integrated into pre-accident plans, could accelerate and synchronize DART responses. If combat training centers consistently observe ineffective recovery operations, the Aviation Branch should reassess whether sufficient time, resources, and training opportunities exist at home station. When training aids or risk constraints impede realistic execution, the branch must either reallocate resources or recalibrate expectations for the "Perform Downed Aircraft Recovery Missions" MET.

Within the AMTP, BDAR tasks and evaluations should be incorporated into the ML2 Repairer ICTL to reflect the proficiency required to lead field maintenance teams. Units should also develop training aids for both backshop and aircraft-series maintainers to enable deliberate practice and cross-training. Aviation maintenance company personnel must likewise remain proficient with all equipment listed in their MTOE, from BDAR kits to aerial recovery systems such as the UMARK.

Because BDAR and recovery operations will continue to rely on brigade-level task organization, commanders should deliberately train composite teams for contested environments. These missions demand rapid coordination among security, personnel recovery, and lift or ground recovery assets, and will increasingly require commanders to weigh risk against the preservation of combat power. The proliferation of ISR across the modern battlefield will compress recovery timelines, and in some cases, rapid cannibalization may become the only feasible option. As the Army prepares for LSCO, sustaining aviation combat power will remain a central challenge requiring continued adaptation across doctrine, training, and force design.

Author's Note:

All civilian sources cited in this article are open source. All U.S. Army doctrine publications are approved for public release with unlimited distribution.

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Biography:

CPT Caleb Kifer is an Army Aviation officer and UH-60 pilot. While stationed at Fort Wainwright, Alaska, with D/1-52D Aviation Regiment, he served as the DART Officer-in-Charge and helped establish the unit's DART standing operating procedures, with special considerations given to Alaska's austere environment. He led four real-world DART operations, including the recovery of Coast Guard 6016 from Read Island, Alaska.

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