Aviation
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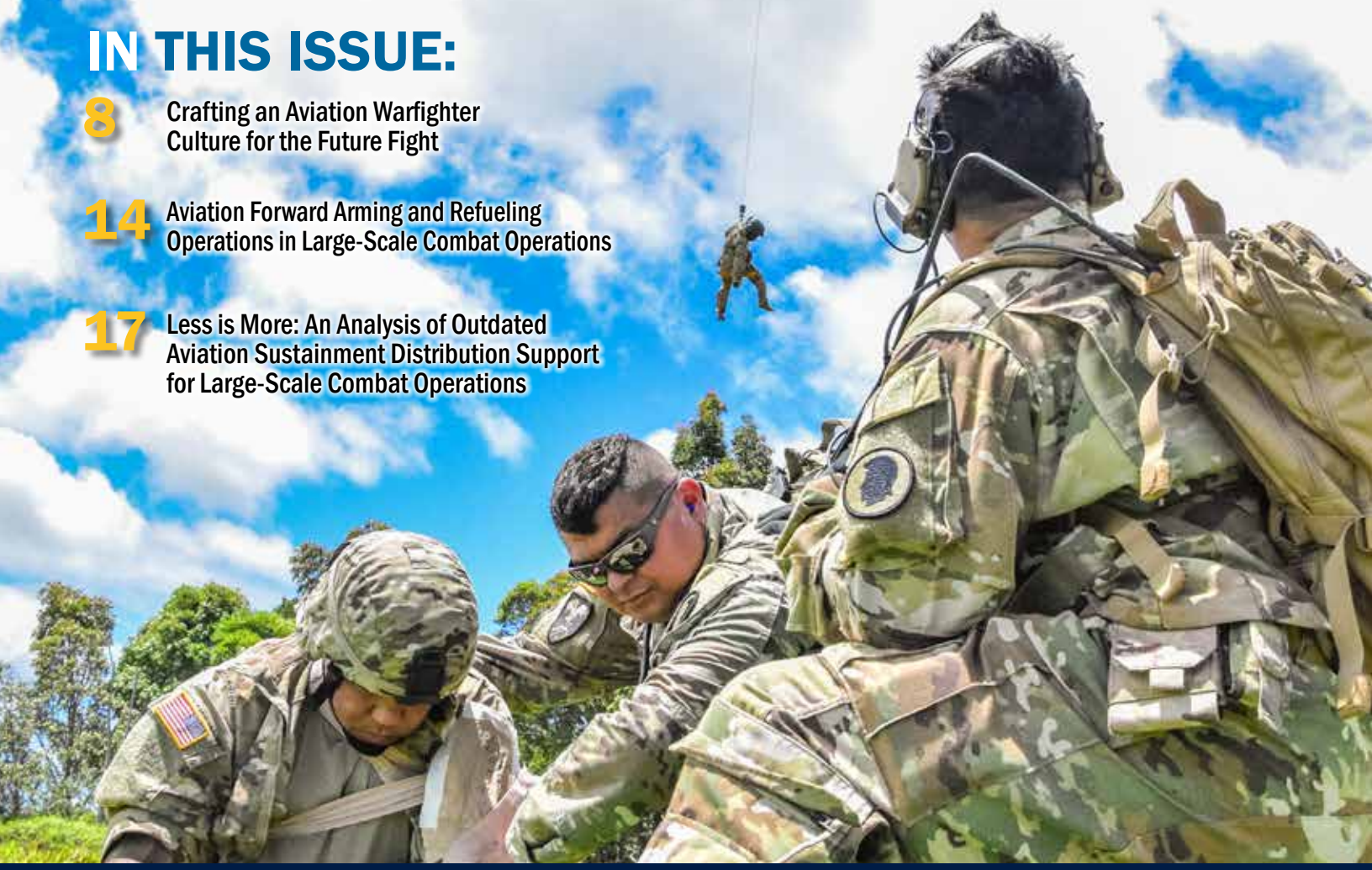
Volume 13/Issue 1

# SUSTAINMENT

## IN THIS ISSUE:





THE PROFESSIONAL BULLETIN OF THE ARMY AVIATION BRANCH

UNITED STATES ARMY Aviation DIGEST
The Professional Bulletin of the Army Aviation Branch, Headquarters, Department of the Army, PB 1-25-1 January-March 2025
Volume 13/Issue 1



By Order of the Secretary of the Army:

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2434800

The 126th and 189th Aviation Regiments conduct hoist operations in Wahiawa, Hawaii. U.S. Army National Guard photo by SFC Theresa Gualdarama.

# The Command Corner

## Training, Sustaining, and the Tyranny of Distance

By the end of 1939, Europe had again fallen into war. World War I, the war to end all wars, did not live up to its name, and World War II had arrived. Prior to America's entry into the war, the Army was in sad shape and poorly trained. However, understanding the potential cost in blood of the coming war, GEN George C. Marshall secured funds for meaningful collective training, ultimately culminating in the Louisiana Maneuvers. The training maneuvers represented a grand event to test both systems and Soldiers.

Marshall, a veteran of World War I, who knew the cost of training and the price of war said, *"The expense of maintaining our army is heavy, but to maintain troops without properly training them would be inexcusably wasteful, as well as highly dangerous in the present world situation"* (1940). Marshall set about training the Army in large-scale combat and against the tyranny of distance, or maneuvering extended distance, with Patton executing one maneuver more than 400 miles. This type of aggressive training would inform doctrine, prepare Soldiers, and develop leaders to be skilled in the art of sustaining their formations over great distances to maintain vital freedom of action. The Aviation Branch needs to train like Marshall and Patton and challenge our formations against the tyranny of distance, because the scope and scale of the next war will put new demands on operations and sustainment, unlike anything our generation has seen/experienced.

Army Aviation is blazing a very bold path into the future. In just a few years, the branch will oversee the initial fielding of the Future Long Range Assault Aircraft (FLRAA). To some, that may sound like a distant future, but truth in lending, it should feel like it could happen tomorrow. After all, there are students in flight school today who will fly the aircraft of tomorrow. A sense of urgency surrounding FLRAA must go beyond physical acquisition of the aircraft or what is happening at the Aviation Center of Excellence. Combat aviation brigades (CABs) across Army Aviation must undertake challenging training to ensure our crews focus on the tyranny of distance. Furthermore, our sustainers must be trained to meet the maintenance challenges of the current fleet ('Fight Tonight' mentality), while simultaneously planning for the coming FLRAA capability.

Only challenging, realistic, purposeful training will create the necessary demand to prepare Soldiers and leaders alike for what is to come, as our ability to sustain both current and FLRAA fleets will dictate the pace of future operations. Doctrine regarding how best to adapt the current fleet operations to FLRAA capability does not yet exist, nor is there a spoon-fed course with all the answers. Instead, leaders must challenge their formations in training. Only training can replicate the demands of the future, including threat, distance, and environment. Marshall understood the vital importance of such collective training, and subordinate leaders like Patton embraced the challenge, going beyond what logistical support could reasonably maintain. This training would prepare their leaders to make eventual real-world decisions in war. Challenging training is foundational to success in future combat.

The CAB of the 101st Air Assault Division executed training at the beginning of 2024 in the same spirit of Marshall and Patton's Louisiana Maneuvers, launching what they dubbed a "large-scale long-range air assault operation" (L2A2). In just one period of darkness, the 101st CAB launched 76 aircraft, covered over 500 nautical miles, and accumulated nearly 750 total flight hours across all airframes. Operation Eagle Eclipse aimed to dislodge a live enemy, the Geronimo forces of the Joint Readiness Training Center. The enormity of "maneuvering" covered in this training, and the integrated effort exerted across all aspects of the CAB (i.e., command and control, sustainment, fires, maneuver, intelligence), has set the stage for audacious aviation training for the coming years.

But, this is much more than a discussion about training. This is about the necessity of such grand maneuver while in training and the enormous burden it places on sustainers and leaders to think and work through the complexities of the next fight. Additionally, L2A2 demands are comparable to the coming range and performance capability of FLRAA. The more our leaders and sustainers train to maneuver our aviation formations on the scale of L2A2, the better they will understand the demand of eventual blended aviation operations. Our leaders and sustainers must be able to read the tea leaves and template future demands to be placed upon systems, resources, and personnel in light of FLRAA and large-scale combat. We need the reps to ensure we can deliver when our nation needs us.

Training L2A2 in order to simulate coming demands on sustainment and maneuver resources offers phenomenal opportunities to develop leaders at each level of the Aviation Branch. Leaders must learn how L2A2 influences the preparation of aircraft by deliberate readiness build-up, demands sustainment at scale, and the subsequent impacts to follow-on operations. These lessons will help the Aviation Branch rewrite doctrine and revise both training and education. Finally, such audacious training will better prepare future aviation leaders to receive, operate, and sustain the blended aviation force in support of the Army of the future.

Embrace the spirit and creativity of Marshall, Patton, and our own 101st CAB. Train in ways that will prepare for the future sustainment requirements of a blended fleet. Be creative, be tough, and be bold. To paraphrase the often misattributed GEN Norman Schwarzkopf quote, the more we sweat in peace, the less we'll bleed in war (1991). Let's break a sweat!

Above the Best!

Fly Army!

Clair A. Gill
Major General, USA
Commanding

A U.S. Army flight engineer conducts flight operations during CH-47 Chinook flight training in Waimanalo, Hawaii. U.S. Army National Guard photo by SGT Lianna Hirano.

# Aviation DIGEST


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https://home.army.mil/novosel/index.php/aviationdigest

### Author Guidelines

Articles prepared for *Aviation Digest* should relate directly to Army aviation or reflect a subject that directly relates to the aviation professional. Submit the article to the *Aviation Digest* mailbox at usarmy.novosel.avncoe.mbx.aviation-digest@army.mil.

Please note that *Aviation Digest* does not accept previously published work or simultaneous submissions. This prevents an overlap of material in like publications with a similar or same audience.

*Aviation Digest* is an open-source publication. As such, we do not accept articles containing For Official Use Only or Classified materials. Please do not submit articles containing Operations Security (OPSEC) violations. If possible, have articles reviewed by an OPSEC officer prior to submission.

Please submit articles via MS Word document format. Articles should not exceed 3500 words. Include a brief biography (50 word maximum) with your article. We invite military authors to include years of military service, significant previous assignments, and aircraft qualifications in their biographies.

*Aviation Digest* editorial style guidelines follow the American Psychological Association Publication Manual, 7th edition; however, Digest staff will incorporate all necessary grammar, syntax, and style corrections to the text to meet publication standards and redesign visual materials for clarity, as necessary. Please limit references to a maximum of 20 per article. These changes may be coordinated with the authors to ensure the content remains accurate and reflects the author's original thoughts and intent.

Visual materials such as photographs, drawings, charts, or graphs supporting the article should be included as separate enclosures. Please include credits with all photographs. All visual materials should be high-resolution images (preferably set at a resolution of 300 ppi) saved in TIFF or JPEG format. For Official Use Only or Classified images will be rejected.

Non-military authors should submit authorization for *Aviation Digest* to print their material. This can be an email stating that *Aviation Digest* has permission to print the submitted article. Additionally, the author should provide a separate comment indicating that there is no copyright restriction on the use of the submitted material.

The *Aviation Digest* upcoming article deadline and publication schedule is as follows:

April-June 2025 (published on or around 15 May 2025). Submissions closed.

July-September 2025 (published on or around 15 August 2025). Accepting articles now through 15 May 2025.

October-December 2025 (published on or around 15 November 2025). Accepting articles now through 15 August 2025.

Authors are asked to observe posted deadlines to ensure the *Aviation Digest* staff has adequate time to receive, edit, and layout materials for publication.

# Notices to Air Missions (NOTAMs)

## Directorate of Training and Doctrine Director (COL Sean C. Keefe):

The Directorate of Training and Doctrine (DOTD) remains committed to supporting U.S. Army Aviation transformation efforts, with a focus on developing and implementing new doctrine and training initiatives. The updated Field Manual (FM) 3-04, "Army Aviation," has recently been approved for public release by the Combined Arms Center, U.S. Army Training and Doctrine Command. This capstone doctrine provides essential context for the employment and integration of Army Aviation into multidomain operations and will be published digitally on the Army Publishing Directorate website in the coming quarter. In addition to the updated FM, the DOTD is also working on the Army Techniques Publication (ATP) 3-04.1, "Aviation Tactical Employment." This publication is currently undergoing final edit approvals through the Headquarters, Aviation Center of Excellence, and is expected to be published before the end of the year. The updated ATP 3-04.1 will provide critical guidance on the tactical employment of Army Aviation assets and will play an important role in shaping the Army's approach to aviation operations.

The DOTD is also making significant progress in the development of unmanned aircraft system (UAS) training and doctrine. In collaboration with the Maneuver Center of Excellence, the DOTD is working on the final draft of Training Circular 3-04.62, "sUAS." This publication will standardize small UAS qualification and gunnery and is expected to be published in early 2026. The small UAS qualification draft will be distributed for staffing in March 2025, followed by the gunnery draft in summer 2025. This will ensure that Army personnel are properly trained and equipped to operate small UAS in a variety of environments.

Finally, the DOTD is working closely with Combined Arms and Joint partners to develop modernized airspace doctrine and training. This effort is being driven through a series of airspace symposiums, which bring together Army leaders and experts to discuss current doctrine and systems, as well as emerging materiel solutions. These symposiums will help to inform the development of new doctrine and training initiatives and will play an important role in shaping the Army's approach to airspace operations in the future.

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## Training Division Chief (Mr. Bo Thurman):

The Training Division is excited to announce the creation of a Digital Department of the Army (DA) Form 2028 Product Change Request form. This allows the Training Division to receive your professional feedback! As Aviation experts, your assessment of the Programs of Instruction, Lesson Plans, Individual Critical Task List, and Individual Critical Tasks is vitally important to our Training Development teams within the Directorate of Training and Doctrine (DOTD). Your specialized observations, insights, and lessons learned, which you have gained through the practical application of training each one of your Soldiers, either at Advance Individual Training, professional military education, or in the field is vastly significant and will greatly enhance future training products for your community. Once your feedback is received, the review and analysis of recommended improvements will assist us in determining operational needs, provide insight into the effectiveness of our training products, and will ensure future improvements to the division's processes and procedures during analysis and development.


Your feedback can be captured by following the steps below:

1) Click on the DA Form 2028 link: https://play.apps.appsplatform.us/play/e/default-fae6d70f-954b-4811-92b6-0530d6f84c43/a/465f69a9-f73e-4930-8717-30dafcb2de97?tenantId=fae6d70f-954b-4811-92b6-0530d6f84c43&sourcetime=1736300199395he

2) Fill in the digital form.

3) Click on the check mark to submit.

Please be as specific as possible! The more information you provide will expedite the review process and will ensure the accuracy and quality of revised training products.

If you have questions for the Directorate of Training and Doctrine's Training Division, please feel free to contact us at: usarmy.novosel.avncoe.mbx.dotd-training-division@army.mil

The Directorate of Training and Doctrine wants to hear from ALL military occupational specialty (MOS) 15T and 15F Soldiers. We value your opinion, your experience, and your time and would like all of you to complete these surveys.

The Aircraft Electrician, MOS 15F survey is now open and will close 3 August 2025. Participants can access the survey using the QR code or the link: https://survey.tradoc.army.mil/EFM/se/0AFDD71A191FB67B

The UH-60 Helicopter Repairer/Aircrew Members, MOS 15T survey is now open and will close 11 May 2025. Participants can access the survey using the QR code or the link: https://survey.tradoc.army.mil/EFM/se/0AFDD71A05D29F0D

## Gunnery Branch (Branch Chief: CW4 Steve Dickson):

Happy New Year!!! And with the new year comes some new members to the Gunnery Branch team. We gladly welcome SSG Bryant Dooley and SFC Geoffrey Holbrook! SSG Dooley has taken over as our unmanned aircraft systems (UAS) Master Gunner, as WO1 Kyle Hedden has departed. SFC Holbrook is filling the long-time vacant position of Master Door Gunner. Both of these high-speed Noncommissioned officers have joined the team and hit the ground running. Welcome to the team, gentlemen! As alluded to before, WO1 Hedden departed in January. His contributions to the UAS community and Army Aviation community have been tremendous, and his impacts will be felt for many years to come. We appreciate everything Kyle has done for the Gunnery Branch and wish him the best of luck in continuing his journey in the Army! Lastly, CW4 Max Wannelius has departed the Gunnery Branch to fill a temporary role while transitioning out of the Army. Thank you for your service Max, and we wish you luck in life outside of the Army.

In this issue of the *Aviation Digest*, I'd like to talk about the role of a Master Gunner and ask the question, "What is the role of an Aviation Master Gunner?" Typically the response to that question is that a Master Gunner manages the unit gunnery program. While that answer is correct, it is only one small part of the complete answer. Many will say that a unit gunnery program is designed to train/qualify Aviators and Nonrated Crewmembers (NRCMs) on gunnery tables so commanders can report positive unit status report numbers. However, if we analyze what the unit gunnery program main objective is, we can determine the true role of an Aviation Master Gunner. The real objective of the unit gunnery program is to increase unit lethality. Just look no further than how collective gunnery tables are focused on execution of mission essential task list (METL) tasks and not entirely on gunnery engagements. Remember that gunnery tables are not Aircrew Training Program (ATP) requirements, and while a unit ATP does build proficiency of Aviators and NRCMs on aircraft operations, the ATP does not require an evaluation of METL tasks. An ATP prepares Aviators and NRCMs for graduate-level training, which is gunnery execution and METL task execution, ultimately training, evaluating, and measuring a unit's lethality. The true role of an Aviation Master Gunner is to increase unit lethality.

There are many ways that Master Gunners can increase lethality outside of the unit gunnery program, including acquisition of new weapon systems and accompanying training (e.g., AGR-20 Advanced Precision Kill Weapon System; XM1225 Aviation Proximity Explosive, or APEX, 30 millimeter; air-to-ground missile-114L7A, etc.); improving resourcing and access to those resources (e.g., improvement of home station ranges locating a range complex that supports larger training exercises, etc.); and analyzing and improving crewmember engagement techniques and METL task execution (to include during combat operations), utilization of resources, live-fire exercises, and so on. In order to have the influence to increase unit lethality, it is imperative that Master Gunners be engaged with the division and higher echelons they are serving so they can get adequate resourcing support for the forementioned methods. Master Gunners must be engaged during company and platoon mission planning exercises and during division target working groups. They must be present and engaged up and down the chain of command. The Master Gunner's role is lethality, and anything that can increase unit lethality falls within the Master Gunner's roles and responsibilities.

It is a new year, and with a new year comes promises of changing for the better. Gunnery Branch's New Years resolution contains upcoming changes to lift/cargo door gunnery, UAS gunnery, the Master Gunner course, and 2023 Training Circular, 3-04.3., "Aviation Gunnery." There will also be a high changeover of personnel beginning this May. To maintain continuity between incoming and outgoing team members, I please ask that emails sent to any of our Gunnery Branch teammates also be sent to our organizational email address, listed in the address book. This will ensure any information, requests, or questions are answered and not lost due to the personnel turnover. We look forward to this next year and excited to see what it brings. Change is coming, and we are prepared to embrace it with open arms. Happy New Year to everyone and as always, stay lethal, stay safe! ATTACK!!!

## Tactics Branch (Branch Chief: MAJ Dustin Ramatowski):

Army Aviation will be updating the force on observations at Combat Training Centers (CTCs) via the "Quick-Fire" Observation tool. The Center for Army Lessons Learned developed a "Quick-Fire" observation tool (See quick response [QR] code) to provide Soldiers and units a readily accessible method to upload, share, and discuss lessons observed during operations and training. The tool works on any mobile phone and will store observations in a cloud database for further analysis.

We've listed some of the lessons learned observations from National Training Center rotation 24-07 with the 1-2 Stryker Brigade Combat Team (BCT), uploaded to "Quick-Fire" for unmanned aircraft systems (UAS) and small UAS.

**CTC Trend: Relocation of FARP**
**Observation 1**-Units find it challenging to relocate forward arming and refueling point (FARP) operations. Many units train on FARP operations but very few train to relocate the operations multiple times.

**Discussion**-Units struggle to emplace and displace FARP operations as the threat and operations dictate. Relocating FARP operations has become vital as FARP operations become more complex when stretched across farther distances. Forward arming and refueling point operations are often one of the top priorities on the opposition's high-payoff target list.

**Recommendation**-The challenges of relocating a FARP often exceeds what the distribution platoon can handle alone. There should be coordination at the battalion level to ensure there is communication, sustainment, and security to make the relocation site a success.

Best Practices:
Units' tactics, techniques, and procedures executed over the past year that facilitate quicker relocation operations include:
• Co-locate the FARP with the BCT brigade support area for an extended period and push out in support of specific missions.
• Maintain two FARPs that alternate between active and silent to provide continuous coverage during high-tempo missions while still permitting relocations.
• Execute a forward arming and refueling area* where aircraft land and trucks drive up to them. This eliminates the need to emplace hoses, but there is a greater risk for accidents.

*DOTD Doctrine and Tactics Division (DTAC) Note: (Area for Forward Arming and Refueling, or AFAR) This is a new concept that is being adopted as an alternate method of refueling and rearming. The AFAR will allow for modularity and expedience within the battlespace. The potential exists for more moving parts during operations and should be rehearsed at a home station prior to execution at either a CTC or when forward deployed as an expeditionary element.

**CTC: Integration of Fires**
**Observation 2**-Integration of fires to improve aviation maneuver and survivability.

**Discussion**-Aviation battalion task forces (ABTFs) typically struggle to integrate indirect fires into their planning, which limits survivability and reduces maneuverability during execution of operations. Additionally, aviation maneuver elements are often not included in the priority of fires organic to the supported BCT when executing missions in direct support of that element.

QUICK-FIRE

https://www.army.mil/CALL

**Recommendation**-One of the largest struggles for ABTFs at the Joint Readiness Training Center (JRTC) is the integration of fires into the execution of missions. Aviation battalion task forces are not allocated an organic fire support officer and often either arrive without someone filling that role or with an individual who hasn't been fully integrated into the staff to assist in mission planning and execution. This lack of fires planning and integration spans from suppression of enemy air defense (SEAD) to utilization of fires in support of deliberate attack, reconnaissance, or security operations. Suppression of enemy air defense typically appears to be one of the last portions of an overall air assault plan to try and get organized in an extremely condensed and contested planning timeline. This often leads to the removal of SEAD from the plan, as it is too late to sequence between the development of airspace control measures (ACMs), ground and aviation maneuver, and the supporting fires element.

Additionally, the lack of integration of indirect fires in support of Army Attack Aviation (AAA) mission sets severely limits potential successes of attack, reconnaissance, and security operations executed by AH-64s. Fire support for AAA is arguably an incredibly important opportunity that is not often exploited at JRTC. This leads to AH-64s utilizing organic weapons systems to engage targets, increasing their exposure to enemy air defense artillery assets and decreasing survivability and overall effectiveness. There are multiple issues that lead to this lack of integration of indirect fires and AAA. First, often the construction of ACMs either does not occur at all or is not fully developed and integrated into the ground maneuver plan. This does not allow for effective use of those ACMs by aircraft with indirect fire support. Second, supported ground forces do not fully understand the breadth and width of the AAA mission and typically task AAA to conduct very dynamic, hasty, and unplanned missions that do not allow for deconfliction of airspace between aircraft and fires in the mission planning process. When AAA is tasked down to the battalion or company level, often the BCT struggles to clear the airspace to fire targets in support of any maneuver element, AAA included. Finally, the BCT does not regularly include AAA in the priority of fire support to enable target suppression, neutralization, etc. This forces aircrews to have to work through a supported maneuver battalion or through the BCT directly to enable fires, which slows the process and can cause confusion.

## Address Book:

### Fort Novosel has gone through several SharePoint migrations in the past year.

As of 4 March 2024, the active DOTD public-facing SharePoint is: https://armyeitaas.sharepoint-mil.us/sites/TR-ACOE-DOTD

Training: https://armyeitaas.sharepoint-mil.us/sites/TR-ACoE-DOTD/SitePages/Training-Division.aspx

DTAC: https://armyeitaas.sharepoint-mil.us/sites/TR-ACoE-DOTD/SitePages/DTAC.aspx

**Aviation Leader Kit Bag: new address!** https://armyeitaas.sharepoint-mil.us/sites/TR-ACoE-ALKB

**Aviation Training Strategy:** https://armyeitaas.sharepoint-mil.us/sites/TR-ACOE-DOTD/DOTD%20Documents/Forms/AllItems.aspx?id=%2Fsites%2FTR%2DACOE%2DDOTD%2FDOTD%20Documents%2FArmy%20Aviation%20Training%20Strategy%2Epdf&parent=%2Fsites%2FTR%2DACOE%2DDOTD%2FDOTD%20Documents

**Aviation Branch Operations SOP, Annex A (Aviation Handbook), Annex B (Aviation Liaison Officer/Brigade Aviation Element Handbook), Annex C (Risk Common Operating Procedure), and Branch Maintenance SOP:** https://armyeitaas.sharepoint-mil.us/:f:/r/sites/TR-ACOE-DOTD/Aviation%20Branch%20SOPs/Aviation%20Branch%20Operations%20SOP?csf=1&web=1&e=M3gYgb

**DOTD Education and Technology Branch** *(questions regarding the development and/or the development, implementation, and administration of interactive multimedia instruction)*

- Branch Chief: Mr. Chuck Sampson at 334-255-0198 or charles.l.sampson10.civ@army.mil
- TRADOC SharePoint: https://armyeitaas.sharepoint-mil.us/sites/TR-ACOE-DOTD/SitePages/Educational-Technologies.aspx

**DOTD Enlisted Training Branch** *(questions regarding NCO professional military education [PME] and AVN Operations/Unmanned Aircraft Systems initial military training [IMT], ATC/UAS Warrant Officer Basic Course, and Aviation Life Support Equipment)*

- Branch Chief: Mr. Morris Anderson at 334-255-1909 or morris.anderson2.civ@army.mil
- TRADOC SharePoint: https://armyeitaas.sharepoint-mil.us/sites/TR-ACOE-DOTD/SitePages/Enlisted-Training-Branch.aspx

**DOTD Flight Training Branch** *(questions regarding ATMs, Training Support Packages, SOPs)*

- Branch Chief: CW5 Lucas Abeln at (334) 255-0363 or lucas.k.abeln.mil@army.mil
- TRADOC SharePoint: https://armyeitaas.sharepoint-mil.us/sites/TR-ACOE-DOTD/SitePages/Flight-Training-Branch.aspx

**DOTD Flight Training Integration Branch** *(questions regarding aviation flight programs of instruction [POIs])*

- Branch Chief: Mr. Brian Stewmon at 334-255-3119 or william.b.stewmon.civ@army.mil
- TRADOC SharePoint: https://armyeitaas.sharepoint-mil.us/sites/TR-ACOE-DOTD/SitePages/Flight-Training-Integration-Branch.aspx

**DOTD New Systems Integration Branch** *(questions regarding new system training deliverables, e.g., system training plans)*

- Branch Chief: Ms. Kelly Raftery at 334-255-9668 or kelly.a.raftery.civ@army.mil
- TRADOC SharePoint: https://armyeitaas.sharepoint-mil.us/sites/TR-ACOE-DOTD/SitePages/New-Systems-Integration-Branch.aspx

**DOTD Officer Training Branch** *(Questions about officer and WO IMT, PME, and non-flight functional courses)*

- Branch Chief: Mr. Arnold Moorman at 334-255-0433 or arnold.r.moorman.civ@army.mil
- TRADOC SharePoint: https://armyeitaas.sharepoint-mil.us/sites/TR-ACoE-DOTD/SitePages/Officer-Training-Branch.aspx

**DOTD Maintenance Training Branch** *(questions about Joint Base Langley-Eustis/128th Aviation Brigade IMT, PME, and functional courses)*

- Branch Chief: Mr. Philip Bryson at 757-878-6176 or philip.e.bryson.civ@army.mil
- TRADOC SharePoint: https://armyeitaas.sharepoint-mil.us/sites/TR-ACoE-DOTD/SitePages/Maintenance-Training-Branch.aspx

**Faculty & Staff Development Branch** *(questions regarding USAACE faculty and staff courses and/or questions about Instructor and Developer training and certification)*

- Branch Chief: Ms. Suzanne Vaughan at 334-255-2124 or suzanne.a.vaughan2.civ@army.mil

**DOTD Doctrine & Sustainment Branch** *(questions regarding Field Manual [FM], ATPs, TCs)*

- Branch Chief: MAJ Ross Skilling at 334-255-1796 or ross.m.skilling.mil@army.mil
- Group Mailbox: usarmy.novosel.avncoe.mbx.doctrine-branch@army.mil
- SharePoint: https://armyeitaas.sharepoint-mil.us/sites/TR-ACoE-DOTD/SitePages/Doctrine-Branch.aspx?csf=1&web=1&e=fFpkxS
- FMs, ATPs, and TCs are published by APD at https://armypubs.army.mil/
- Living Doctrine FM 3-04 (2015) Archive: https://armyeitaas.sharepoint-mil.us/:f:/r/sites/TR-ACOE-DOTD/Doctrine%20Branch%20Documents/ARCHIVE/Living%20Doctrine?csf=1&web=1&e=SYzlcG

**DOTD Tactics and Collective Training Branch** *(questions regarding Lessons Learned, Unit Mission-Essential Task Lists/Mission-essential tasks/Training & Evaluation Outlines/Task Lists/CATS, or Aviation Digest)*

- Branch Chief: MAJ Dustin Ramatowski at 334-255-1252 or dustin.d.ramatowski.mil@army.mil
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- SharePoint: https://armyeitaas.sharepoint-mil.us/sites/TR-ACOE-DOTD/SitePages/Tactics-&-Lessons-Learned.aspx
- AD Archives: https://armyeitaas.sharepoint-mil.us/sites/TR-ACOE-DOTD/Aviation%20Digest%20Documents/Forms/AllItems.aspx
- Aviation Digest public site: https://home.army.mil/novosel/index.php/aviationdigest

**DOTD Survivability Branch** *(questions about all things AMS, Quick Reaction Tests, Computer-Based ASE Training, 2800/2900 Training Support-Packages, Aircraft Survivability Equipment home-station training)*

- Branch Chief: CW5 Lee Kokoszka at 334-255-1853 or lee.e.kokoszka.mil@army.mil
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- Group Secure Internet Protocol Router (SIPR) Mailbox: usarmy.novosel.avncoe.mbx.ams@mail.smil.mil
- Intelinks NIPR/SIPR: https://intelshare.intelink.gov/sites/army-ams/ and https://intelshare.intelink.sgov.gov/sites/army-ams/

**DOTD Gunnery Branch** *(questions about all things gunnery, Master Gunner Course, Ranges, Standards in Training Commission)*

- Branch Chief: CW4 Steven Dickson at 334-255-2691 or steven.d.dickson.mil@army.mil
- Group Mailbox: usarmy.novosel.avncoe.mbx.atzq-tdd-g@army.mil
- Intelinks: NIPR/SIPR: https://intelshare.intelink.gov/sites/usaace/gb and https://intelshare.intelink.sgov.gov/sites/GunneryBranch

# Crafting an Aviation Warfighter Culture for the Future Fight

By MG Clair A. Gill

## Introduction

Like the rest of our Army, the Aviation Branch finds itself transforming to prepare for a challenging future. Everything is evolving in response to potential threats, but our mission requirements continue without pause. And so, "Army Aviation stands ready to meet tomorrow's challenges, today." Coincidentally, that statement of preparedness was also the theme for this year's Army Aviation Senior Leader Forum, or AVSLF, at Fort Novosel, Alabama.

The AVSLF is an opportunity for senior leaders across the Aviation Branch and Army to come together and discuss current challenges and opportunities for operations in the upper tier of the ground domain. Topics discussed at the AVSLF included readiness, experience, maneuver, maintenance, acquisitions, unmanned systems, and updates on current operational environment conditions and threats. Senior Leaders actively discussed these vital matters to ensure preparedness of our Aviation Soldiers today and in the future fight. Leaders often spoke of keeping pace with peer threats and even yet unforeseen enemies who are constantly pushing warfare at the pace of technology. A major point of focus centered around the culture and grit required to fight a war similar to that experienced by those in the Ukraine-Russia conflict. The activity level and sense of urgency was a call to action for all in attendance.

While technology was a key point of discussion at the AVSLF, there were other major areas of interest. We talked about all the factors that influence our collective readiness from personnel to maintenance to training, and I need you—the Soldiers and leaders of the Aviation Branch—to focus your attention on these critical aspects of our profession. As warfare evolves—and it is changing rapidly as evidenced on battlefields in Ukraine and other areas—so too must our organizational culture. Gone are the days of solely counterinsurgency operations (COIN); future Large-Scale Combat Operations (LSCO) will certainly be demanding in new ways. This is a critical moment for Aviation Soldiers everywhere to consider what we do well, areas for improvement, and use our time now to embrace a revised Aviation Warfighter Culture to ensure the preparedness for a complex future fight.

## The Basics of Organizational Culture and a Call to Arms

A strong sense of culture, whether positive or negative, can have a significant impact upon an organization. Every organization has a culture, and whether known or unknown, everyone participates in that culture. In many ways, a culture represents the unwritten sense or feeling one has about an organization

LTC Keith Benoit wears camouflage face paint during an aerial gunnery near Fort Drum, New York. U.S. Army photo by SGT Jamie Robinson.

U.S. Soldiers assigned to the 12th Combat Aviation Brigade provide security during Allied Spirit 25 at the Hohenfels Training Area, Joint Multinational Readiness Center, Germany. U.S. Army photo by SGT Christian Aquino.

that is perceptible with nearly every interaction. A good definition for culture is "the set of values, norms, guiding beliefs, and understandings that is shared by members of an organization and taught to new members as the correct way to think" (Daft, 2010, p. 374).

Army branches, to include Army Aviation, are subordinate cultures that are important, but secondary, to the greater Army culture. No matter where you go in the Army, organizational culture rests in the hands of the unit leaders. That means the culture of our branch rests in the hands of Aviation leaders at every echelon. Those hands, to include my own, all have a role in shaping and developing our branch culture. I take the state of Army Aviation's culture very seriously, as it provides a sense of who we are as a branch. Our culture speaks of our shared values and beliefs as Aviation Soldiers and governs how we contribute to our Army mission. Internally, our branch culture contributes to our collective identity as members of our Army's combined arms team. Externally, our branch culture influences how we achieve our assigned missions in both peace and combat. The two are inextricably linked. Our current organizational culture, both its internal and external linkage, has come across a dangerous sense of status quo as a byproduct of more than 20 years of COIN operations. Realized or not, COIN created a seismic shift in how we perceive our role in combat. During this period of our history, we flew high, avoided dangerous confrontations when able, and operated from the relative safety of the nearest forward operating base. The impact of Aviation Branch members became measured in view of the performance of lethal teams. In many ways, we became individuals with an eroded sense of purpose in light of the greater intended Army mission, flying above the fray and losing site of our role within the land domain of warfare. That's not to say we weren't valued contributors to tactical success—to be sure, we were.

However, around 2014, it became obvious that small unit tactics and reliance on lethal teams would not remain the recipe for future success. Russia shocked the world with its annexation of Crimea. By 2018, and in response to strategic aggression by Russia and China, the National Defense Strategy began to acknowledge the reality of "long-term strategic competition" with China and Russia (Department of Defense, 2018, pp. 2–4). The new and pressing threat had moved from non-state terrorists to peer and near-peer threats. In response to the shifting sands of the global operational environment, the Army began what is called a doctrinal pivot with the release of Field Manual (FM) 3-0, "Operations" (Department of the Army [DA], 2025). Large-Scale Combat Operations had become the new point of focus and has since morphed into multidomain operations, as peer and near-peer threats can now challenge forces across five different domains of warfare.

Our Army now requires an Aviation force that is optimally manned, and occasionally even *optionally* manned, and able to deliver the necessary capabilities—as desired by the ground force commander—in a dynamic future fight that aids in achieving the seizure and retention of the enemy's land, people, and resources. Our real future value to the Army aligns with the ability to allow a ground force commander to exercise their force as they see fit. And so, it becomes necessary that Aviation Branch culture pivot from an overemphasis on team tactics and indi-

vidual proficiency to instead embrace the collective identity of units equipped and trained to effectively conduct LSCO. The value and success of the individual is obvious, but it should not trump the success and identity of the greater unit. **It is time to redouble our Warfighter Culture**.

Some might argue that we don't need change; we just need to focus on the fundamentals—good point, but it doesn't go far enough. To better prepare as a branch in service to the Army of the future, it is time to reorient away from what was once known as operations other than war (FM 100-5) and return to the original intent for keeping Aviation forces within the Army—organic Aviation support to enhance combat operations in the land domain. For the past few decades, and as dictated by operational needs, Army Aviation has performed every mission under the sun. However, a return to large-scale combat requires the branch to transform toward a necessary shared identity as Army Aviation Warfighters for eventual success in future LSCO. Yes, we need to be good at our fundamentals, but we need to advance on that to create a culture of warfighters who are good at the basics but know how to adapt to a more lethal environment. Less structure, less certainty, and less "rotational" mentality.

## Current Aviation Culture–Sustains

When I discuss culture with other Aviation leaders, I first ask what they like about our culture, or the things we organizationally emphasize and value that guide our professional identity. Think about it–why did you choose our branch? It is important to start with sustains, because our heritage and unique identity as professionals is derived in large part from our sense of organizational culture. After all, certain hallmarks of our organizational culture have greatly contributed to our branch success. Some of the most valued aspects of our professional culture are often identified by leaders as individual expertise, independence, aircrew proficiency, and application of Aviation capability as part of the combined arms team.

Individual expertise is critical in Army Aviation; it's the foundation on which we build our war-winning capability for our Army. Our branch requires highly intelligent and technically oriented Soldiers, capable of working on incredibly advanced systems, equipment, and in challenging environments. Lives are always on the line in Army Aviation, and leaders know it. LTG (Ret.) Walt Piatt often said that every day is a live fire in Army Aviation. As a result, Army Aviation has always emphasized and valued technical expertise, adherence to standards, and trust throughout each echelon. Additionally, the expertise and technical acumen of the individual Aviation Soldier has led to the development of a remarkable sense of independence. Our Soldiers make decisions every day that directly impact mission success. The branch consistently recognizes and values the decisiveness, critical thinking, and disciplined execution of our Aviation Soldiers.

Each one of these prized and valued elements of our organizational culture need to be taught, trained, and sustained. Our culture must also emphasize and value the elements of our branch that feed and orient our professional identity on meeting the needs of the ground force commander in the land domain during LSCO.

## Current Aviation Culture–Areas for Growth

Large-scale combat in the future fight will be best met by Aviation Soldiers who focus and value things that decidedly support the ground force commander. After all, the "logic of land war–i.e., land forces operate to control territory, whether for their own end or in support of joint force objectives" dictates that success is measured on the ground (Fox, 2024, p. 8). By extension, any arm of the Army should understand its role and purpose through the lens of the logic of land war. And so, as our organizational attention is drawn to the challenges and complexities of LSCO and future warfare, I believe there are areas in our culture that are primed for growth and improvement.

If our collective purpose in Army Aviation is contributing to success for those

The 16th Combat Aviation Brigade participates in a combined arms life-fire exercise at Joint Base Lewis-McChord, Washington. U.S. Army photo by MAJ Brian Harris.

The 3D Brigade Combat Team engage in a combined arms live-fire exercise on Fort Bragg, North Carolina. U.S. Army photo by SSG Vincent Levelev.

on the ground, then areas for growth in organizational culture should begin with that desired outcome. Our understanding of being value added must extend beyond Aviation-centric success criteria. And so, Army Aviation must better understand ground force needs, operations, and tactics. If Army Aviation better understands ground warfare, our Soldiers can better support the missions of the ground force when in combat. This is not a new concept, as Army Aviation was first developed and sustained, beyond the 1947 birth of the Air Force, to ensure organic Aviation support to Army ground forces (Total Military Insight, 2024). Our reason for existing is success in the land domain, and as a branch, we should value and emphasize extensive knowledge of ground warfare.

As our branch embraces a deeper appreciation for ground warfare, there will be a necessary shift in our training and application of tactics and operations. An Aviation Branch that is focused on ground warfare, especially LSCO, will begin to push the envelope by consistently emphasizing collective training. Collective application of Army Aviation capabilities, and I mean those well beyond the company level, are tough to conduct and even harder to support. However, dynamic large-scale training today is necessary to equip the commanders of tomorrow with the skill sets and experiences that will inform their efforts in the future fight. Some units, particularly our Transformation in Contact units and those forward deployed, are beginning to train for LSCO. This is hard and requires in-depth planning and preparation; however, it also cultivates the idea that we need to build experience and proficiency now. Tomorrow is too late. We should all feel a sense of urgency and ownership to address it now.

A focus on ground doctrine, combined with audacious LSCO-oriented training, will begin to produce a visible difference in all Aviation Soldiers. These Aviation Soldiers will begin to get anxious to apply their skill set and knowledge in a mission setting and not simply fly traffic patterns or conduct cross-country flights. Aviation Soldiers who steer away from the overemphasis on individual performance and move instead to the application of their skill set alongside combined arms teammates in a mission setting, start to cultivate a warfighter identity. Everything will then become oriented on expressing the value of themselves to their greater unit and what they can do to fight and win in combat. If we as leaders measure value of our Soldiers by their contributions to unit success and performance in collective mission settings, we will begin to see and express our value as warfighting organizations. The Aviation Branch must better recognize our collective value to the ground force commander, educate our Soldiers according to success in the land domain, and train to develop the necessary capabilities to win in LSCO.

Improvements in the previously discussed areas are sure to begin to shape an Aviation Warfighter Culture. Still, I am certain there are some reading this article who potentially doubt the impact of a warfighting culture and its contribution to success in war. History is replete with examples of the impact of a culture on successful outcomes.

## Foundations of a Warfighter Culture

In the Steven Pressfield's 1998 book, *Gates of Fire*, he recounts the legendary story of the Spartan hoplites led by King Leonidas

and their successful defense of the Hot Gates at the Battle of Thermopylae. During the battle, a mixed force of approximately 7,000 Greeks, to include a core of 300 Spartans, held off an invading force estimated to number between 120,000 to 300,000 Persian invaders for nearly 3 days. The defensive operation bought their fellow Greeks time to prepare for coming fights and forever emblazoned the significance of Spartan warfighting culture to the annals of history.

The reverence for the Spartan namesake, while arguably overly popularized today, is a testament to their warfighting prowess, a byproduct of a culture ingrained in the agoge.[1] In the movie adaptation *300*, King Leonidas hammers home the idea of culture with his troops when he asks, "Spartans! What is your profession?" The brave 300 release a synchronized battle cry allowing Leonidas to state, "See, old friend, I brought more soldiers than you did" (Snyder, 2006). Their professional identity was rock solid, and the foundation proved decisive in application.

As American Soldiers and Army Aviators, we should take every bit of pride in OUR culture, and I am more than a little curious how Soldiers would describe it both internal and external to the branch. Furthermore, what would you or other Aviation Branch Soldiers say if asked, "what is your profession?" I believe a sense of profession is interwoven into our organizational culture.

A warfighter culture begins individually and is discovered through self-reflection and asking hard questions. For instance, how have you committed yourself to our profession? A good indicator might be your practice of self-study, self-improvement, and whether you go the extra mile. What does the extra mile look like? Well, if you are scheduled to fly late, it should involve starting your day with vigorous PT. Going the extra mile might also be volunteering to take a new Soldier under your wing to demonstrate what right looks like. Is there accountability in your unit? Ask yourself if and how you are challenging your team, or tribe. Do you look like a warfighter? When the situation gets challenging or dynamic, do you throw the technical book at the problem and avoid conflict, or do you lean in and own the problem? These are tough points to consider and only answered by the Soldier in the mirror, but such is the nature of self-reflection.

Now, if you joined our Army for the college benefits, that's great. But at some point, you must commit to the profession and embrace this life of self-sacrifice for our cause. As GEN (Ret.) Martin Dempsey says in his book, *No Time for Spectators*, (2000), this is not a spectator sport. Our profession demands a level of commitment—you took that oath, at least once. It's time to embrace our culture and renew your honor, each day. After all, commitment to our profession is one of necessity.

General (Ret.) Douglas MacArthur explains this necessity best when he said, "Through all this welter of change and development your mission remains fixed, determined, inviolable. It is to win our wars. Everything else in your professional career is but corollary to this vital dedication … you are the ones who are trained to fight. Yours is the profession of arms, the will to win, the sure knowledge that in war there is no substitute for victory" (MacArthur, 1962). To put it simply, our profession is war, and everyone in the branch must be committed to that profession through the application of their Aviation skills.

## Closing Thoughts

Admittedly, organizational culture is a very big topic. I do not want anyone to consider our current culture in a negative light; after all, Army Aviation has served our nation and Army with distinction, decisively, for more than 7 decades. The reality remains that our future fight will be nothing like our past engagements. In response to the changes and complexities of modern warfare, it is necessary to change how we, as Aviation professionals, approach our current and future roles in war. Aviation Soldiers must remain disciplined, technical experts in all aspects of Aviation. However, Aviation Soldiers must grow in their tactical focus, exuding expertise in how the Army fights as a meaningful whole, thereby enhancing our collective worth as a combined arms teammate. I firmly believe that the Aviation Warfighter Culture is Army Aviation's key to refining our collective professional identity, and it will live or die with all of you, the Soldiers of Army Aviation.

Biography:

MG Clair Gill was commissioned in Army Aviation from the United States Military Academy at West Point in 1994. He has served with a variety of units, to include command in the 101st Aviation Regiment and 10th Combat Aviation Brigade. In 2021, MG Gill served as Director, Army Aviation on the Headquarters, DA staff for 1 year, followed by his most recent 2-year assignment as Deputy Director for Regional Operations and Force Management (J35) on the Joint Staff. MG Gill is now the commander of the U.S. Army Aviation Center of Excellence.

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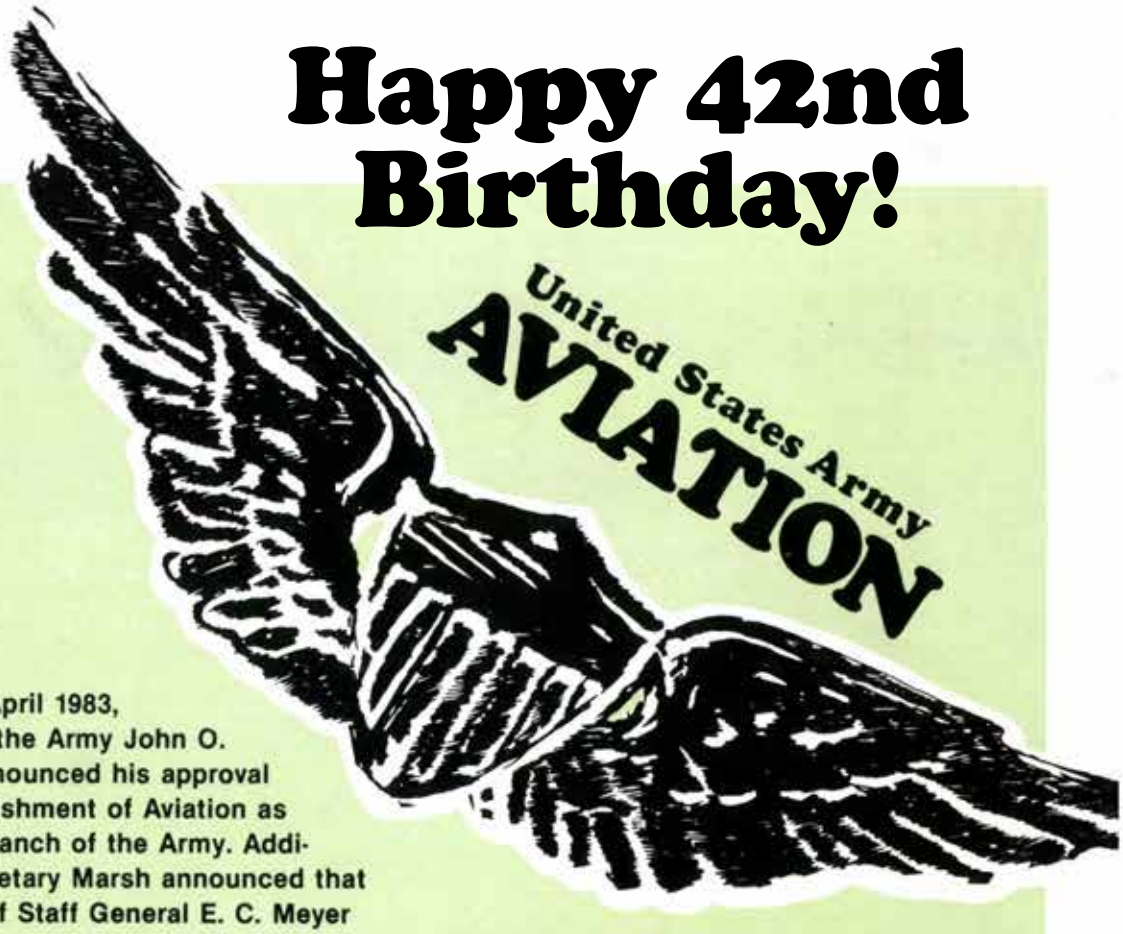
[1] The "agoge" refers to a state-controlled educational and training system for male Spartan youth.

# Happy 42nd Birthday!




On 14 April 1983, Secretary of the Army John O. Marsh Jr. announced his approval of the establishment of Aviation as a separate branch of the Army. Additionally, Secretary Marsh announced that Army Chief of Staff General E. C. Meyer has approved the centralization of proponency, or responsibility, for Aviation matters at the Army's Aviation Center at Ft. Rucker, AL.

General Meyer had earlier approved the two actions in concept as a result of a thorough study of the Army's Aviation requirements now and in the future. That study was conducted by the Army's Training and Doctrine Command at Ft. Monroe, VA.

In approving the centralization of Aviation proponency, General Meyer noted that, "Voids in Aviation training and training development, piecemeal development of Aviation doctrine and force structure, and the education and training requirements generated by equipment advances" mandated single responsibility for Aviation matters.

New battle doctrine for Army Aviation has broadened its role as a combat maneuver element. That doctrinal development and personnel management considerations, according to General Meyer, made formation of a separate Aviation Branch necessary.

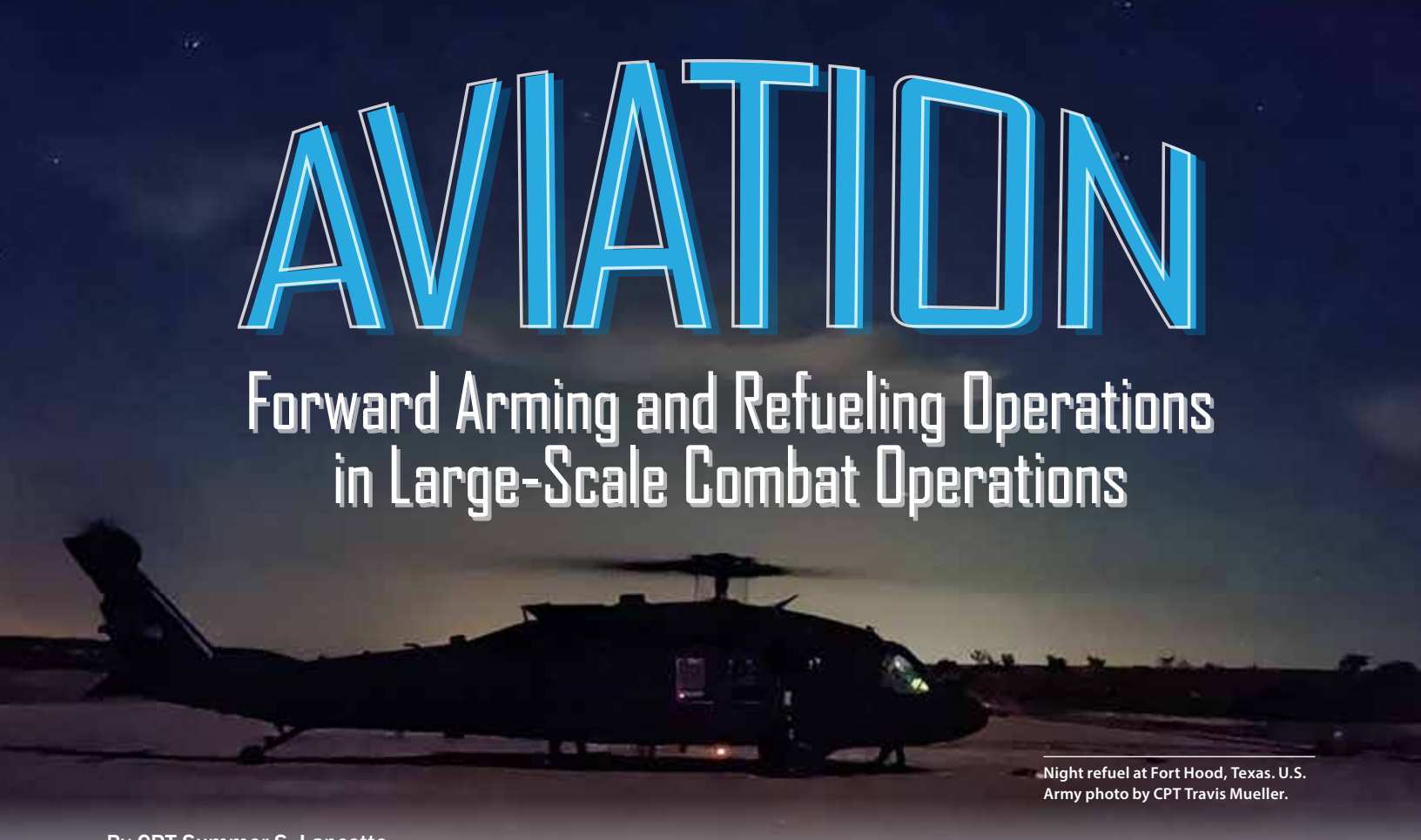
General Meyer has directed the Army staff to give further study to the Training and Doctrine Command's Aviation implementation plan. That study will include personnel management, Aviation training, aviation logistics, budget and branch composition issues.

# We're a branch!

Article originally published in the April 1983 issue of the *Army Aviation Digest*

# AVIATION

## Forward Arming and Refueling Operations in Large-Scale Combat Operations



Night refuel at Fort Hood, Texas. U.S. Army photo by CPT Travis Mueller.

By CPT Summer S. Lancette

The Russia-Ukraine War has provided many lessons about Large-Scale Combat Operations (LSCO). Two specific lessons, however, are exceptionally applicable to the challenges U.S. Army Aviation will experience during LSCO. The first lesson is that there is a significant increase in munition expenditure compared to U.S. operations in Afghanistan, Iraq, and Syria. Second, the combat in Ukraine has demonstrated that dispersion is the key to survivability (Robinson, 2023). Regarding the second lesson, although Army Aviation often conducts dispersed operations at the company and troop level during training exercises, it often fails to properly train and identify existing gaps when sustaining such operations. A failure to properly understand the implications of dispersed operations on sustaining aviation formations may leave Army Aviation insufficiently prepared to fight. With the preparation for LSCO now being the preeminent training focus for the Army as a whole, the aviation community must address the aviation sustainment problem created by operating within a contested environment.

Specifically, how will Army Aviation employ forward arming and refueling point (FARP) packages to provide the requisite fuel and ammunition for company-sized missions while maintaining a small enough ground footprint and signature to avoid detection and targeting? A solution to such a complex problem will require Army Aviation leaders to push boundaries; accept risk; and train unconventional tactics, techniques, and procedures (TTPs) with respect to FARP operations during LSCO.

Two decades of counterinsurgency operations (COIN) have minimized the flexibility of Army Aviation. Aviation units are accustomed to operating in and out of fixed military bases and airfields, where they replenish their fuel and ammunition.

Furthermore, deployed aviators primarily fly in team flights, part of an aircrew weapons team. Breaking the precedent COIN has established, Army Aviation must adapt to the demands of LSCO as team flights from fixed sites will no longer be the norm.

Rather, company command posts (CPs) will jump every 24–48 hours to remain undetected and increase survivability. What this means is that aircraft will likely take off and land at different CP locations, thus highlighting the importance of utilizing jump FARPs across the area of operations more frequently. Additionally, Army Aviation is beginning to emphasize collective training in larger elements and utilizing jump FARPs and silent FARPs[1] forward of the battalion tactical assembly area (TAA) and company CPs. Observations and experiences from the Joint Multinational Readiness Center (JMRC) at Hohenfels Training Area in Germany, and the National Training Center (NTC) rotations at Fort Irwin, California, underscore that Army Aviation continues training for LSCO by prioritizing company-level missions. Such missions exercise phased and continuous attacks on objectives while employing anywhere from eight to 16 aircraft at a time. An additional observation as to how Army Aviation is now training to better prepare for LSCO is the large-scale long-range air assaults currently being

[1] Silent FARPs are "silent until activated" and "have all the equipment and personnel necessary to assume the role of the active FARP" (Department of the Army, 2018, p. 2-1).

developed by the 101st Combat Aviation Brigade (CAB). This new concept for air assaults plans for the use of up to an entire CAB to execute a joint forced entry. These observations are just two examples in Army Aviation demonstrating how the sheer nature and size of LSCO will inherently require more fuel (CL III) and ammunition (CL V) for mission success, as compared to CAB operations historically seen in COIN.

Transitioning to a focus on FARPs and their footprints, previous and current aviation training see FARP site selections being predicated on easy-access open fields capable of fitting four to eight aircraft at a time in a traditional horizontal FARP layout. The fueling at such a site is conducted by two to four heavy expanded mobility tactical trucks (HEMMT), and if ammunition is required, an additional four to five palletized loading system (PLS) trucks. This type of FARP site and layout is ideal for an active FARP at a traditional TAA but will be ill-suited for the challenges presented by LSCO. Instead, jump FARPs will be crucial to enable aviation missions to reach the division deep area and ensure the safety and survivability of FARP packages. Forward arming and refueling point site selections should not be limited to large, open fields that make for easy detection. Instead, they should be FARPs activated at specified times and at inconspicuous locations. These adjustments will consequently decrease predictability and increase survivability.

Referencing Army Techniques Publication 3-0.17, "Techniques for Forward Arming and Refueling Points," FARP site selection is mission, enemy, terrain, troops and support available, time available, and civil considerations, or METT-TC, dependent and a function of the battalion S-3. The only requirements of the FARP are to:

- "meet unit missions requirements.

- Provide support throughout the battlefield under all conditions.

- Avoid threat observation and engagement" (Department of the Army, 2018, p. 2-2).

With this doctrinal guidance, the possibilities of how to execute FARPs are endless. The determining factor for selecting FARP sites will be in our leadership's innovation and willingness to accept risk.

Forward arming and refueling point capacity during training missions is oftentimes "hand-waved." Commanders are briefed and assured the FARP will contain enough fuel and ammunition to support the mission one to twofold. Within the confines of Field Manual 4-0, "Sustainment Operations," and safety regulations, only PLS trucks and trailers may transport aviation ammunition (Department of the Army, 2019). Each PLS truck is able to carry 10 pallets of ammunition, bearing in mind that not all types of ammunition can be transported on the same truck at the same time. What this means is that the FARP package would be greater than five oversized trucks in order to transport an AH-64 company's full combat load (CBL) with enough fuel and ammunition. The complexities introduced by LSCO make it unacceptable for such "hand-waving" to continue because a commander may no longer be able to easily forward-deploy such a large FARP package without the legitimate risk of losing those assets and Soldiers.

Forward arming and refueling point packages will be a high-value and high-payoff target for an enemy during LSCO. Consequently, large jump FARP convoys in this contested environment will be at risk of interdiction and targeting by indirect fires, first-person viewer drones, enemy reconnaissance elements, and potentially, enemy aircraft (Wilson, 2024).

This leads to the first problem of how the size of a FARP package can be decreased while still maintaining a large enough CL III and V capacity to effectively support a company-sized mission. This unique problem will force Army Aviation to rethink the current doctrine and TTPs pertaining to the movement and storage of CL III and V. Some rhetorical examples of this include: How compactly can a PLS load 8x AH-64s standard CBL without mixing ammunition restrictions? Could a CH-47F transport CL V and if so, how much? How many light medium tactical vehicles would it take to transport only the *Hellfires* of a company's CBL? These are just a few questions to consider as Army Aviation starts to develop the TTPs to ensure sufficient assets and prioritize survivability.

Another possible solution allows for aviation units to remove the movement of CL V from the FARP package equation entirely by using CH-47s to discreetly pre-position ammunition holding areas (AHAs) across the division operational environment. This could

Tigershark FARP Operations at Joint Base Lewis-McChord, Washington. U.S. Army photo by SGT Ashunteia Smith.

U.S. Soldiers refuel a CH-47 Chinook helicopter at a FARP in the 28th Expeditionary Combat Aviation Brigade's area of operations in the Middle East. U.S. Army photo by SPC Rob Donovic.

allow for the reduction of the size of a jump FARP convoy to potentially three vehicles (2x HEMMT; 1x high mobility multipurpose wheeled vehicle) as this silent convoy needs only to move to the forward-positioned ammunition.

An additional approach to decreasing the size of the FARP package is to leverage the assets we already possess, such as the advanced aviation forward area refueling system (AAFARS) and Fat Cow operations.[2] The AAFARS is a four-point refuel system providing a total of 2,000 gallons of fuel. This solution to fuel can be transported with empty blivits by a ground vehicle in a container or sling loaded full by a UH-60 helicopter.

Though Fat Cow operations may have the largest signature with the CH-47 being the primary source of fuel, in my experience and taking into account convoy and transit times, Fat Cows are the quickest to set up, making them a viable option for last minute FARPs after a mission is initiated.

The second challenge Army Aviation faces with respect to preparing for LSCO is how to properly train and prepare for these aforementioned unconventional FARPs. The training must start with leadership. Risk is both accepted and mitigated by the unit commander. The forward support company, in coordination with the battalion S-3, have to be willing to think creatively when it comes to selecting FARP sites and executing FARP operations. Such new ideas may alter conventional thinking with respect to FARP selection. Rather than prioritizing open fields for FARPs, units may turn to abandoned roads and parking lots. Moreover, training at the battalion and company level will have to emphasize driver training and nighttime driving. Units must understand and stress the importance of conducting jump FARP movements during periods of darkness and to obscure locations, minimizing the risk of detection. In addition to administratively conducting regular night driver training, units must prioritize the actual employment of a full jump FARP and all of its steps at night during a JMRC or NTC rotation. Early on in the rotation, units should exercise lift assets to establish notional AHAs, frequently maneuver FARP packages to these sites to set up refuel pads on a road, and have the aircraft actually utilize the FARP for fuel. All of this experimenting and training will be the true test of the unit's readiness and ability to employ a small, survivable package capable of supporting an aviation LSCO mission.

Logistics win and lose wars. Finding a solution that can solve how to increase or maintain the capacity of FARPs while decreasing its footprint during LSCO will not come easily or quickly. Through proper planning, preparation, and execution during training, we can identify the gaps in our processes and devise TTPs to ensure the most efficient, survivable way to accomplish aviation sustainment operations in a contested environment. Innovation and an increased willingness to accept risk at the tactical level will lead to the development of different FARP courses of action. The result will be an Army Aviation community able to proactively identify potential friction points, find solutions, and be ready for the challenges LSCO will present.

Biography:

CPT Summer Lancette is a 2018 graduate of Clarkson University, majoring in Engineering and Management. She serves as an Aviation officer in the United States Army.

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[2] The primary mission of Fat Cow operations is "to provide a safe and convenient means of increasing the range and endurance of the CH-47D helicopter" (Department of the Army, 2018, p. 2-20).

# Less is More:

## An Analysis of Outdated Aviation Sustainment Distribution Support for Large-Scale Combat Operations

A U.S. Army petroleum supply specialist flushes the lines of a fueling truck while watching the sun rise at a FARP. U.S. Army photo by CPT Travis Mueller.

**By CPT Nicholas D. Turner**

Army Aviation, now more than ever, serves as the catalyst for Army operations through its seven core competencies of Provide Accurate and Timely Information Collection; Provide Reaction Time and Maneuver Space; Destroy, Defeat, Disrupt, Divert, or Delay Enemy Forces; Air Assault Ground Maneuver Forces; Air Movement of Personnel, Equipment, and Supplies; Evacuate Wounded or Recover Isolated Personnel; and Enable Command and Control Over Extended Ranges and Complex Terrain (Department of the Army [DA], 2020, pp. 1-2 to 1-6). This role, however, does not come without complex challenges in a Large-Scale Combat Operations (LSCO) environment, specifically within the sustainment warfighting function. The considerable sustainment requirements expected in LSCO present a concerning challenge for sustainment professionals when focusing on the enablement of aviation operations throughout the widespread operational environment. Based on experiences and insight gained at combat training center rotations and field training exercises (FTX) across a multitude of echelons, it is clear that the current organic modification table of organization and equipment (MTOE) structure of forward support companies (FSC) and troops (FST) within each of the specialized aviation battalions lacks the ability to support the wide array of aviation missions, specifically regarding forward arming and refueling points (FARPs). The centralization of all FSC distribution sustainment assets within the aviation support battalion (ASB) will augment sustainment leaders with key tools to excel at all principles of logistics to better organize, train, and manage personnel in a LSCO environment.

### INSIGHT INTO SUSTAINMENT IN LSCO

As the U.S. Armed Forces has committed to the operational framework of LSCO, echelons of leaders have been assessing and adapting elements of doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF). This is the decision-making framework for addressing gaps throughout the military to ensure preparedness for the future fight. All elements of DOTMLPF can be assessed throughout the following analysis and restructure solution of sustainment distribution support operations, but organization, training, and personnel are the key focus of this presented restructure solution.

Sustainment professionals seek to maximize the efficiency of the sustainment warfighting function, defined as, "**the related tasks and systems that provide support and services to ensure freedom of action, extend operational reach, and prolong endurance**" (DA, 2019, p. 5-5). This definition, however, is a gross simplification of the requirements that will be placed upon the sustainment warfighting function in the complex LSCO environment. In conjunction with providing support and services, sustainment must operationalize in plans, execution, and survivability to endure and shape the LSCO fight. Field Manual (FM) 4-0, "Sustainment Operations," further elaborates on the purpose of sustainment operations, summarizing that the endurance of Army forces is a primary function of sustainment and is essential to seizing, retaining, and exploiting the initiative (DA, 2024, p. ix). To accomplish this purpose, sustainment leaders develop tactics and train to excel at the principles

of sustainment, which include integration, anticipation, responsiveness, simplicity, economy, survivability, continuity, and improvisation (DA, 2024). Additionally, as identified in Eagle Team newsletters from the National Training Center, the Eagle Team specifically highlights that "the sustainment WfF [warfighting function] is the determining factor that enables the depth and duration of [all] Attack Aviation operations … deliberate aviation sustainment planning and forecasting enables freedom of action by increasing the number of options available to the ground force commander" (Griffin & McQuinn, 2024, p. 2). When it comes to the crucial role Army Aviation plays through its seven core competencies, it becomes clear that sustainment, specifically FARP operations, is the lynchpin determining success or failure in LSCO. The centralization of all FSC distribution sustainment assets within the ASB would provide organizational continuity, create enhanced training opportunities to develop critical skills, and consolidate personnel for assignment to key sustainment tasks, ultimately enabling sustainment professionals to operationalize the principles of logistics for FARP functions in a LSCO environment.

## ORGANIZATION

The current task organizational structure of sustainment nodes in combat aviation brigades (CAB) is convoluted. Within a CAB, there resides an ASB whose purpose is overseeing all sustainment operations within the CAB, comprised of a headquarters and support company, distribution company, brigade signal company, and aviation support company (DA, 2024). Additionally, there are embedded sustainment nodes in the form of FSCs and aviation maintenance companies/troops within each of the attack, assault, and general support battalions, and cavalry squadrons with each FSC generally comprised of a headquarters platoon, distribution platoon, and ground maintenance platoon (DA, 2024). The distribution platoon specializes in aircraft refuel capabilities, transportation of supply classes, and logistical operations, including ammunition and water. As LSCO continues to develop, it becomes more evident that commanders who are closest to updated information must retain the ability to directly task distribution assets to achieve the sustainment principles of integration, anticipation, and responsiveness within a dynamic environment. Consolidation of distribution assets, which entails the transfer of each specialized battalion's distribution platoon MTOE to the ASB, fills this gap for sustainment and operational commanders.

I analyzed current MTOEs between assault battalions and cavalry squadrons, which revealed a critical shortfall among current distribution asset allocation within CABs. This sample analysis is based on the FSC MTOE of an assault helicopter battalion (AHB) and air cavalry squadron (ACS).

In this example, the AHB is allocated up to 1x Palletized Loading System (PLS), 1x Load Handling System (LHS), 5x PLS trailers, and 10x M978 heavy expanded mobility tactical truck (HEMTT) fuelers, with a total of 30x petroleum supply


The 12th Combat Aviation Brigade sharpens its skills at Saber Junction 2024. U.S. Army photo by CPT Lydia LaRue.

specialist (92F) Soldiers compared to the ACS allocation of up to 1x PLS, 10x LHS, 13x PLS trailers, and 8x HEMTTs, with a total of 25x 92Fs.

The PLS, LHS, and PLS trailer systems provide the capability to move ammunition and the M978 system for fuel. The obvious difference in the MTOEs between LHS and PLS trailer capacity presents considerable challenges for cross-battalion support within CABs due to ammunition and fuel requirements outlined in Army Techniques Publication (ATP) 3-04.17, "Techniques for Forward Arming and Refueling Points," for AH-64 Apache mission sets (DA, 2018, p. 4-3). In simple terms, under the current organization of assets, assault distribution units can organically transport about 15 percent of an ACS's basic ammunition allocation. This is a significant shortcoming in the enablement of cavalry capabilities across a LSCO operational environment for the CAB. Consolidation of distribution equipment and personnel under the single distribution company in the ASB provides flexibility to commanders, while allocating assets at respective FARPs when integrating with CAB and division-level operational plans.

## TRAINING

How sustainment elements prepare to fight tactically and integrate into the larger concept of operations weighs heavily on leadership when preparing to fight in a LSCO environment. Further, the emphasis on developing the skills required to provide sustainment support across the Aviation Enterprise has never been more pressing. Consolidation of distribution assets within the ASB will immediately fill gaps in cross-training and allow for continuity in tactics, techniques, and procedures (TTPs) and standard operating procedure (SOP). The FARP is the primary logistical hub for aircraft during the execution of any operation. The Eagle Team reinforces the criticality of reducing downtime at FARP locations to increase survivability, requiring efficient cross-training of fuelers and ammunition specialists within the support company (Griffin & McQuinn, 2024, pp. 5–6). Organic FSCs currently train to meet the needs of their specialized battalions, but in LSCO, much more will be asked of sustainment nodes in aviation operations. Forward arming and refueling points must be able to provide continuous, simple, responsive, and survivable sustainment coverage across multiple platforms to allow commanders the ability to exploit the initiative on the battlefield and enable the utilization of Army Aviation assets throughout the operational environment at any time. Centralizing sustainment distribution assets at the ASB level, which is closely linked to the CAB operations cell, provides sustainers a wide variety of training opportunities across the array of missions. Therefore, training can be structured to encompass all mission-essential task list tasks required from the sustainment warfighting function in a CAB.

The ability of ASBs and the CAB staff to nest and forecast training requirements holistically allows sustainment professionals to focus on developing skills required to enable operations outside the narrow lens of the current task organization. Strong, integrated teams are required to ensure "the systems and processes that go into setting up and maintaining [the] FARPs [of various types], as well as the actions of those around them," to improve FARP efficiency in refitting aircraft back into the fight (Griffin & McQuinn, 2024, p. 5). To achieve this, streamlined capture of roles and responsibilities through cohesive training across a multitude of platforms is necessary. Large-scale combat operations demand sustainment personnel to retain the ability to provide refuel and rearmament support across all platforms within the CAB at a precise time and place, quickly followed by rapid displacement to ensure survivability in a contested environment. Consolidation of the distribution assets within the ASB directs the focus of sustainment professionals toward establishing thorough training plans, with the objective of enhancing all skills required to support CAB operations.

## PERSONNEL

The assignment of qualified, professional experts to critical tasks increases the probability of mission accomplishment, especially when it comes to the planning and execution of sustainment operations in a LSCO environment. Centralization of distribution assets at the ASB brings sustainment leaders and Soldiers together with the goal of providing greater flexibility to integrate, anticipate, and respond in a dynamic operational environment. With each service

member bringing unique experiences and solutions that would enable complex missions, this centralization would reduce the friction currently experienced in CABs relating to 92F shortages and mission command under the existing task organization structure.

The critical Army-wide shortage of the petroleum supply specialist military occupational specialty (MOS) presents a significant challenge for sustainers conducting FARP operations. According to ATP 3-04.17, "FARPs with eight service points, theoretically, require at least ten petroleum service specialist MOS 92F: eight to refuel aircraft and two manning the emergency shut-off valves. It also requires sixteen arming personnel (two per service point)" (DA, 2018, p. 2-24). That results in a total of 26 personnel to operate a single eight-point FARP, but the footprint eight-point FARPs require, and their inability to displace quickly when in contact, poses challenges in a LSCO fight. Combined with this operational change, the eight-point FARP requirement compromises survivability in today's FARP personnel structure. The availability of FARP personnel within the current MTOE allocation of 30 personnel in an AHB FSC and 25 personnel in an ACS FST, severely restricts the type and amount of FARPs that can be emplaced throughout the operational environment. The current requirements to successfully run a single eight-point FARP requires 85–95 percent of a current FSC or FST's distribution personnel. Additionally, the MTOE does not account for lack of personnel assigned to each distribution section, nor whether the service members filling those positions are physically capable of conducting FARP operations at a particular time. Even regulation acknowledges the likely result of overextending FSCs based on total number and type of FARPs required for an operation. Army Techniques Publication 3-04.17 recommends cross-training ammunition specialists (89B), petroleum specialists, and even copilots to rearm and refuel operating aircraft (DA, 2018, p. 2-24). Regulation provides techniques to assist with shaping the way Army Aviation conducts FARP operations; however, it fails to identify shortcomings in the current MTOE structure of sustainment assets across battalions within the CAB. Therefore, the centralization of distribution assets at the ASB level would allow for flexibility to support CAB operations with the increased access to more personnel.

10th Combat Aviation Brigade petroleum supply specialists at Forward Operating Base Shank, Afghanistan. U.S. Army photo by CPT Peter Smedberg/Released.

Key sustainment personnel in leadership positions must exercise mission command across the warfighting function, and this proposed restructure enables a clear path for mission command to thrive. The proper institution of mission command, defined as "the Army's approach to command and control that empowers subordinate decision-making and decentralized execution appropriate to the situation" (DA, 2019, p. 3-8), which emphasizes "seizing, retaining, and exploiting the initiative," (p. 3-8) will be decisive in a LSCO fight. Most importantly, "mission command helps commanders capitalize on subordinate ingenuity, innovation, and decision making to achieve the commander's intent when conditions change or current orders are no longer relevant" (p. 3-8). Under the current task organization, there is significant confusion regarding what echelon retains operational control of sustainment operations when planning, preparing, and executing operations in support of CAB missions. All logisticians assigned to specialized battalions within the CABs are managed by the ASB battalion commander, who acts as the senior logistician within the CAB, but each FSC and FST falls under the attack, cavalry, assault, or general support operational command of the battalion commander and their respective staffs. This dilemma faced by company- and troop-level leadership significantly weakens mission command and distracts the specialized battalions while carrying out Army Aviation's seven core competencies. The centralization of distribution leadership personnel focuses mission command within the ASB, allowing for clear synchronization of sustainment support provided through FARPs across the CAB.

A restructure of leadership personnel focused within the ASB also presents the ability for sustainment staff to operationalize the sustainment warfighting function through enablement of a nested sustainment operations process. Today, the sustainment warfighting function lacks deliberate involvement in a thorough military decision-making process (MDMP) iteration, but the depth and duration of operations that will be instituted in LSCO require sustainment staffs to conduct the operations process with the same diligence as the operations staffs. Through observance of FARP operations, the Eagle Team identifies that "it's essential to have distribution Platoon Sergeants, Platoon Leaders, and FARP NCOICs involved in the mission planning process at the task force level, [and that] their expertise and insights are essential for successful integration of FARP operations into the bigger picture" (Nice, 2023, p. 10). The

leadership consolidated in the ASB, as proposed, must accept the responsibility to operationalize FARPs for CAB operations and run the MDMP and troop leading procedures process to support the various operations that will occur in LSCO. The ASB can then designate how to array leadership within that force structure and provide liaison officers, for example, to maneuver units to assist in sustainment synchronization based on their operational timelines.

Logistics leaders and FARP operators must have a thorough understanding of ATP 3-04.17 to provide consistent support, but they must also retain the foundational knowledge needed to improvise certain support capabilities based on mission requirements to meet success criteria. An ASB has the specialized personnel and staff required to implement techniques for unique circumstances quicker, compared to a singular FSC or FST. With this structure, further success can be pursued in proper preparation for critical inspections, such as the Directorate of Evaluation and Standardization Aviation Resource Management Survey (ARMS) inspection. Forward support companies consistently struggle to truly meet the foundational requirements outlined in the ARMS because of limited access to diverse training opportunities. Due to high operational tempo across maneuver units, they seldom receive opportunities in the pursuit of proficiency on critical ARMS tasks in the current structure. Overall, the movement of distribution leadership personnel within the ASB would allow logistics leaders to conduct thorough operations processes for sustainment operations, meet critical standards for proficient aviation sustainment operations, and promote the use of creative techniques to better support aviation missions in LSCO.

## CHANGE FOR THE BETTERMENT OF BATTALIONS

With this proposed organizational consolidation, organic planning of logistics support within battalions would be restricted and require nested coordination with the ASB throughout each operation. However, this would enable the ASB to provide more thorough and complex solutions surrounding FARP planning, training, and execution in the operations process. The ASB's assumption of this responsibility to support Army Aviation in a LSCO fight would free time for the battalions to intently focus on other warfighting functions. Aviation is expected to largely be used as a division asset, consistently tasked to various brigade combat teams across a vast area of operations. Therefore, the ASB, nested with CAB operations, must accept and lead the FARP effort for broad utilization across the LSCO domain. The consolidation of personnel and assets would require refinement once instituted, but giving sustainment professionals operational control and access to personnel would rapidly grow the warfighting function's capability through diverse training opportunities.

## CONCLUSION

In summary, the centralization of all FSC distribution sustainment assets within the ASB will augment sustainment leaders with key tools to excel at all principles of logistics to better organize, train, and manage personnel in a LSCO environment. The current task organization structure stifles decision-making and execution. Additionally, coupled with improper MTOE allocations when assessing cross-platform FARP operations, failure to achieve the sustainment principles of integration, anticipation, and responsiveness within a dynamic environment ensues. Consolidation of distribution assets provides a streamlined organizational structure and access to a wide array of equipment and personnel, resulting in fulfilling key sustainment principles in a LSCO environment. This centralization additionally streamlines training opportunities for all sustainment professionals across all CAB platforms, filling the shortfall of efficient FARP operations through shared TTPs and SOPs to ensure survivability in a contested LSCO fight. Lastly, reorganization of personnel, both with FARP personnel and key sustainment leadership, solves critical shortcomings seen in the current structure regarding lack of personnel, convoluted mission command, and the required role of sustainment staffs when conducting the operations process for sustainment support. Although this centralization would remove organic distribution assets from the various battalions within the CAB, this change would enable the sustainment leaders within the ASB to operationalize sustainment across the CAB, further enhancing the support required to continuously provide freedom of action, extend operational reach, and prolong endurance in a LSCO environment.

Biography:

CPT Nicholas Turner graduated from the United States Military Academy at West Point with a Bachelor of Science degree in Electrical Engineering. He was assigned to 4th CAB, 3-4 AHB in Fort Carson, Colorado, as a UH-60M Pilot. CPT Turner served as a Maintenance Company Executive Officer in the Aviation Maintenance Company, Assault Company Platoon Leader, Battalion Logistics Officer, and FSC Commander, and he conducted two rotations to the National Training Center in Fort Irwin, California. CPT Turner currently serves in Company D, 1-145th Aviation Regiment, as an Aviation Basic Officer Leader Course Instructor.

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# HACKING YOUR AVIATION MAINTENANCE PROGRAM:

## DRIVING DOWN PHASE MAINTENANCE INSPECTION TIMES

By MAJ(P) Kyle R. Murray and LTC Billy D. Blue, III

Winning matters in aviation maintenance. Whether in combat or in garrison, aviation maintenance programs can make or break the readiness and success of your aviation fleet. Plain and simple, maintenance enables operations. Aviation maintenance is a challenging and dynamic business, sensitive to factors such as changes in leadership and training priorities, mission demands and operating tempo (OPTEMPO), manning and logistical challenges, and budgetary constraints. Fluidity of operational variables in Large-Scale Combat Operations (LSCO) can be one of the biggest challenges to aviation maintenance (Department of the Army [DA], 2020, p. 1-1). While every aviation maintenance organization faces unique challenges regarding these factors—as well as others more specific to their location—disposition, OPTEMPO, and resourcing all have the same fundamental objective when it comes to aviation maintenance: to provide safe and reliable mission-capable aircraft to support mission requirements (DA, 2020, p. 1-5). Therefore, it is essential that aviation commanders and their maintenance program managers develop, implement, and support a structured and well-synchronized aviation maintenance program, which maximizes both efficiency and effectiveness by synchronizing, tracking, and managing sustainment resources.

### The Importance of Phase Maintenance

The aviation maintenance program is the beating heart of any aviation organization, pumping out continuous sustenance to keep aircraft operating and build critical readiness. Aviation maintenance comes in various forms of daily scheduled and unscheduled tasks to deliberate, long-term scheduled maintenance operations, such as critical aircraft modifications and phase maintenance inspections. While predictable and regularly scheduled daily maintenance keeps the fleet in the air on a short-term basis, in order to ensure the long-term health and longevity of an aviation fleet, aviation maintenance programs must develop and execute a more deliberate, in-depth maintenance cycle known as phase maintenance. Phase maintenance is a unique maintenance action involving the thorough disassembly and inspection of an aircraft at scheduled flight hour marks specific to the airframe (DA, 2020). Maximizing efficiency in managing and executing this phase maintenance cycle will pre-

Company B, 602D Soldiers conducting a 960-hour phase maintenance inspection on a UH-60L in June 2024. Photo courtesy of CW3 Tim Claflin.

serve and support the operational unit's flying hour program. It will also ensure adequate capacity exists through bank time management to endure periods of increased operational intensity that short-term, daily maintenance cannot sustain over prolonged periods of time. An inefficient phase maintenance program not only creates real delays in regenerating aviation combat power, but it wastes limited resources and disrupts key sustainment and logistical processes. This, in turn, can significantly destabilize the crucial partnership that must exist between maintenance and operations. Furthermore, this can decrease productivity and talent retention; reduce major scheduled maintenance predictability and synchronization; increase blind spots on underlying or emerging maintenance concerns; eliminate proactive and innovative efforts and practices; and erode trust between leaders, operators, and maintainers. Additionally, because phase maintenance plans span over a year or more, these impacts will likely endure well beyond the time it takes to correct the problem. This lag creates further delays, frustration, and challenges in getting the maintenance program back on track. Regardless of the specific circumstances, we have outlined several methods in the next section that have proven highly successful for increasing efficiency and overall effectiveness of an aviation phase maintenance program.

A CH-47 Chinook helicopter sits in a hanger awaiting phase maintenance at Camp Buehring, Kuwait. U.S. Army photo by CPT Elizabeth Rogers.

U.S. Army Soldiers conduct 400 hours phase maintenance on a CH-47 Chinook. U.S. Army photo by Charles Rosemond.

## 10 Hacks to Boost Phase Maintenance Program Efficiency

This section outlines 10 methods, or "hacks," that generated tangible results within an aviation support company (ASC) assigned to the Korean Theater of Operations. The ASC worked with limited resources and a consistently high OPTEMPO due to ongoing mission readiness requirements. The results were compiled across 12 phases involving UH-60L, UH/HH-60M, AH-64D/E, and CH-47F aircraft over the past year. The phase data revealed a 30 percent (%) decrease in overall phase maintenance times, with a 40% reduction in overall flight line to flight line times. Additionally, we saw nearly a 50% drop in post-phase maintenance times, which includes deficiency corrections following internal and joint 100% inspections, power-on checks, ground runs, and maintenance test flights, indicating a collective increase in overall maintenance quality, coupled with the shorter phase times.[1]

Regarding personnel, we also saw just over a 30% increase in retention and investment back into the unit to further enable more talent management across our maintenance teams. Considering these results, the following hacks are offered as proven means to measurably increase efficiency and effectiveness, while sustaining the highest level of quality, safety, and talent retention across your maintenance organization. While these methods were proven in an ASC, they can certainly be applied equally to an aviation maintenance company.

### 1. Eliminate Phase Team Distractions.

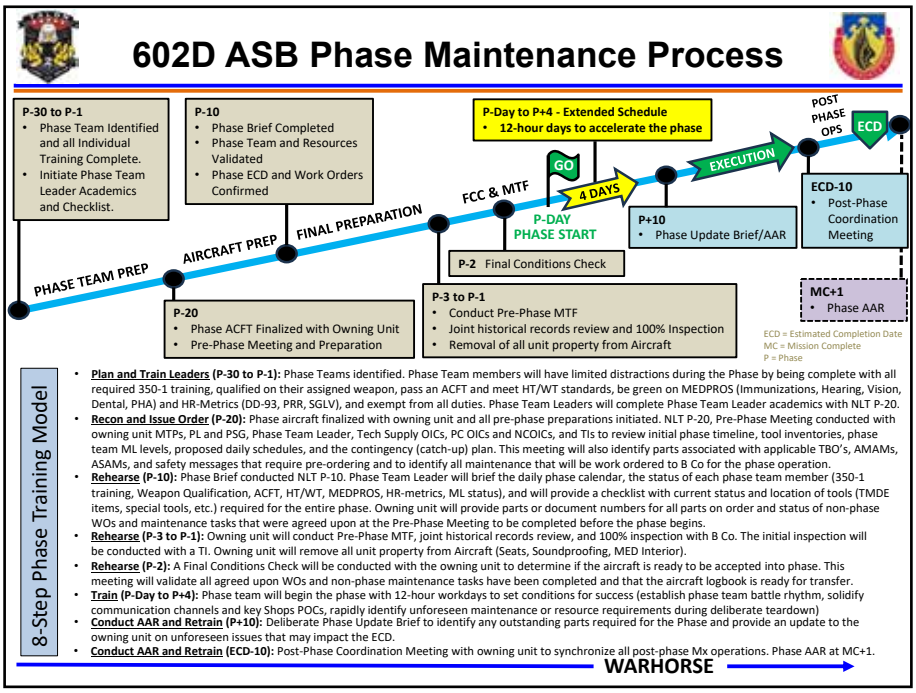
Aviation maintainers, like other Soldiers across the Army, are constantly bombarded with countless demands on their time, ranging from periodic training requirements to last-minute taskings. Add in the myriad of individual and collective readiness tasks and other personal requirements, such as family and social commitments, and there isn't much time left to focus on the primary job to fix and maintain aircraft. Protecting your phase teams by carefully and deliberately identifying personnel early will allow selected Soldiers to complete all requirements related to required 350-1 training, medical and individual readiness, human resources-metrics tasks, Army combat fitness tests, ranges, and other unit readiness requirements before starting the phase. Additionally, ensuring that these Soldiers complete all duty and tasking requirements before they start the phase will further eliminate distractions taking their focus away from the phase maintenance inspection. Eliminating distractions for the phase team yields three important results. **First**, Soldiers are much more committed to and focused on phase maintenance all day, every day, until the mission is complete; **second**, Soldiers are fully engaged and immersed in their maintenance craft, allowing for significant development and progression in line with the aviation maintenance training program (AMTP); and **third**, Soldiers develop a sense of pride and healthy energy as they feel more supported by their peers and leaders to do their job and do it well. These three results directly correlate to increased efficiency, effectiveness, motivation, and talent development.

### 2. Do Not Neglect Pre-Phase Coordination and Synchronization.

Phase maintenance must start well before day zero with pre-phase meetings at least 20 working days before the phase begins. This pre-phase coordination and

U.S. Army aircraft maintainers work on the combining transmission box of a CH-47 Chinook for a 160-hour phase maintenance inspection during a multinational training exercise. U.S. Army photo by SGT Jason Greaves.

[1]Please contact the authors for specifics on the phase maintenance data results referenced in this article.




Company B, 602D phase maintenance process flow chart—September 2023. Developed by MAJ Kyle Murray.

synchronization allows both the owning unit and phase unit to assess the aircraft requirements; personnel requirements; parts, tools, and equipment requirements; and set expectations for the phase timeline, unit responsibilities, feedback mechanisms, and anticipated friction points and delays. More communication, coordination, and synchronization before the phase begins will pay significant dividends throughout the phase and post-phase processes. Advanced part forecasting and resourcing prior to the phase will save measurable time and energy during the phase operation. Maintenance commanders, managers, and test pilots, as well as phase team quality control, production control, and technical supply leaders must be involved and engaged in pre-phase coordination and synchronization.

### 3. Reinforce Post-Phase Coordination and Synchronization.

Post-phase coordination and synchronization is similar to the importance of pre-phase coordination and synchronization. This ensures the owning unit and phase unit clearly understand timelines, resourcing, manning, and priorities for completing the post-phase maintenance requirements to successfully finish the phase and return the aircraft back to the owning unit on time. This post-phase coordination and synchronization must occur no less than 10 working days prior to the expected completion of phase maintenance. Post-phase maintenance is fraught with friction points and single point failure steps, such as refueling aircraft and having a maintenance test flight aircrew ready to fly. These can cost the overall phase maintenance operation hours, days, and weeks through avoidable delays due to mistaken priorities, inaccurate assumptions, or a lack of proper communication and coordination.

New Jersey U.S. Army National Guard Soldiers perform phase maintenance on a UH-60L Black Hawk helicopter at the Army Aviation Support Facility on Joint Base McGuire-Dix-Lakehurst, New Jersey. U.S. Air National photo by MSG Matt Hecht.

### 4. Train Your Phase Team Leaders.

Training your phase team leaders and assistant leaders ahead of the phase will yield immense dividends throughout. Quality control, personnel, and other experienced maintenance leaders must pass along valuable knowledge and lessons learned to the next generation of phase team leaders. Topics such as pre-phase preparation and planning, daily phase operations and battle rhythm, critical standards, internal and external communication and coordination, pilot-in-command briefings and updates, logbook fundamentals, developing proactive approaches, and using critical thinking on the shop floor to get ahead of potential friction points are key to training and sustaining an efficient and effective phase team. A valuable way to give additional experience to phase team leaders is by allowing them to perform as an assistant phase team leader first. These individuals have significant pressure on them to perform well and motivate their team to uphold or excel beyond the expected DA or unit standard. Train them to succeed!

### 5. Accelerate the Phase Right From the Start.

Harnessing the phase team's energy and preparedness at the beginning of the phase is key during the first week. This is when they conduct an accelerated, but deliberate, aircraft teardown to remove all components and begin inspections as efficiently as possible. As with most operations, the earlier you can identify a friction point, the more time and resources are available to neutralize the issue before it impacts your overall timeline and plan. Delays in identifying issues early in the phase can create second- and third-order effects later, causing significant delays, slowdowns, or even a work stoppage. Engaged maintenance leaders and managers must exercise some caution in not pushing phase teams recklessly. This could cause them to rush this process and make mistakes costing additional time and resources.

### 6. Critical Mid-Phase Day 10 Updates.

In addition to daily phase updates, maintenance leaders and managers from both the owning unit and phase maintenance unit, as well as the rest of the audience from the pre-phase meetings, must reconvene to assess phase progress against the metrics used during the pre-phase coordination and synchronization. This single event gives all key players the opportunity to discuss phase progress; re-address any resourcing, personnel, parts, or timeline concerns; and to identify and address any new developments and emerging friction points anticipated during the remainder of the phase. This simple act reinforces the regular, critical communication, coordination, and synchronization between the owning unit and phase unit that must persist throughout the entire phase, not just at the beginning and end.

AH-64 Apache maintainer, SPC Hannah Waggoner, conducts maintenance on Schofield Barracks, Hawaii. U.S. Army photo by SPC Charles Clark.

### 7. Unleash the Full Power of Technical Supply.

Integrating technical supply into the phase operation is key to minimizing delays due to ordering and acquiring needed parts. Without parts, maintenance teams cannot conduct required maintenance. Each phase team should have a technical supply representative attached to the team throughout the entire phase. This direct link from phase team leader to technical supply streamlines the parts resourcing process, minimizing the wait time for parts. This efficient method proved it could save days, and even weeks, off the average phase time this year.

### 8. Maintain a Deliberate AMTP Focus During the Phase.

As stewards of the profession, the AMTP must be integrated across our range of maintenance operations. The AMTP focuses on developing and progressing aviation maintenance personnel to become more competent and talented aviation maintainers and leaders. Phase maintenance provides a primary means to train and progress maintenance personnel across every military occupational specialty (MOS). As part of every phase operation, the AMTP must be fully integrated to maximize opportunities for building required experience and progressing maintainers to the next maintenance level. Developing more experienced maintainers will increase the efficiency and effectiveness of the overall maintenance program. Phase team leaders and unit AMTP managers synchronize efforts to deliberately plan and execute training and evaluations throughout phase maintenance. This is how leaders invest in their maintenance teams to improve the overall quality of maintainers across the Army.

### 9. Learn From Phase After-Action Reviews (AARs).

Following every event, activity, and operation, an AAR is conducted to identify what went well, what did not go well, and how we sustain or improve as we move forward for the next iteration. Phase maintenance AARs should be conducted as soon as the phase is completed to capture critical feedback before the next phase cycle begins. This is the time and space for maintenance leaders, managers, and everyone involved with the phase to pause, reflect, and develop tangible takeaways benefitting the process and teams involved in the next phase. Phase team leaders are charged with passing lessons learned to the next phase team leader to ensure continuity of sustains and improves carryover to the next phase. Making the same mistakes phase after phase is a result of not learning from our experiences through the AAR process. Do not miss this golden opportunity to make the team and program better.

Company B, 602D, 15T phase maintenance team. Photo taken by SFC Michael Bennett.

Company B, 602D, 15R maintainers conducting phase maintenance in April 2024. Photo taken by 2LT Brandon Nguyen.

### 10. Incentivize Your Team and Reward Success.

Most people respond best to positive reinforcement. While maintenance programs should not be dependent on incentives and rewards alone, engaged leaders should seek opportunities to positively reinforce good, healthy maintenance practices and success where appropriate. Finding ways to motivate teams to perform and succeed is what leaders do. Finishing phase maintenance at or ahead of the DA standard is a major accomplishment. Do not neglect the opportunity to recognize your maintenance teams and the leaders managing maintenance when they achieve great results. Motivating phase maintenance teams and the many direct support teams contributing to and enabling their success is paramount to a healthy, successful, and resilient maintenance program. When Soldiers know they have the support of the much bigger team around them, they will move mountains with a single shovel. Leaders must capitalize on the success of their team, no matter how big or small. Additionally, senior maintenance leaders and managers can invest resources in programs to further increase the skills and competency of their aviation maintainers by sending them to skill-enhancing aviation maintenance training opportunities ranging from traditional courses, such as the Senior Maintainer Course, aimed at developing our mid-to senior-level maintenance leaders and managers to a specialized MOS-tailored 10- to 14-day immersive training experience. This is where junior maintainers have the unique opportunity to work closely with skilled maintenance experts and artisans in their craft at Corpus Christi Army Depot, Texas.

**Finding ways to motivate teams to perform and succeed is what leaders do.**

## Why Winning in Aviation Maintenance Matters

A healthy, reliable, and resilient aviation fleet starts with success in aviation maintenance. This critical success is essential to Army Aviation's overall ability to be a true combat multiplier in LSCO. Without well-synchronized, consistent, and predictable maintenance flows and operations, aviation organizations quickly cease to function effectively. As outlined in the previous section, maintenance efficiency and effectiveness start with enabling maintenance teams to be the absolute best they can be. This can be done simply by eliminating distractions and harnessing the potential energy within a maintenance program through a series of focused, deliberate, systems and processes prioritizing consistent communication, coordination, and synchronization, as well as robust leader engagement at every echelon. Maintenance leaders and managers must be willing to invest time, energy, and other critical resources into hardening their maintenance programs, making them more efficient, effective, and able to provide the sure foundation for operations from which to launch.


Biographies:

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# CONSIDERING SAFETY IN ARMY AVIATION MAINTENANCE

Crew members from the 10th Mountain Division's 10th Combat Aviation Brigade from Fort Drum, New York, conduct routine maintenance on a UH-60 Black Hawk at Katterbach Army Airfield in Ansbach, Bavaria, Germany. U.S. Army photo by Charles Rosemond.

**By the 2-6 Air Cavalry Squadron, 25th Combat Aviation Brigade***

Are we putting safety ahead of actual maintenance, or are we just checking the box by saying "safety first"? The aviation leadership community continuously preaches safety, from the highest in command, to the mechanic covered in hydraulic fluid on the hangar floor. Recent events, from losses in funding to aviation mishaps, have shaken our formations. Conducting vital maintenance proves critical to our success as aviators and crucial to our safety as an Enterprise. In this collaboration, we intend to display the practices that Army Aviation Maintainers conduct daily and their importance. These significant practices are scheduled maintenance, unscheduled maintenance, quality control (QC), supervision, and the Commander's Aviation Maintenance Training Program (AMTP).

Several factors exist in the equation that Army Aviation units use when pursuing Department of the Army (DA) standards for operational readiness (OR) rates. Per Army Regulation (AR) 700-138, "Army Logistics Readiness and Sustainability," the equipment readiness goal for Army manned aircraft resides at a defined 75 percent fully mission capable (DA, 2018, p. 8). When maintainers try to log aircraft downtime properly and understand the extreme lengths of time units wait for parts, unit leaders can unintentionally push safety to the side. The pressures pushed by command teams, production control (PC), and individual leaders blur the line between safety and proper maintenance techniques and practices.

Aircraft maintainers should always err on the side of caution and perform all maintenance with safety at the front of their minds. Every time maintainers touch the aircraft, they must always remember the lives in their hands. This collaboration displays the importance of aviation safety and aims to provide a perspective through the lens of actual aircraft maintainers.

## Scheduled Maintenance

Scheduled maintenance is the foundation of safe operations and baked-in operational plans designed by aircraft engineers to ensure proper and safe aircraft operation. Timely maintenance intervals on the aircraft prevent both unexpected breakdowns and catastrophic failures. As noted in AR 750-1, "Army Materiel Maintenance Policy," all commanders will schedule maintenance services in accordance with appropriate technical manuals (DA, 2023,

pp. 8–9). Using this guideline, Army Aviation bases its scheduled maintenance program on each airframe's operating hours, cycles, and calendar time and mostly uses DA Form 2408-18, "Equipment Inspection List," to track this scheduled maintenance (DA, 2014, p. 72; DA, 1997). Manufacturer recommendations obtained through thorough testing and prototype data serve as significant factors influencing the scheduling of routine maintenance tasks. To prevent unnecessary downtime from scheduled maintenance tasks, units use an in-depth preparation method to conduct proper planning.

The Army Aviation community knows this preparation method as P4T3, which stands for Problem, People, Parts, Plan, Time, Tools, and Training. All of these individual words are part of a question that mechanics ask themselves before conducting a maintenance task. What is the problem? Do I have the correct parts on hand to start this task? Does my team have the proper training to conduct this repair? These three question examples are just the start. Many aviation units use a very defined and physical procedure to conduct a formal P4T3 process. Usually, this involves a locally generated form that answers all of these questions, and mechanics will not turn a single wrench until QC and PC approve the form and in turn, approve the plan. Using a maintenance process such as P4T3 streamlines scheduled maintenance tasks to save on time and resources required. Stressing the importance of scheduled maintenance tasks at all maintenance levels fosters a comprehensive maintenance strategy and reduces downtime, which boosts overall confidence for safe operations.

Scheduled maintenance requires an initiative-taking attitude and ensures the upkeep of aircraft. This includes routine inspections, component replacement, and systems checks aimed at preventing potential issues and ensuring the aircraft's continued airworthiness. Adhering to a strict schedule gives ample availability of aircraft for all operations and ensures that the aircraft are safe for flight. After conducting scheduled maintenance, it is possible to miss or even overlook potential deficiencies that could lead to equipment malfunctions. Adherence to a well-planned scheduled maintenance program increases safety and reduces the time and resources required for unscheduled maintenance tasks that are bound to happen.

## Unscheduled Maintenance

Unscheduled maintenance in aviation is any unexpected maintenance. The most important aspect of unscheduled maintenance involves planning for future events and learning from past experiences that enable safer and better maintenance practices, both in the air and ground realms of maintenance operations. Some of these faults develop while the aircraft flies its mission. Others require you to react to situations like if you are in a wheeled vehicle and have a blown-out tire while you are on a mission. As another example, consider the Soldier who conducts a preventative maintenance check and service and finds a Class III leak (petroleum, oil, and lubricants), which brings down the readiness level of the equipment to non-mission capable. The listed examples simply display the routine situations where unscheduled maintenance becomes the main effort.

Operators identify faulty equipment during operations and report to higher maintenance authorities, PC, and QC to address issues and plan the execution

Soldiers of 1st Battalion, 3D Aviation Regiment (Attack Reconnaissance) conduct phase maintenance on an AH-64 Apache helicopter at Katterbach Army Airfield, Germany. U.S. Army photo by Georgios Moumoulidis.

of the maintenance plan. The event of unscheduled maintenance creates issues, either on the aircraft or ground maintenance, because it is not something that you can track or are prepared for. These issue mostly happen at an inopportune time; hence, the term "unscheduled."

Unscheduled maintenance involves unexpected repairs or maintenance tasks that arise due to equipment failures malfunction or other unforeseen circumstances. This type of maintenance is often more challenging to manage, as it requires quick response times and efficient critical thinking skills to minimize downtime, ensuring that aircraft are safe to fly. Yet, to complete maintenance derived from unforeseen circumstances, units must rely on the P4T3 process and effective QC personnel combined with adequate supervision.

## Quality Control and Supervision

Quality control and supervision are key aspects of safety within aviation. Army Aviation QC certifies equipment, supplies, and processes to meet high standards for mission readiness and airworthiness. An active QC section is a core pillar for maintaining equipment and tools that ensure safe daily and operational use of dangerous chemicals and products. It also prevents poor maintenance practices from developing that could lead to personnel injury or damage to equipment. A well-rounded QC team learns from previous mistakes and develops unit standard operating procedures (SOPs). These SOPs, combined with Army publications like regulations and other doctrine, establish focus areas for the technical inspectors and other supervisors to concentrate on.

Supervision proves essential for several reasons: mission success, safety, training development, discipline and morale, accountability, and decision-making. Proper supervision gives guidance to Soldiers and verifies that they follow proper procedures in all maintenance tasks. When supervisors get directly involved with team maintenance tasks, it improves esprit de corps. Soldiers need to see that the leaders responsible for their well-being and training have a personal stake in their development. This statement aligns directly with Army Regulation 350-1, the Army's doctrine for "Army Training and Leader Development," which states, "Each NCO [noncommissioned officer] (and officer) must be capable of performing every task required of their immediate subordinates and understand the relationship between individual job requirements, Soldiers manuals, and collective tasks" (DA, 2017, p. 44).

The list of essential elements of helicopter maintenance definitely includes QC and supervision, guaranteeing that all maintenance tasks meet the highest standards of quality and safety. Quality control involves the inspection and verification of maintenance work and confirms that it meets regulatory requirements. Directly from "Army Aviation Maintenance," Army Techniques Publication 3-04.7, states, "First-line supervisors are a commander's first line of defense in the prevention of mishaps" (DA, 2020, p. 1-14). On the other hand, supervision involves overseeing maintenance personnel, confirming their training, and verifying that they perform the maintenance tasks to the standards outlined in the published technical manuals, especially at the platoon level (DA, 2024, p. 6-7).

A U.S. Army Soldier performs maintenance on a Black Hawk helicopter at Joint Base McGuire-Dix-Lakehurst, New Jersey. U.S. Air National Guard photo by SMSgt Matt Hecht.

## Aviation Maintenance Training Program

Considering the Army's high demand for complex aircraft and equal demand for experienced aircraft maintainers and managers, the AMTP actively supports the Army's mission and proves an integral part of both aviation maintenance and Army safety (DA, 2024, p. v). Scheduled maintenance applications rely on a combination of AMTP and leadership to assign tasks to personnel appropriately suitable for their skill level. This ensures the completion of every task on time and follows the guidelines and restrictions set forth in appropriate publications. This flows into unscheduled maintenance, which relies on personnel having a firm grasp of systems and processes.

This includes understanding universal aviation methods such as P4T3, airframe-specific items like the AH-64 1533 data bus and target acquisition designation sights, or TADS, power flow to troubleshoot faults. All of these hold potential safety pitfalls that maintenance leaders can identify and mitigate with proper training and certification as tracked by the AMTP maintenance-level certification. The appropriate tasking of all personnel according to their maintenance level enables the prevention of safety infractions or mishaps. Effective management and oversight of the AMTP, alongside robust QC measures and ongoing supervision, play crucial roles in maintaining the airworthiness of aircraft and defending the safety of ground and air crews alike.

The AMTP plays a critical role in preparing maintenance personnel for their roles. The program provides comprehensive training in aircraft systems, maintenance procedures, safety protocols, and regulatory requirements. By ensuring the maintenance personnel are well-trained and knowledgeable, the program contributes to the overall safety and efficiency of aircraft operations.

It is safe to assume that most of a Soldier's technical and tactical experience comes from major collective training events such as the Joint Readiness Training Center (Louisiana), National Training Center (California), Joint Pacific Multinational Readiness Center (Hawaii), and a slew of other major op-

erations that require the completion of heavy workloads in constrained periods. For 20 years, many aviation units garnered high levels of experience from the execution of multiple deployments to Afghanistan, Iraq, European rotations, and other operations like Pacific Pathways (now known as Operation Pathways).[1]

Using Army equipment inevitably means that the equipment will eventually break down. As maintainers, this proves to be an opportunity. The status of a unit's maintenance program should never drive its operations; yet, with fewer opportunities for mass consumption of experience from real-life missions, a unit finds itself in a status left wanting. With this lack of real-life experience combined with the recruiting woes and lack of personnel, Army Aviation units find themselves less equipped with the normal standard of experienced personnel to fill required supervisory and managerial positions. Knowing that as a reality, the AMTP serves as a methodical and deliberate way to fill the gap.

## Conclusion

The important practices that keep Army aircraft safe are scheduled maintenance, successful and timely completion of unscheduled maintenance, QC practices, effective supervision, and the empowerment of leaders to implement the AMTP. Real-life missions provide natural "pressures" on their own, and certain leaders who drive the maintenance process might see the unit's OR rate as their personal report card. At the ground level, the unit's OR rate serves as a regulatory goal and also provides insight into the true experience level of the maintainers inside of that organization.

A U.S. Soldier conducts AH-64 Apache helicopter routine maintenance in Germany. U.S. Army photo by Charles Rosemond.

Using the AMTP effectively, with adequate supervision from maintenance leaders and the management of the program from QC, only serves to track experience levels and provide managers the ability to deliberately increase experience levels across the formation. If this is true, units will recognize the importance of AMTP as they see a correlation between the maintenance levels of its maintainers and the OR rate of the organization. Buying into the AMTP serves to enhance the safety culture of the organization. At the same time, it proves to the maintainers and operators of the aircraft that leaders do not push safety aside and truly care for their development. This enhances the unit's overall combat readiness.

To hammer home the importance of safety in aircraft operations and importance of the AMTP, the 2-6 Air Cavalry Squadron (ACS) hosts a monthly AMTP council chaired by the CSM and Maintenance Level Four personnel of the organization. Similar in nature to the non-rated crewmember safety/stands council seen in many units, this group meets to discuss the progression of its maintainers, to talk scheduled and no notice evaluations, and thoroughly exchange discourse about maintenance trends seen across the organization. All of this is to share the wealth of knowledge and to guarantee the success of the AMTP in conjunction with the completion of the unit's overall mission.

Biography:

* SSG Kevin Aranguren, SSG Kenneth Burgos, 1SG Victor Castillo, SSG Christian Glover, SFC Francisco Gomez, SGT Kristina Hargis, SGT Merwin Ibay, SGT Dylan Kopp, SGT Armando Lueras, SFC Anthony Lowery, 1SG Mark Norwood, SFC Nathaniel Ray, SSG Francisco Rivas, SSG Mathew Steiner, CPL Jacob Torres, SFC Jose Vasquez, and CSM David Vowell contributed to and authored this article.

This work serves as a writing collaboration derived from Leader Professional Development encouraging the NCOs of the 2-6 ACS to put complex thought into issues that they think are important and then translate those thoughts with pen on paper. The 2-6 ACS finds its home at Wheeler Army Airfield, Hawaii, as the proudest members of the 25th Combat Aviation Brigade.

[1] Operation Pathways is "the annual series of joint multinational exercises in the Pacific spanning all combat domains" (Carlisi, 2023).

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# Aviation Ground Support Equipment and Air Superiority

By CW2 Jermaine M. Bailey and Mr. Aaron T. Scripture

## Background

As Army Aviation transitions and prepares for the "Deep Fight," our Warfighters must continue to maintain and accurately report their aviation ground support equipment (AGSE). Air superiority is an essential element of combat power; it increases surveillance and maneuverability, while quickly allowing ground force commanders to concentrate their forces to meet any given objective. Our ability to maintain air superiority in combat operations is directly proportional to the readiness and status of our AGSE. Given the threat of a near-peer conflict, aviation units will need to conduct split operations with a smaller number of aircraft distributed over larger distances. Consequently, it is essential that all assigned AGSE is maintained fully mission-capable and immediately accessible to be distributed across multiple locations. It is widely acknowledged that the primary weapon system of an aircraft maintainer is their AGSE (including tools, test sets, and other enabling devices). This equipment enables maintainers to rapidly troubleshoot, diagnose, and repair any aircraft faults, ensuring their quick return to the fight and maintaining freedom of maneuver.

U.S. Army Paratroopers conduct ground maintenance at Camp Buehring, Kuwait. These Paratroopers ensure that vehicles and ground support equipment are in working condition in support of the brigade. U.S. Army photo by CPT Erik Solares.

In August 2021, the U.S. Army Aviation and Missile Command issued Aviation Maintenance Action Message (AMAM) AGSE-21-AMAM-01, which authorized the addition of the shop foreman position to aviation support company and aviation maintenance company or equivalent units and aviation maintenance activities. The shop foreman role empowers AGSE maintenance managers to perform various tasks directly in the Global Combat Support System-Army, including initiating; closing; viewing; creating; modifying; and completing fault notifications, work orders, and parts requests. Furthermore, they can view and print the status of equipment from the equipment status report. Reports from the field indicate that while useful, the shop foreman role still lacks some of the functionality needed to support AGSE maintenance. Representatives from the Aviation Enablers Requirements Determination Directorate and Combined Arms Support Command are actively working to provide an updated shop foreman role to better fulfill the user's needs.

U.S. Soldiers conduct maintenance on a UH-60 Black Hawk helicopter using a self-propelled crane aircraft maintenance and positioning (SCAMP) II expeditionary crane. The SCAMP II is used to move major pieces of the helicopter. U.S. Army photo by SFC Melanie McCracken.

## Why It's Important

The accuracy of readiness reporting is critical to ensure AGSE is properly maintained and fully mission-capable. One of the most significant challenges Army Aviation units face is the potential for

inaccurate readiness reporting, which can present an overly optimistic view of equipment status. This can create a false sense of security, showing that fielded AGSE is sufficient while in reality, it may lack sustainability and maintainability over time.

Inaccurate readiness reports can lead to delays in addressing critical maintenance issues and inhibit the ability to deploy AGSE effectively during operations. Given the growing importance of conducting split operations where aviation assets are distributed across larger distances, the need for fully operational AGSE becomes even more critical. Accurate reporting ensures that units can anticipate and address faults in AGSE before they become mission-degrading issues.

Aviation ground support equipment is the primary toolset for maintainers, enabling them to troubleshoot, diagnose, and repair aircraft faults rapidly. Inaccurate readiness reports can mask equipment deficiencies, resulting in unpreparedness during high-demand situations. This directly impacts aviation unit readiness, reducing their ability to maintain air superiority and provide critical support to ground forces.

The Product Manager (PdM) AGSE's role is essential, not only in ensuring that the right tools and equipment are available, but also in supporting accurate and transparent reporting systems that reflect AGSE's true operational status. By addressing these reporting shortcomings, AGSE maintenance can become more proactive, ensuring that equipment is ready for rapid deployment and sustained operations, thus supporting the Army's overall mission success.

The importance of fully mission-capable AGSE cannot be overstated. The PdM AGSE is working to ensure the equipment's current operational readiness. At the same time, PdM AGSE is also looking forward to next-generation solutions that will further enhance troubleshooting, diagnostic, and repair capabilities. This ensures that aviation assets remain in the fight and are able to project air superiority. With the PdM AGSE's focus on innovation and readiness, aviation maintainers will have the tools they need to operate effectively in the multidomain battle environment of the future.

Biographies:

CW2 Jermaine Bailey serves as an Aviation Maintenance Technician (MOS 151A), having previously held the role of an AH-64 Repairer (15R). He is currently an aviation logistics capabilities developer at U.S. Army Futures Command, where he supports the U.S. Army Aviation Center of Excellence at Fort Novosel. With over 17 years of experience in Army Aviation maintenance, CW2 Bailey has contributed to various operations, including Operation Iraqi Freedom, Operation Enduring Freedom, Operation Inherent Resolve, and Operation Atlantic Resolve.

Mr. Aaron Scripture is an Assistant Product Lead at the AGSE Product Office, where he manages all AGSE products currently in use by Soldiers. A retired Army aviation maintainer, he now serves as a materiel developer, ensuring life cycle management to enhance mission readiness and support.

U.S. Army Soldiers hoist the engine of an Aviation Ground Power Unit off of a maintenance stand at Fort Eustis, Virginia. U.S. Army photo by SSG George Prince.

# Counter-Small Unmanned Aircraft Systems

## (Where Does Aviation Fit In?)

The 1st Cavalry Division trains with new counter-small unmanned aircraft systems equipment on Fort Cavazos, Texas. U.S. Army photo by SPC Cheyne Hanoski.

**CW3 David D. Tyo**

### In the not-so-distant future...

You are a drone hammer team—one UH-60M loaded with the latest software-defined radio jammer and suite of updated survivability equipment and an AH-64E—all tied together with digital radio links. You are both flying 100 feet above ground level approximately a mile behind the forward line of own troops (FLOT), low and slow. Your wingman scans the skies with his radar set to look for the swarm of angry plastic you know is out there somewhere. It's the eve of a big attack for your supported ground forces, with early dawn reluctantly rising in the east.

Your Purple Team radar picks up telltale small radar contacts and kicks right pedal at hover to begin unleashing a hail of flechette rockets and 30-millimeter cannon. In no time at all, they are on your flight—small glints filling your windscreen as you come to a high hover—and crank up the power on your radiofrequency jammer. Your two-ship flight digs its heels in, knowing it's up to you to stop this. Your aircraft survivability equipment (ASE) announces "DRONE 3 O'CLOCK," but your common infrared countermeasures program is already going to work melting plastic engines and optics one after another. Your copilot keys the mic, but there is no time to warn the infantry below as the drones are coming on faster and thicker. Behind you, the Apache cannon thumps away as clouds of drones are felled. You climb to 150 feet to give your door gunner better line-of-sight and your jammer a more favorable altitude.

Miles away, operators on the other side of the FLOT frantically attempt to switch frequencies on their consoles, but links are immediately lost as the localized jamming of their control frequencies is too powerful. Many drones and their payloads are caught harmlessly in treetops or crash in open fields.

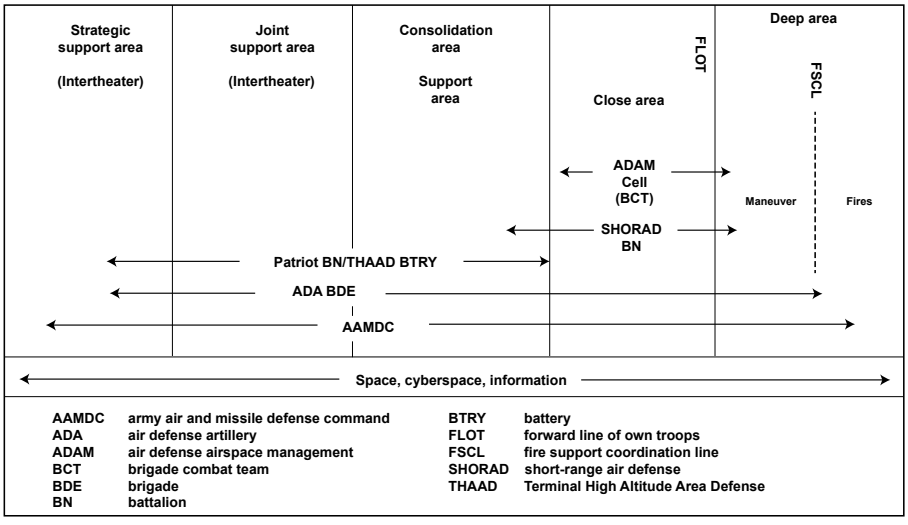


*Figure 1.* Army Air Defense echelons in support of a theater of operations. Example of a typical brigade-level C-UAS employment (DA, 2020, p. 1-9).

A second wave comes on strong with different controller frequencies, now faster and from your flight's 12 o'clock! With -2 still engaged behind, there is no time to warn him and your crew as you brace for impact. Below, air defense artillery (ADA), fed with targeting data from your aircraft, fills the sky with hot lead as the wave disappears in smoke and secondary explosions. With your aircraft fed data into the system, the local Army ADA sites wreaked havoc on the second swarm. The whole engagement lasts a mere 2 minutes. What could've been a disaster for your ground forces became clear skies for the attack!

Miles away, operators stare blankly at screens and goggles wondering what happened to 2 weeks worth of unmanned aircraft systems (UAS) production with nothing to show for their efforts. A phone rings behind the drone unit commander; the GEN on the phone is expecting success…

### The modern battlefield and UAS

The ubiquitous presence of UAS on the modern battlefield can be seen across media of all platforms. Videos of modern conflict on social media show the terrifying efficiency and effectiveness of these systems on equipment and individual soldiers. Forces fighting in Ukraine are reported to expend tens of thousands of drones a month. Everyone from the trained infantryman to specialized electronic warfare units support these small UAS (SUAS). Adapting to this distributed network of reconnaissance and direct attack threats must occur to ensure success in the next conflict.

The topic of the SUAS is broad; therefore, the scope of this article is limited to categories as defined in Army Techniques Publication (ATP) 3-01.81, "Counter-Unmanned Aircraft System (C-UAS)," as those systems included in categories 1-3.[1]

These categories include systems weighing from zero to 1,320 pounds, capable of traveling anywhere from under 100 up to 250 knots with service ceilings from less than 1,200 feet to 18,000 feet above ground level (Ferguson & Lemler, 2024; Department of the Army [DA], 2023, p. 1-2). In a theater of operations, UAS groups 1-2 typically operate in deep and close areas, and for the larger category 3 UAS, into the consolidation and support areas. In UAS groups 1-2, the smaller the platform the shorter the range and the smaller the payload and required logistical footprint to operate. The ADA Branch, combined with other joint agencies, are tasked with mitigating the threats of these SUASs. Figure 1 illustrates an overview of ADA equipment and general location in a theater.

How can aviation formations adapt to this threat, and more importantly, how can we help reduce this threat to the combined arms force? How can aviation help task-saturated ADA assets and command and control (C2) nodes enable successful early warning and engagement, while reducing the risks of fratricide?

What if an aviation formation could provide effective integration into brigade and below C2 nodes to detect, identify, and defeat UAS across a wide area of coverage for a maneuver commander? Or, what if it could provide a localized C-UAS coverage "bubble" to allow a commander time and space, while mitigating effects on the battle by using equipment (early warning/detection, targeting, direct attack, etc.) already fielded by the Army and other services?

## C-UAS: The Army process

For the purposes of this article, we will focus on active measures used to mitigate the effectiveness of these systems. According to Army doctrine, **modern C-UAS consists of Detect, Identify, Decide, and Defeat threats** (DA, 2023, p. 3-7). Layered approaches to this process are critical for success of formations at every level. These layers can be seen in Figure 2 and rely on networking devices and sensors to build a reliable picture of airspace.

Monitoring the operational environment for these threats can be an overwhelming task, particularly as the operational environment shifts, and units constantly move. Connectivity of these devices is essentially handled through joint networks such as Link-16 and internally within divisions as the internal inter-forward area air defense (FAAD) network, which is then typically operated in brigade air defense airspace management cells computers using FAAD software. This makes networking these monitoring and C2 devices particularly complex, with networking outages or latency quickly degrading the effectiveness of these defenses.

## Army Aviation to the rescue?

The following are some examples of how aviation can fit into this problem set. This list is broken down into the detect, identify, decide and defeat categories:

1. Detect and Identify

Detecting UAS is primarily accomplished via line-of-sight sensors of various kinds. Since aviation platforms operate at various altitudes depending on thorough consideration of the operating environment, additional sensors at altitude can greatly aid in early detection and identification. Currently, aircraft-based detection means are limited to the AH-64 fire control radar (FCR) and visual observation by aircrew. However, with the advent of software-defined radios and other specific electronic warfare devices, electronic signatures can be gathered and triangulated automatically. The Navy and Marine Corps currently operate electronic warfare devices such as the ALQ-231 (V) Intrepid Tiger II, which is mounted across both rotary- and fixed-wing platforms (Naval Air Systems Command, n.d.). I believe the Army could adopt devices such as these already in approved use from other services, giving additional capability and battlefield situational awareness to commanders at all echelons and at a much lower cost than a new program.

Connecting these devices across the battlefield can consist of networks such as Link-16 and the friendly force tracking system, Force XXI Battle Command Brigade and Below. These legacy networks are often overloaded, slow, and require in-depth maintenance and specialized technical know-how to keep operating. The modern digitally networked radios currently being fielded across the force, such as the MPU5, act as WiFi routers in the sky and on the ground, transmitting voice and data with minimal required operator input or maintenance. This ad hoc distributed network can be used as a data pipeline to transmit needed sensor inputs from every platform the Army fields. The networking and integration of these data

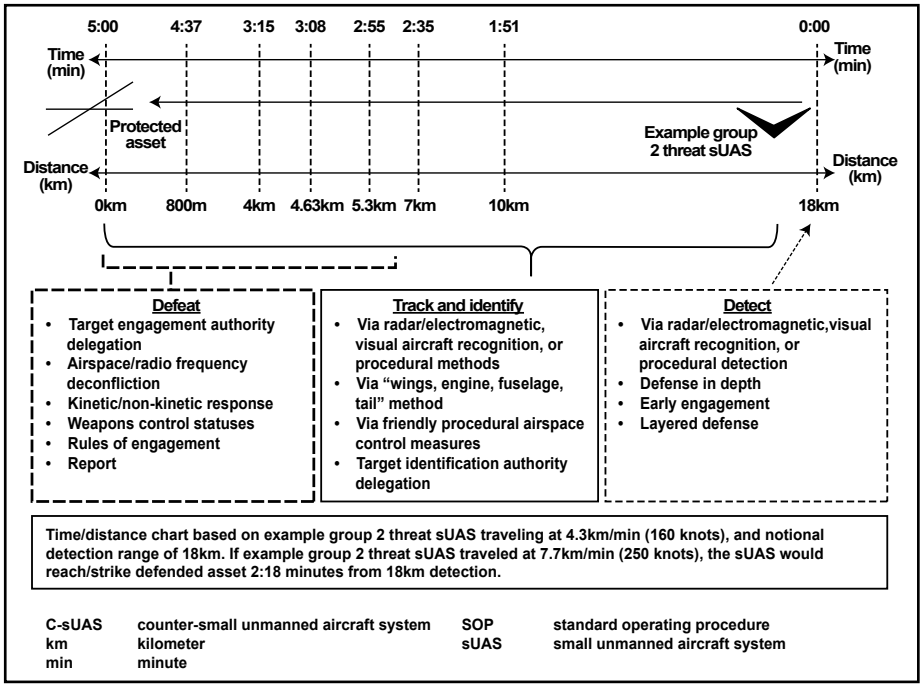


*Figure 2.* Counter-SUAS time/distance engagement sequence planning consideration (example engagement sequence) (DA, 2023, p. 3-16).

[1] "UASs are categorized in Groups 1 through Group 5, this designation is based on weight, operating altitude, and speed" (DA, 2023, p. 1-2).

can also facilitate identification between friend and foe UAS and avoid fratricide of friendly platforms. An ad hoc networked FCR system being flown just behind friendly lines can greatly extend both ADA and battlefield awareness by feeding data back into ADA and fires networks.

For additional detection and identifying capabilities, ASE can aid in the detection, gathering, and fidelity of these data.


A UH-1Y Venom is staged on the flightline with an AN/ALQ-231(V)3, which enhances the airborne electronic warfare capability for fixed- and rotary-wing aircraft. U.S. Marine Corps photo by Sgt Samuel Ruiz.

2. Decide and Defeat

With these airborne ad hoc networks, data gathered by aerial platforms are routed and fed into the appropriate systems on the ground. This allows the decision and allocation of hard or soft kill options on these UAS targets by appropriate C2 nodes. Some theoretical examples of hard kill are the assignment of ground-based ADA assets to direct fire on adversarial UAS or the assignment of a nearby AH-64 flight to use rockets or cannon. The Army has taken this capability seriously by investing in the XM1223 Multi-Mode Proximity Airburst munitions,[2] of which I believe a variant should be developed for the AH-64. Hard kill can also be a reprogramming of laser-based ASE to destroy critical components on UAS, such as optics or engines. Targeting data for these lasers can come from electro-optic missile sensors or from off-platform cueing, such as AH-64 FCR or ground-based ADA radar.

Notional soft kill options can consist of aircraft-mounted jammers and electronic warfare modules, such as the previously mentioned ALQ-231, already fielded by sister services. New software-defined radio receivers that can be mounted to aircraft at low cost can be used to isolate and triangulate drone operator radiofrequencies and generate targeting data for air- and ground-based fires onto drone repeating stations or operator stations, either severing controlling links or destroying or killing operators themselves.

## A way forward

The proposals presented here are largely a fight to gather and share data across the battlefield faster than the enemy and to share these data across the breadth and depth of echelons that opposing forces cannot hope to match. This data sharing allows our aviation and ground-based forces to bring the maximum amount of reaction time and appropriate firepower to bear on the modern UAS threat. The solutions presented here are entirely within the realm of technical achievement, much of it at very little additional cost to the currently employed platforms. Further UAS countermeasures are currently being tried on ground platforms that would also work the same, or better, when mounted to aviation platforms with minimal additional modifications to equipment (DA, 2023, Appendix B). Additionally, the development of air-launched effects is also ongoing and are outside the scope of this paper, yet could yield great results in mitigating the UAS threat (PEO Aviation, 2020).

Ad hoc networks specifically presented in this article are the key to tying these devices all together in the air and on the ground, allowing Army Aviation continued relevance in the future fight and ensuring successful overmatch on the next battlefield.

For further reading on the foundation of this topic, please see Field Manual 3-01, "U.S. Army Air and Missile Defense Operations" (DA, 2020); ATP 3-01.81 (DA, 2023); and common access card-enabled handbook, *Surviving the Swarm: Recommended C-UAS Tactics, Techniques, and Procedures at the Brigade and Below* (Center for Army Lessons Learned, 2024). This document also owes much of its foundational conceptualization to *Needles in the Haystack: Hunting Mobile Electronic Targets* by Maj. Michael Pietrucha, U.S. Air Force (2003).

Biography:

CW3 David Tyo is a dual-tracked Instructor Pilot and Aviation Mission Survivability Officer currently working as an UH-60M Flight Line Instructor while stationed at Fort Novosel, Alabama. He is a graduate of the Massachusetts Institute of Technology Lincoln Laboratory's Electronic Warfare course.

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[2] "DEVCOM AC [The U.S. Army Combat Capabilities Development Command Army Research Laboratory] designed a programmable proximity cartridge along with a contact fuze setter, the XM1223 Multi-Mode Proximity Airburst (MMPA), a fiscal year 2024 new-start program that achieved Technology Readiness Level 6—a system model or prototype demonstrated in a relevant environment—in technology maturation" (Santamaria & LaGue, 2024).

# Army Aviation Training Performance Practice Model

By COL Joseph A. McCarthy

While the landscape of modern warfare continues to evolve, the role of Army Aviation in the combined arms fight remains steadfast. Aviation operations are integral to the ground forces' ability to fight, survive, and win in combined arms maneuver. Army Aviation creates multiple dilemmas for the enemy and allows the ground force commander to rapidly consolidate gains. As technology advances and the operational environment grows more complex, Army Aviation units must adapt tactics to execute mission tasks successfully. This adaptation is critical to upholding our sacred trust with Soldiers on the ground.

Army Aviation must adapt to remain relevant on the battlefields of today and tomorrow. However, our core requirement is mastering the fundamentals of aviation operations, a craft that demands precision, skill, and expertise only gained through highly repetitive, focused training. Our obligation extends beyond maintaining currency or a basic understanding of the ***science*** of aviation. Achieving excellence in technical and tactical skills forms the foundation upon which all other training objectives rest, but we must go beyond that. Aviation commanders must dedicate training time and resources to ensure aircrews not only meet minimal proficiency requirements but truly become experts in the ***art*** of aviation. From piloting helicopters to operating unmanned aircraft systems, the purpose of Army Aviation is to employ the seven aviation core competencies for the ground force commander.[1]

A practical approach to mastering fundamentals is employing the principles of international sports coaching expert, Wayne Goldsmith's *Performance Practice Model*. This model emphasizes a deliberate, structured, and repetitive approach from skill acquisition to mastery. By applying this framework, units can develop training programs that emphasize repeated, focused practice, enabling aviators to fine-tune their skills and consistently achieve high levels of proficiency. This approach ensures that Aviation Warfighters develop the technical and tactical competence necessary to meet diverse mission demands and build collective proficiency at echelon.

This article explores a comprehensive training approach to master the technical fundamentals of flying and prepare Aviation Soldiers for the demands of large-scale operations. Drawing inspiration from Wayne Goldsmith's *Performance Practice Model* (WG Coaching, n.d.), applying the Army Aviation Training Performance Practice Model (A2TP2) with doctrine will ensure Army Aviation remains a vital part of the combined arms team now and in the future.

## The Performance Practice Model

Wayne Goldsmith's *Performance Practice Model* consists of 7 crucial steps that guide coaches and athletes in progressing from the introduction of a basic skill to mastering its application in high-pressure competitive environments.[2]

- Training begins with Step 1, where coaches teach athletes a fundamental skill, and athletes perform the task.
- Step 2 emphasizes the mastery and thorough understanding of the skill by performing the task well.
- Step 3 focuses on executing the skill at speed, recognizing that competition demands precision and swiftness.
- In Step 4, athletes must execute the skill exceptionally well at speed, even when fatigued—an essential aspect of enduring competitive performance.
- Step 5 introduces the concept of pressure, emphasizing that athletes must learn to execute skills proficiently under various forms of pressure, differentiating between participation and performance sports.
- Step 6 aims for consistency, ensuring that athletes can repeatedly demonstrate their skill with excellence, no matter the circumstances.
- Finally, Step 7 emphasizes the practical application of these skills using real-time problem-solving on the field during competitive situations.

[1] The seven aviation core competencies are: Provide Accurate and Timely Information Collection; Provide Reaction Time and Maneuver Space; Destroy, Defeat, Disrupt, Divert, or Delay Enemy Forces; Air Assault Ground Maneuver Forces; Air Movement of Personnel, Equipment, and Supplies; Evacuate Wounded or Recover Isolated Personnel; and Enable Command and Control Over Extended Ranges and Complex Terrain (Department of the Army, 2020, pp. 1-2 to 1-6).

[2] The following seven steps are taken from Goldsmith's model; however, they are not listed verbatim. A more detailed explanation of the performance practice model can be found at https://wgcoaching.com/performance-practice/

Goldsmith's model emphasizes the importance of honing skills under conditions that replicate the demands of actual competition, mirroring the Army's Training and Evaluation Outlines requirement for dynamic and complex threats at night to consider a unit fully trained. However, more tangibly, this model asserts that skills must be executed under speed, fatigue, pressure, and with consistency to develop truly effective athletes in their chosen sport. *Performance Practice*, as opposed to mere practice, is the key to achieving excellence in the athletic competition. These principles are equally applicable to aviation training.

Paratroopers assigned to "Cavemen" Bravo Company, 2-82 Aviation Regiment, 82D Combat Aviation Brigade, 82D Airborne Division, prepare and take off for night flight on April 24, 2024. U.S. Army photo by SGT Vincent Levelev.

## Army Aviation A2TP2

The A2TP2 Model differs from traditional athletic training frameworks due to the heightened risks inherent in aviation operations. In Army Aviation, the stakes are significantly higher; mistakes can result in severe consequences, including being a detriment to the Ground Tactical Plan, loss of life, and costly equipment damage. This reality necessitates a more rigorous and comprehensive training approach that emphasizes not only skill acquisition but also performance under various high-stress conditions. While Goldsmith's model effectively addresses skill mastery in sports, Army Aviation training must incorporate additional layers of safety and operational effectiveness to ensure aircrews can manage the complexities and challenges of flight operations. Additionally, leaders must be engaged in planning, preparing, and training execution to validate successful progression throughout the model.

The A2TP2 Model addresses these unique challenges through an 8-step framework. Beginning with task performance to Aircrew Training Manual standards, it progresses through mastery, speed, and consistency. The model then introduces contingencies, pressure, and fatigue, culminating in performance under combat conditions. Each step builds upon the previous, ensuring aviators are not only skilled but adaptable to dynamic, high-pressure environments. This comprehensive approach enhances operational readiness and real-world mission effectiveness, equipping Army Aviators to navigate complex roles with confidence and precision.

- **Step 1: Perform the Task to Standard**–performs the task to the standard prescribed in the Aircrew Training Manual.
- **Step 2: Master the Task**–achieves a high level of proficiency and confidence in performing the task, demonstrating consistency, accuracy, and the ability to adapt to dynamic conditions while ensuring safety and mission effectiveness. It requires not only technical skills but also sound judgment and situational awareness.
- **Step 3: Perform the Task at Speed**–performs the task efficiently and confidently under time constraints, maintaining high accuracy and safety standards while adapting to the operational environment. This capability demonstrates the ability to react swiftly and effectively to dynamic situations, reflecting both skill and experience.
- **Step 4: Perform the Task at Speed Consistently**–performs the task reliably across multiple scenarios and over time, demonstrating the ability to achieve the prescribed standards consistently, regardless of varying conditions or contexts. This step emphasizes the importance of repetition and reinforcement to ensure that high performance is maintained throughout different situations.
- **Step 5: Perform the Task With Contingencies Introduced**–executes the task while effectively managing unexpected changes or challenges, such as equipment malfunctions or altered mission parameters. This step requires quick thinking and adaptability, allowing the aviator to maintain performance standards despite unforeseen circumstances.
- **Step 6: Perform the Task Under Pressure**–demonstrates the ability to execute the task effectively in high-stress situations, such as tight timelines or critical operational demands. This step tests the aviator's composure, decision-making, and ability to maintain focus while delivering accurate and timely performance.
- **Step 7: Perform the Task While Fatigued**–maintains the ability to perform the task proficiently despite physical or mental fatigue, showcasing resilience and the effectiveness of training that prepares aviators to operate safely and competently in less than ideal conditions. This step underscores the importance of endurance and mental fortitude in aviation operations.
- **Step 8: Perform the Task Under Combat Conditions**–executes the task in a real-world combat environment, integrating all previous skills while managing the complexities of combat scenarios, including threats and high-stakes decision-making. This final step tests the aviator's complete readiness and capability to operate effectively under the most challenging and unpredictable circumstances.

## Application of the A2TP2 Model

The A2TP2 Model provides a structured

approach to mastering complex tasks in high-risk operational environments. The following description details each step of the model as applied to executing a visual meteorological approach—a fundamental task across all mission design series in Army Aviation.

### Step 1: Perform the Task to Standard

**Objective:** Initiate the landing process with fundamental knowledge.

**Application:** An Army Aviator learns the basic techniques of helicopter landings, including approaches, descent rates, and hover control. Training might involve simulator periods or controlled environment practice where the pilot performs standard landings under instructor supervision.

### Step 2: Master the Task

**Objective:** Achieve proficiency in landing techniques.

**Application:** The Army Aviator practices landing maneuvers repeatedly, focusing on refining their skills. This may include executing various landing techniques (e.g., landing on a runway, helipad, or unimproved landing zone) until they can perform these maneuvers with minimal guidance. Additionally, to master a task, it must be executed in all conditions (degraded visual environments, confined areas, etc.). Mastery is demonstrated through consistent performance and anticipating the aircraft's response.

### Step 3: Perform the Task at Speed

**Objective:** Increase the tempo of the landing process.

**Application:** The Army Aviator practices landing tasks with increased urgency, simulating a faster approach and a mission landing scenario. This step includes drills that incorporate time constraints, such as landing within specific time frames to enhance reaction times and decision-making under speed.

### Step 4: Perform the Task at Speed Consistently

**Objective:** Ensure reliable performance under increased speed.

**Application:** The Army Aviator repeatedly executes landings at speed, focusing on maintaining control and precision. Consistency is key here; the pilot practices until they can reliably land the helicopter at speed without sacrificing accuracy or safety, performing multiple landings in rapid succession.

### Step 5: Perform the Task With Contingencies Introduced

**Objective:** Prepare for unanticipated situations.

**Application:** The Army Aviator faces simulated challenges during landing scenarios, such as sudden weather changes or unexpected obstacles on the landing site. This also includes emergency procedures for dealing with potential malfunctions, adverse conditions, and simulated engagements by enemy threats and weapon systems. This allows the aviator to learn to adapt their techniques in real time to react to contingencies.

An Army flight medic is hoisted during a simulated medical evacuation (MEDEVAC) during a MEDEVAC training exercise at Fort Liberty, North Carolina. U.S. Army photo by SGT Steven Galimore.

### Step 6: Perform the Task Under Pressure

**Objective:** Test performance in high-stress situations.

**Application:** Stress impacts the ability of an Army Aviator to perform skills with quality and accuracy. The pilot practices landing tasks in high-pressure environments, simulating real-world stressors like time constraints or operational urgency (e.g., in a large-scale combat operational scenario). This may involve landing during live-fire exercises or in the presence of simulated enemy threats, focusing on maintaining composure and clarity under pressure.

### Step 7: Perform the Task While Fatigued

**Objective:** Build resilience and performance endurance.

**Application:** The Army Aviator trains while fatigued, simulating long missions or night operations. They practice landings after extended flight times and/or during extended duty days as part of a field training exercise (FTX) to mimic the physical and mental strain that may occur in actual missions. This step helps ensure that performance remains steady despite fatigue.

### Step 8: Perform the Task Under Combat Conditions

**Objective:** Prepare for the realities of combat operations.

**Application:** The Army Aviator participates in challenging and realistic simulated-combat scenarios that imitate all aspects of operational landing. This may include training exercises with ground troops under maximum gross weight conditions, landing in different operational environments (overwater, high altitude, degraded visual environments), under zero illumination, or navigating simulated threats. The focus is on integrating all learned skills into cohesive performance under combat-like conditions, ensuring readiness for real missions.

Each step in the A2TP2 Model progressively builds on the previous one, ensuring that aircrews not only master the fundamentals but also develop the adaptability and resilience required for successful operations in challenging environments. An aviator should not progress to the next step until an aviation trainer (i.e., pilot-in-command, unit trainer/evaluator, instructor pilot) validates each step. This structured approach leads to a high level of preparedness for real-world scenarios, enhancing individual and unit capabilities.

## Applying the A2TP2 Model to Collective Training

Applying the A2TP2 Model gradually increases training complexity, building toward the chaotic conditions of the battlefield. Aviators must master their craft and understand their role in the broader tactical picture. This requires regular situational training exercises (STX), FTX, and combined and joint exercises at the combat training centers (CTC) to ensure seamless integration within the combined arms team. However, for Army Aviation to execute combined arms maneuver in large-scale combat, commanders must first validate aircrew proficiency in individual, team, and multi-aircraft tasks before progressing to more complex, higher-risk collective level. The A2TP2 Model provides a standard methodology for developing unit training plans and evaluation criteria, validating units as they progress through the Aviation Training Strategy.

In Army Aviation, we measure everything in 6-minute intervals or .1 hours. Whether for maintenance or flying hours, every .1 must be meticulously tracked each day. Training should be approached with the same precision, so every flight hour is maximized to develop lethal air crews and units. While the science of unit training management is essential for developing coherent training plans, it only defines the "what" and "how" of execution. The art of training ensures we truly meet training objectives to guarantee our Soldiers are prepared to do their jobs anywhere in the world under the toughest conditions, even on their worst day.

Doctrine alone cannot instill the creativity and rigor necessary for commanders to fulfill their responsibilities to train Soldiers for wartime missions. Commanders must develop unit training plans that focus on mastering fundamentals, create and resource tough and realistic training events, and build proficiency at echelons. Achieving proficiency requires deliberate repetitions and sets evaluated and certified by leaders before progressing to the next level.

The Figure outlines the time units should dedicate for each echelon of training, and the proposed steps of the A2TP2 applied at each echelon. As the model progresses from individual to collective training at echelon, complexity and risk increase, requiring commanders and their advisors to be engaged in validating units. Only then are individuals and units prepared to advance to the next level of training and mitigate risk.

Unit training goals are structured to maximize 240 annual training days, accounting for block leave and training holidays. The A2TP2 model allocates time as follows:

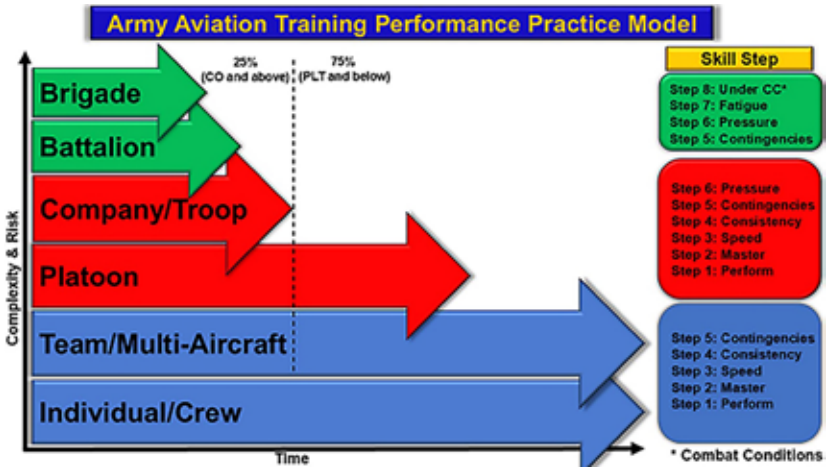


*Figure.* The A2TP2 Model (McCarthy, 2024).

- Seventy-five percent (%) (~180 days) for platoon-level and below training, emphasizing individual, aircrew, and multi-aircraft-level skills essential for building training readiness.
- Ten% (~24 days) for company/troop-level exercises, fostering teamwork and coordination (STX; battle drills; aviation support to brigade combat teams [BCTs]; environmental training; air-ground training).
- Ten% (~24 days) for battalion/squadron-level training, integrating more complex scenarios (Battalion FTXs; Aviation Battalion Support to BCTs; CTC Rotations; Collective Gunnery Tables; and Air-Ground Training).
- Five% (~12 days) brigade-level training, allowing for broader operational exercises (Brigade FTXs; division command post exercises [CPXs]/FTXs; CTC rotations; and Warfighter exercises).

Platoon-level training and below should occupy 75% of allotted training time due to its critical role in establishing the foundational skills necessary for effective company, battalion, and brigade operations. Despite this emphasis, it is noteworthy that training at these lower echelons is conducting fewer steps of the training model compared to higher levels. This discrepancy arises because the intensity and frequency of repetitions at the platoon level are essential for solidifying individual and collective proficiency. Mastery of basic tasks at the platoon level and below not only enhances training readiness but also ensures that companies and higher echelons can rapidly build upon a strong base, leading to more effective execution of more complex training. Thus, prioritizing comprehensive and rigorous training at the platoon level and below is vital for overall unit training readiness.

Battalions and brigades can optimize training by conducting staff planning CPXs and field craft training in parallel with company/troop and platoon exercises. This approach enhances resource allocation and maximizes training opportunities across all echelons, preparing units to employ Army Aviation core competencies in support of ground force commanders. Of note, additional battalion and brigade training days and events can be planned to support subordinate training without creating additional demands on subordinate units.

As a unit advances to higher echelons of training, the model is tailored to mitigate risk. At the individual and crew level, implementation of the A2TP2 Model begins with Step 1: Perform the Task to

Standard. This ensures each aviator and crew member thoroughly understands the standards outlined in the Aircrew Training Manual, developing essential skills for safe and effective operations. Progressing through subsequent steps, aviators achieve mastery, perform tasks at speed, and consistently apply their skills. Crew-level training culminates at Step 5: Perform the Task With Contingencies Introduced, where aircrew learn to manage anticipated and unanticipated challenges. This prepares each crew member to adapt to dynamic conditions and maintain performance standards in unpredictable situations.

At the platoon and company/troop levels, the training model advances from Step 1 through Step 6: Perform the Task Under Pressure. This training emphasizes teamwork and coordination among crew members, focusing on effective task execution in high-stress scenarios. By introducing time constraints and operational demands, aviators learn to work cohesively, enhancing communication and decision-making skills under pressure. Building on individual foundational skills, this step fosters an environment where teams support one another while refining their collective capabilities, ensuring mission success in more challenging contexts.

At the battalion and brigade levels, the focus shifts from progressing through the entire A2TP2 Model to begin with Step 5: Contingencies, and culminating with Steps 7 and 8: Perform the Task While Fatigued and Perform the Task Under Combat Conditions. This comprehensive approach prepares units for the rigors of combat, incorporating tough, realistic training scenarios. By challenging aviators to operate effectively despite fatigue and in high-risk environments, leaders can assess unit readiness and adaptability. These final steps test individual and unit proficiency to perform under combat conditions.

## Conclusion

The A2TP2 Model is a useful and necessary training model aviation commanders can apply to master the fundamentals as aviators and units progress deliberately from individual through collective training. These challenges are primarily due to the individual and team-level training requirements that exist throughout the year. It can also be difficult to effectively track aviators' training levels and ensure they are progressively exposed to the necessary steps outlined in the model. A key consideration is understanding where each aviator and aviation unit stands in relation to their specific mission-essential task list. This awareness is crucial for assessing risk and advocating for additional training time when needed, ensuring that both individual capabilities and unit readiness align with mission requirements.

The A2TP2 model, originally designed for aviation units, is equally applicable to non-aviation Army units. This rigorous and comprehensive training approach emphasizes not only the acquisition of essential skills but also the ability to perform effectively under high-stress conditions. As Army units progress through increasingly complex training scenarios, the A2TP2 model provides a structured framework for building foundational tasks and applying them to collective capabilities. By focusing on performance across various stress levels, the model ensures that all Soldiers and units—regardless of their specific military occupational specialty—are prepared to execute tasks efficiently and cohesively in real-world, high-pressure environments.

Combining the A2TP2 Model with Army and Army Aviation training strategies offers a straightforward, robust framework for mastering flying fundamentals and tactical employment of combined arms maneuver in Large-Scale Combat Operations. As warfare and technology evolve, Army Aviation units must prioritize adaptability and effectiveness. Implementing this training model ensures that Army Aviation remains the cross-domain solution for the ground force commander. By mastering the art of aviation and seamlessly integrating with combined arms forces, Army Aviation units will be prepared to meet current and future battlefield challenges.

Biography:

COL Joe McCarthy is a Master Aviator, Instructor Pilot, and currently serves as the Director of the Directorate of Evaluation and Standardization. Prior to his current position, he served as the Chief, Commanding General's Initiatives Group at the United States Aviation Center of Excellence; Battalion Commander of the 4-3 Assault Helicopter Battalion, 3D Infantry Division; and Lead Speechwriter and Special Assistant to the 19th and 20th Chairmen of the Joint Chiefs of Staff. His other assignments include service in the 25th Infantry Division, 101st Airborne Division (Air Assault); Office of the Secretary of Defense; and Headquarters, Department of the Army.

COL McCarthy deployed three times to Afghanistan in support of Operation Enduring Freedom: once with the 25th Infantry Division as a Rifle Platoon Leader (2004-2005), and twice with the 101st Airborne Division as a Flight Troop Commander (2008-2009), Brigade Operations Officer (2014), and Brigade Executive Officer (2014).

COL McCarthy holds a doctorate in political science from the University of Nebraska-Lincoln, a master's degree in public policy management from Georgetown University, and bachelor's degrees in psychology and criminal justice from Rutgers University.

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UH-60 Black Hawk training operations at Fort McCoy, Wisconsin. U.S. Army photo by Scott T. Sturkol.

# Exercises Austere Challenge and Avenger Triad 2024:

## Lessons Learned from a Corps Combat Aviation Brigade

**By the 12th Combat Aviation Brigade Staff***

With the re-emergence of large-scale, protracted conflict in Europe for the first time since the 1940s, North Atlantic Treaty Organization (NATO) military leaders are evaluating how to conduct combined arms operations in an increasingly complex operational environment. Combined arms, as part of Large-Scale Combat Operations (LSCO), is significantly different in size, scale, and scope than the conflicts of Iraq and Afghanistan. Corps and division commanders and their headquarters must win their respective fights at echelon, commanding and controlling combat forces as an integrated whole. Maneuver in the corps and division deep areas requires the effective integration of intelligence, fires, CEMA (cyber and electromagnetic activities), and aviation assets to provide the required operational reach, in addition to synchronization of limited logistics resources to ensure operational endurance.

As the corps or division commander's only air maneuver element, combat aviation brigades (CABs) and CAB commanders play a critical role advising how to best integrate aviation as part of combined arms operations. These integration tasks must be evaluated and executed through iterative training and experimentation. The 12th CAB, as V Corps's assigned CAB, is uniquely positioned to develop tactics, techniques, and procedures (TTPs) that address the unique aspects of aviation operations at the corps level. The 12th CAB recently participated in two virtual exercises designed to prepare U.S. and NATO forces to operate across the full range of military operations—Austere Challenge 24 (AC24) and Avenger Triad 24 (AvT24)—which provided lessons that inform future training for the Enterprise.

This article highlights key observations from the 12th CAB's participation in AC24 and AvT24, focusing on relatively new TTPs implemented during the exercise: the role of the Aviation Coordinator (AVCOORD) and the corps CAB as a deep maneuver asset.

### The Aviation Coordinator

During AC24, V Corps experimented with employing an AVCOORD (summarized in the Figure). Though not a current doctrinal position, the AVCOORD was defined in (then) Field Manual 6-0, "Mission Command-Command and Control of Army Forces," from 1997–2003 as the senior aviation officer responsible for integrating staff efforts and coordinating the actions of divisional and corps CABs in support of the ground scheme of maneuver (Department of the Army, 2003, p. D-33). Through their unique ability to understand, visualize, describe, and direct aviation operations, the AVCOORD helps drive the corps's operations process and inform the corps commander's decisions, as described in Army Doctrine Publication 6-0, "Mission Command-Command and Control of Army Forces" (2019, p. 2-13). In these exercises, the 12th CAB Commander served as the V Corps's AVCOORD.

COL Ryan Kendall, commander, 12th CAB, discusses plans with MAJ Ryan Kline, Brigade Operations Officer, 12th CAB, during Exercise Austere Challenge 24, Grafenwoehr, Germany, March 11, 2024. U.S. Army photo by CPT Gabrielle Hildebrand.

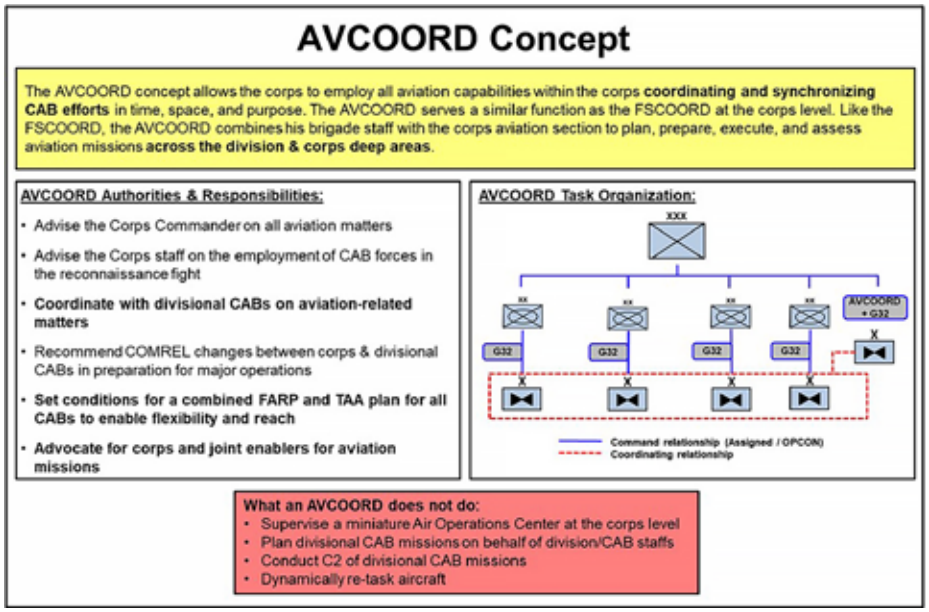


*Figure*. Summary of the AVCOORD concept (12th CAB staff, 2024).

U.S. Army Soldiers assigned to the 12th CAB stand in front of the tactical action center during Exercise Austere Challenge 24, Grafenwoehr, Germany, March 11, 2024. U.S. Army photo by CPT Gabrielle Hildebrand.

Before digging deeper into the role of the AVCOORD at AC24 and AvT24, it is helpful to provide a few examples of what it is not. The AVCOORD is not an aviation equivalent to the fire support coordinator; the AVCOORD does not hold tasking authority over the corps CABs, assign priorities of support, or task organize division aviation units. Additionally, the AVCOORD is not a corps-level air operations cell that can retask aviation formations during execution. Instead, the AVCOORD—in conjunction with non-lethal enablers and fires—facilitates the synchronization and integration of aviation maneuver operations as part of the corps scheme of maneuver to achieve the corps commander's objectives. The paragraphs below outline some specific lessons learned from implementing this concept.

During AC24, the AVCOORD participated in several battle rhythm events to assist the corps commander's decision-making. The AVCOORD hosted an aviation huddle with four divisional CAB commanders prior to the corps commander's update brief (CUB). The huddle ensured synchronized aviation planning efforts and shared understanding prior to the corps CUB, which enabled division commanders to better integrate aviation into their rapidly evolving plans. Additionally, the V Corps G32, in the role of Deputy AVCOORD, hosted the Deep Operations Working Group (DOWG) for subordinate units' aviation staff to build a shared understanding of their missions and coordinate necessary resources. The nested touchpoints between CAB staffs and commanders, the AVCOORD, and division commanders allowed CABs to share resources, better integrate with the corps's overall scheme of maneuver, conduct synchronized multi-CAB deep attacks, apply continuous pressure to the enemy, and ultimately significantly influence the battle's outcome.

It is worth noting that the 12th CAB's habitual relationship with V Corps played a critical role in the success of the AVCOORD concept. The corps commander's familiarity with the CAB, the CAB commander's understanding of the corps CG's intent, and the CAB's relationships with the corps staff members set conditions for the CAB commander to execute the AVCOORD role. However, this habitual relationship is the exception rather than the rule. Combat aviation brigades finding themselves task organized as a corps asset must quickly build trust with the higher headquarters, define the intent and limits of the AVCOORD role, and identify key events within the corps's battle rhythm to facilitate coordination with fires, intelligence, and other enablers.

## Lessons Learned as a Deep Maneuver Aviation Asset

Based on the brigade's experiences at AC24 and AvT24, the 12th CAB hopes to provide insight broadly applicable to any corps CAB, with lessons learned organized below by warfighting function.

### *Command and Control*

**Strike Net**. During both AC24 and AvT24, the 12th CAB utilized a NATO SECRET network known as the Mission Partner Environment (MPE)[1] to operate a "Strike Net" chatroom during mission execution. This capability enabled real-time mission updates and coordination across enablers. The ability to rapidly reorient and execute fires against threats on the corps's high-payoff target list proved significant to enabling overall scheme of maneuver. Strike Net drastically increased the overall situational awareness of all participants and provided the coordination mechanism to exploit opportunities in the execution of deep maneuver.

**Integration vs. Deconfliction**. In coordination with the V Corps staff, the 12th CAB successfully integrated into simultaneous rotary-wing operations across the corps's operational environ-

[1] "The DoD created a suite of capabilities known as the Mission Partner Environment (MPE) that enables the joint force to share information and exchange data with mission partners through all phases of operations" (U. S. Department of Defense Inspector General, 2022).

ment, utilizing procedural airspace coordination measures. Technical rehearsals and common graphics utilizing the command post computing environment (CPCE) across the MPE enabled integrated use of air corridors, holding areas, forward arming and refueling points (FARPs), engagement areas, and tactical assembly areas (TAAs). In combination with well-positioned liaison officers and coordination at the DOWG, cross-CAB synchronization was critical to sustaining continuous pressure on the enemy.

Of note, due to the exercise design of AvT24, division CAB response cells did not have the same level of participation as AC24. This limited their participation in battle rhythm events and coordination during planning, resulting in limited shared understanding and integration of division and corps aviation operations. Compared with 12th CAB's experience during AC24, this highlighted the importance of the commander-to-commander huddle and DOWG for integrating CAB operations and synchronizing them as part of the corps's maneuver plan.

## *Movement and Maneuver*

**Standard Mission Packages**. The 12th CAB task organized its rotary-wing attack capability to best sustain combat power and enable flexibility for the corps commander. Use of standard mission packages—i.e., a main effort, supporting effort, and exploitation force, each with a specified echelon of forces available—provided a sustainable model that could be tailored to the threat and operational environment. Additionally, this provided a valuable foundation of planning predictability to staff and enablers that proved critical in condensed planning timelines where the corps strived to rapidly exploit opportunities against enemy formations during each period of darkness.

## *Intelligence*

**Integrating Multiple Unmanned Assets**. During one particularly successful deep attack at AC24, the Corps Collection Manager allocated tactical control of one line of MQ-1C Gray Eagle unmanned aircraft systems (UAS) to 12th CAB, allowing the CAB to rapidly identify the priority target formation and associated enemy air defense assets. This further enabled execution of precision Suppression of Enemy Air Defenses (SEAD)[2] through corps fires assets, Gray Eagle *Hellfire* missiles, and organic long-range capability of the SPIKE™ Non-Line-Of-Sight missile on the AH-64. Additionally, UAS employment in advance of rotary-wing maneuver validated threat disposition and appropriate routing for maneuver to preplanned battle positions. The tactical control of UAS capability retained at the CAB in support of deep maneuver proved successful when planned and employed with similar rigor and intent as attack rotary-wing capability. Conversely, overly bureaucratic or ill-understood release authorities for UAS weaponry can impair a mission and generate increased risk to force.

U.S. Army Soldiers assigned to the 12th CAB stand for a photo during Exercise Austere Challenge 24, Grafenwoehr, Germany, March 10, 2024. U.S. Army photo by CPT Gabrielle Hildebrand.

**Supporting Deep Maneuver**. The corps CAB, operating in the deep area, requires intelligence support from the corps's analysis and control element to a degree greater than any other subordinate unit within the corps. The risk of loss to combat power for the corps in a deep maneuver operation must be clearly understood and enablers applied appropriately to mitigate risk. In both the Aviation Mission Acceptance Brief and Go/No-Go conditions check, the threat assessment, enemy disposition, and triggers for initiating deep maneuver must be clearly understood, with assets allocated to inform decision-making and risks.

## *Fires*

**Responsive Fires**. Pre-planned fires in support of deep maneuver provided responsive capability to execute both precision SEAD and fire missions against opportunity targets. Fires participation in the Strike Net provided a mechanism for rapid engagement when paired with a well-placed fire support officer and technical rehearsal prior to execution. Rehearsals of pre-established lines of communication maximized the sensor-to-shooter capability and expedited fire mission timelines.

**Priority Formations and Priority of Fires**. In AC24 and AvT24, the presence of the AVCOORD in the Target Working Group and Target Decision Board resulted in the most effective employment of the corps-shaping capabilities of the CAB and field artillery brigade. Aviation Coordinator participation in these events also provided situational awareness and presented opportunities for the corps CAB to make recommendations on employment of rotary-wing attack capability in concert with other corps enablers and efforts. These venues also provided the AVCOORD the ability to shape the prioritization of key enablers, such as space and CEMA assets, for both the corps and division CABs.

## *Sustainment*

**Sustainment Common Operating Picture (COP)**. The AVCOORD maintained a running estimate of current and projected locations for all CAB air corridors, engagement areas, FARPs, and TAAs. The COP was maintained utilizing a CPCE layer and briefed daily at the DOWG. In

[2] "SEAD efforts create localized air superiority through avoiding, suppressing, or destroying the enemy's integrated air defense system" (Fillman, 2021).

A UH-60 from the 12th CAB, Wings of Victory, is prepped for the next day's flight at Wiesbaden Army Airfield. U.S. Army photo by MAJ Robert Fellingham.

addition to shared situational awareness on fuel and ammunition posture, this aspect of the AVCOORD role proved critical to the sustained and long-range employment of all corps's rotary-wing capability.

**Heavy Lift and Casualty Evacuation (CASEVAC)/Medical Evacuation (MEDEVAC)**. The exercises utilized general support aviation battalion heavy lift capability to support corps sustainment efforts and rapid resupply of critical munitions. Additionally, the 12th CAB Surgeon developed a robust MEDEVAC and CASEVAC COP that provided flexibility and responsive capability across the corps's operational environment.

## *Protection*

**TAA/FARP Survivability**. The 12th CAB received direct support of one air defense battery and military police company during AC24. These assets (Avenger Air Defense Systems, man-portable air defense systems, drone busters, gun trucks) were further task organized to provide organic protection capability to forward positioned assets of the CAB. During AvT24, Territorial Defense Forces provided additional protection and intelligence sources. Clear understanding of capabilities and limitations of these assets, combined with frequent survivability moves, proved essential to the protection of the corps's combat power.

The 12th CAB's experiences during AC24 and AvT24 highlight the potential of several new TTPs that facilitate the integration of aviation combat power as part of a combined arms team. These TTPs, such as the AVCOORD, require further experimentation and refinement during future exercises. These future exercises should increasingly reflect the realism of the modern battlefield, such as limited connectivity and the challenges of dispersed command and control nodes, in order to test the ability of the CAB commander to coordinate efforts across multiple echelons. Finally, units must incorporate the depth and complexity of corps deep maneuver into live training to further refine lessons learned during simulation.

*"Wings of Victory!"*

Biographies:

*At the time of this writing, COL Ryan Kendall is the commander of the 12th CAB at Katterbach Army Airfield, Germany; MAJ James Raymond was the 12th CAB Executive Officer (AC24); MAJ Caleb Sherstad is the Intelligence Officer (AC24) and Executive Officer (AvT24); MAJ Ryan Kline was the Operations Officer (AC24); MAJ Jared Grubbs is the Operations Officer (AvT24); MAJ Roberto Rivera is the Logistics Officer; MAJ Brian Burchett is the Communications Officer; CPT Ryan Uzzell is the Fire Support Officer; and CPT David Bindon is an Assistant Operations Officer at 12th CAB.

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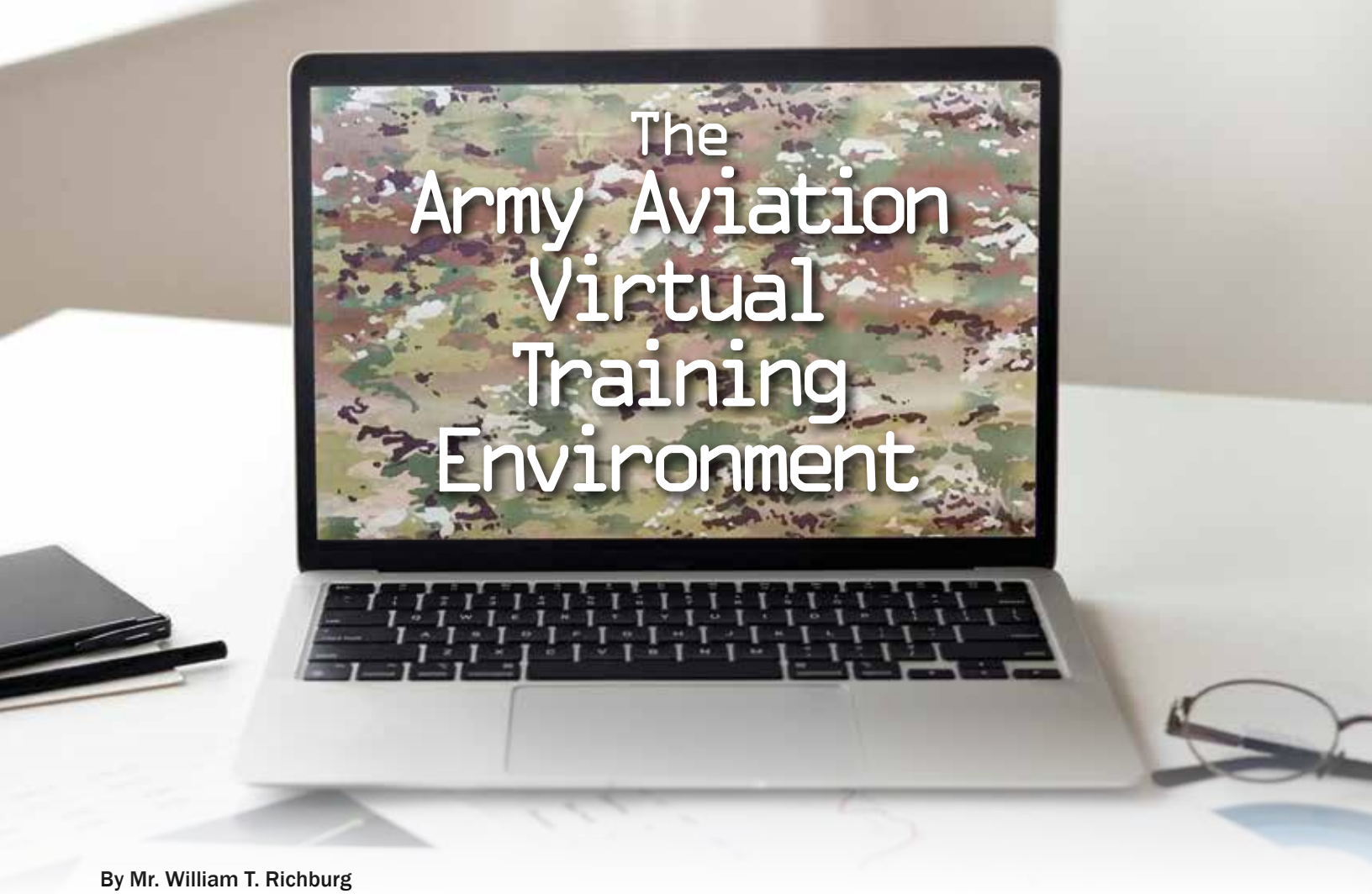


# The Army Aviation Virtual Training Environment

By Mr. William T. Richburg

The Program Executive Office, Aviation (PEO Aviation) developed the Virtual Training Environment (VTE),[1] a comprehensive aviation maintenance training solution that uses software and services. It offers a standardized, secure, and globally accessible platform for creating, managing, and distributing Interactive Media Instruction (IMI) resources among various stakeholders within the Aviation Enterprise. The VTE also supports U.S. Army Aviation Center of Excellence's need for uniformity in virtual training across all Army Aviation systems and platforms. The VTE, in conjunction with the ongoing development of the Virtual Training Suite (VTS), aims to deliver training that is readily available and meets the immediate needs of Soldiers.

New Army recruits are already well-versed and comfortable with digital technology, which shapes how they work, play, learn, find information, shop, and communicate. Soldiers embrace technological advancements such as the internet, apps, and other tools for both personal and professional development. In short, digital elements are an integral part of their daily lives, and the Army must adapt to this reality to address future training challenges and enhance combat readiness for aviators and aviation maintainers.

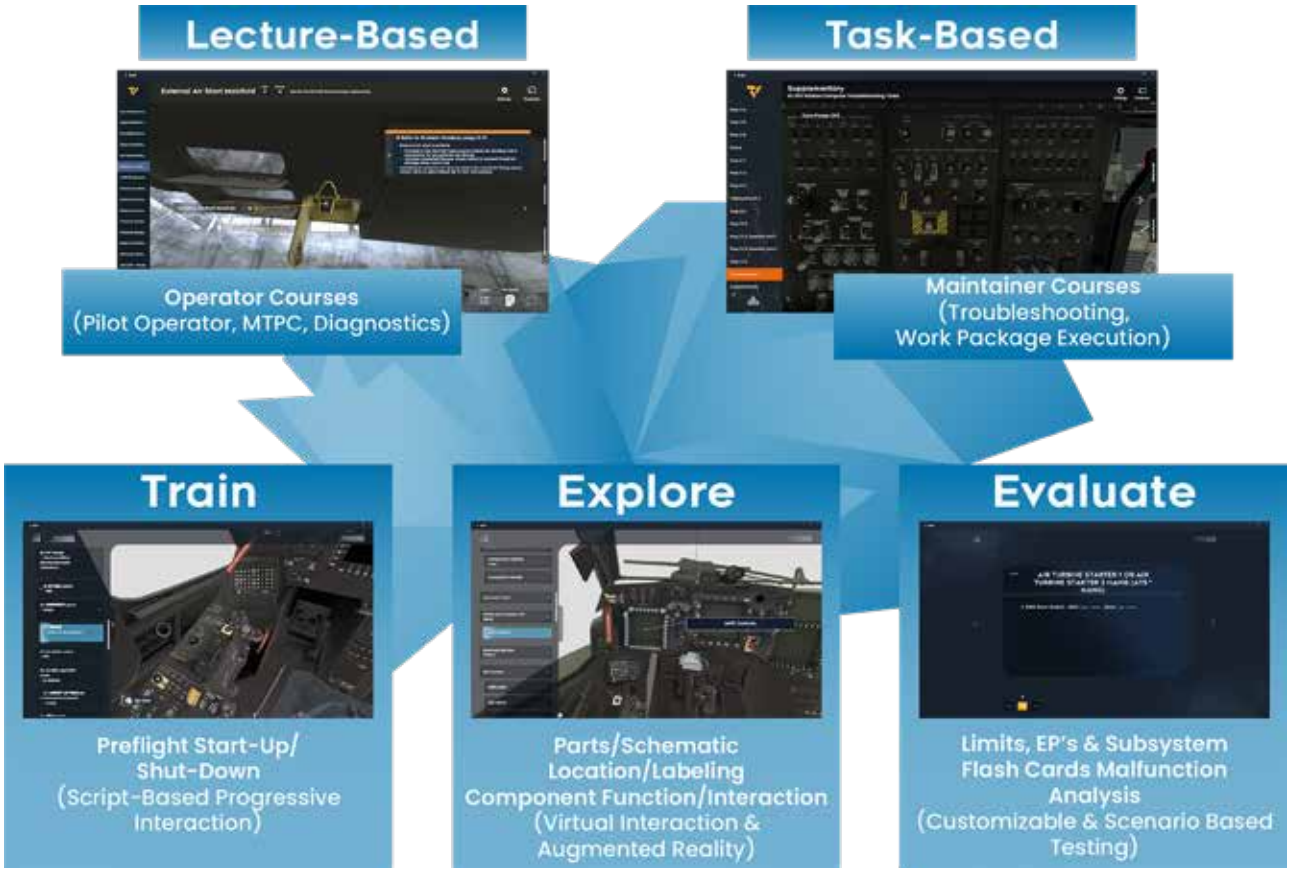
Effective training is the cornerstone of a force prepared for any mission. It equips Soldiers with the necessary knowledge and practical skills to adapt to new technology, meet technical requirements, and respond to emerging threats. To meet the needs of the modern Soldier, training must provide realistic, digital instructional content that is securely accessible anytime, anywhere, and on-demand.

The VTE's role in Army Aviation training cannot be overstated. It offers a single, globally accessible library of up-to-date Army Aviation courseware resources. Any internet-connected device can download the resources, and the content is hardware-agnostic, following the guidelines of a software development kit. Authenticated with their common access card, users can access their VTE account and training content across all devices. This cloud-based structure allows seamless transition of user profile data and progress between devices, eliminating the need for manual tracking.

The VTE offers a wealth of immersive and engaging IMI resources, featuring highly accurate digital models and simulations of various systems. The UH-60 Black Hawk, AH-64 Apache, UH-72 Lakota, CH-47 Chinook, and MQ-1C Gray Eagle all currently have content for basic electronics. This virtual approach allows Soldiers to train as needed, without limits from equipment availability, schoolhouse hours, or simulator time. Soldiers can perform multiple "digital repetitions" within the VTE before moving on to actual equipment, significantly reducing the time needed to acclimate to real-life systems.

The VTS is a downloadable, Windows-based application that serves as a central

[1] www.vte.mil




A look inside the VTS. Image provided by the author.

access point for courseware within the Army Aviation Enterprise and is a key component of the VTE. The VTS supports both classroom instruction and self-paced learning and offers a significant improvement over traditional teaching methods. The cloud-based distribution system ensures that all users have access to the most current training materials by pushing updates as soon as they are published, eliminating issues caused by outdated content.

Since December 2023, the number of registered VTE users has grown from 5,100 to more than 8,000, with new users logging in daily. Each user receives immersive and engaging training through the VTS. Courses at Fort Novosel, Alabama, and Fort Eustis, Virginia, use VTS to access virtual training materials and IMI.

The VTS offers the flexibility required for training courseware development, distribution, and sustainment across various and diverse aviation platforms. Additionally, VTS employs an acquisition strategy that meets Army Aviation's Training Aids, Devices, Simulators, and Simulations (TADSS) regulatory obligations and is compliant with applicable Army regulations.

The VTE transforms aviation training by digitizing it, allowing it to evolve and keep up with advancements in both the current and future fleets. Notably, the VTS follows the principles of the Modular Open Systems Approach, ensuring seamless integration with current and future systems, providing flexibility and scalability as Army Aviation continues to modernize.

The next VTE evolution will incorporate Extended Reality (XR) and Augmented Reality (AR) support for task-based training, allowing Soldiers to engage in highly immersive, realistic training scenarios with remote location multiuser capabilities. By integrating XR and AR into the VTE, the Army can enhance task-based learning and enable collaborative training across different locations, simulating real-world environments and mission scenarios. This adaptability and innovation ensure that training remains relevant and effective, even as the operational landscape evolves, and helps the U.S. Army meet the needs of a new digital generation.

The PEO Aviation VTE journey is a shining example of how modern digital resources keep Army Aviation training relevant in an ever-changing tactical environment. The VTE sets a new standard for quality, timeliness, concurrency, distribution, and tracking of IMI and training materials. It is well-equipped to meet the training and simulation needs of the current and future force.

Biography:

Mr. William Richburg is the TADSS/VTE Liaison Officer, Army PEO Aviation, Redstone Arsenal, Alabama.

Quick response code for the VTE homepage.

# Dying on the Vine:

## How Historic Roots Produce Enduring Evolutionary Problems for Army Aviation

**By Maj. Mark M. Stanfield**

Around the time of the Army Air Service's infancy (that is, in 1917), General John J. Pershing and others sought to keep the new air arm small (Maurer, 1979) in size, scope, and assignment–something for which operational problems continue in all components of the U.S. Army. The desire at the time was to keep the Air Service a part of the Army and inadvertently (or by design) limited in scope of strategic thinking, interdepartmental collaboration, and tactical acumen. Ever since, the perspective toward and understanding of aviation by all other Army warfare specialties has inherited an equally narrow field of view and spectrum of employment. Whether by accident or ambition, the early decisions to prune and rein in aviation closely to Army command has resulted in issues like underutilization of combat power; continual capabilities briefs to non-aviation units; and more dramatically, a lack of innovative, inventive (or even involved) use in exercises and combat operations.

Having chosen my words carefully, the idea is not that Army Aviation is dead on the vine but rather, dying (or at least dated) in its current state. It needs new life. The bold, big picture offered in this commentary is to reverse and modernize that 100-year-old thinking. In truth and humility, the point of this article is not to discuss solutions at length, especially given the limitations of a single author; instead, it is to illuminate many concerns, and as such, suggest that they are appropriate for consideration by joint and political levels well above Army Aviation.

So, why am I, as a U.S. Air Force Maj., even writing this article for *Aviation Digest*, and what gives me the authority? I am a former Army Aviator and wanted this article to be thought-provoking and timely toward modernizing the force. I also have a multiservice perspective, since I now serve in my third branch. In each setting, I have always tried to make things better where possible. In truth, this article is perhaps a bit controversial; however, I wanted to express my constructive, respectful criticism to the Army Aviation Enterprise.

Is it an outrageous argument to reference policy and opinion from so long ago? Aviation—at least powered, fixed-wing flight—itself is about as old. Not only was that crucial decision to limit the Army Air Service not so distant in time, but its impact has been fairly permanent in its mark on Army Aviation. Through Pershing's words and founding policy, there is a ghost of the past within Army Field Manual (FM) 3-04, "Army Aviation" and elsewhere, which keeps aviation grounded within the larger Army service. Indeed, the initial (and enduring) belief that Army Aviation is a force solely supporting the ground commander was the strong opinion of General Pershing himself (Department of the Army, 2020, p. 1-1)—so much so that it seems the Army cannot or will not shake itself from that tenet.

Army Aviation still largely supports its own ground forces, and that cultural relationship is important to be sure. There is an inherent trust involved between the ground force and Army Aviation assets: The Soldier on the ground has always believed an Army aircraft is nearby (or can be) to resupply, rescue, or bring supporting fire overhead. While logical, to almost exclusively define aviation's existence around that is also restrictive. That sole support of the ground forces' mindset might also partly be explained by language in the Aviation Branch's guiding FM 3-04, which suggests Army Aviation should be leaders in tactical employment of the maneuver force; yet, and as a contradiction, also embody a supportive role (Department of the Army, 2020, pp. 1-1 to 1-2). In 1999, then Chief of Staff of the Army, GEN Eric K. Shinseki, gave his "Address to the Eisenhower Luncheon" speech during the 45th Annual Meeting of the Association of the United States Army. The speech, which addressed the future of the U.S. Army, rather apparently left out Army Aviation in that vision (Shinseki, 1999). To suggest that aviation is sometimes an afterthought in the minds of non-aviation Army leaders is not unfounded.

The U.S. Air Force, in its birth, was able to break somewhat from tradition and embrace transformation in its infancy and has continued to do so nearly throughout its history (Gladwell, 2021). It is important to clarify that the nearly simultaneous departure of the Army Air Force and the generation of the U.S. Air Force in the 1940s, while necessary for air warfare and overall expansion of U.S. foreign policy and national defense capability, represented an immediate talent and resource drain. I believe that

the drain is one that—in its continued inattention to and exclusion of—an otherwise premier, first-to-fight capability the Army Aviation Enterprise has suffered ever since as a fighting force within the U.S. Army.

World War II was instrumental in transforming air warfare. Striking Japan from American outposts in Eastern India and the Marianas (truly the choice between a rock and a hard place) drove the development of longer range aircraft (Gladwell, 2021). As a result, U.S. military aviation units have since operated rather independently (or collaboratively) and more to the point, distally to their parent organizations, whereas Army Aviation units by doctrine and choice are still employed proximally. U.S. forces now have global reach with many Air Force aircraft, U.S. Navy carrier and expeditionary strike groups, and Marine Expeditionary Units. In fact, the Marine Corps has not only blazed the trail of vertical envelopment, but it has continually expanded on it in terms of doctrine and advancements in technology, to include rotary-wing, fixed-wing, and tiltrotor aircraft. By comparison, Army Aviation units, and in some instances technologies themselves, have largely remained the same (e.g., air assault, attack, and lift categories) since the 1980s and are not only directly attached to the main element but almost entirely reliant on other services to deliver their assets overseas. In fact, Army Aviation only became its own subgroup in 1983,[1] which might highlight the nature of its somewhat unchanged state.

It is also worth mentioning that although technically "brand new," most Army aircraft are a retread of designs from decades ago, the newest being the early 1980s (B. Moenck, personal communication, March 11, 2023).

Fleet modernization programs have also not produced many new capabilities; rather, they have just changed how Army Aviators operate in the cockpit (B. Moenck, personal communication, March 11, 2023).

The Army, however, does not need long-range aircraft to deliver its own assets abroad so much as it should strive to emulate other aviation services in the joint environment. In my experience, and interestingly enough, the Bell V-280 Valor tiltrotor aircraft is a much longer-range platform than any current Army aircraft, with the exception of the C-12 Huron. If the issue of Army Aviation limitations does not seem very pressing or around the corner, the Future Vertical Lift concept in fact highlights it. The V-280 will require an Army Aviation partner that understands joint environments because it will soon have an aircraft that performs outside and above the confines of Army airspace and other typical planning boundaries. In other words, when considering an aircraft that will very quickly and extensively reach beyond traditional Army airspace confines, the Army will soon have to rethink its service counterpart relationships. This is because the Valor will find itself in the joint service environment, regardless of intent. For a service seeking relevance in joint multidomain operations, the Army's new tiltrotor aircraft, much like the larger landscape described in this article, will hasten the need for an organizational shift toward goals that align and array with other joint services. Most certainly, one should not prepare for a marathon after the starting gun fires.

A constant process of inward reflection, redefinition, and realization of Army Aviation goals is necessary. In truth, one of the most significant ironies is that in the same period of the early 1900s and for 2 solid decades beyond that, U.S. Army Aviators were some of the most influential pioneers of America's earliest record-setting and industry-changing flights (Thomas & Thomas, 2004). This was in the face of very strong, high-ranking voices that kept the Air Service limited in its development and delivery of Army aerial combat power. Is this lack of reflection a problem of the service or the Aviation Branch? Maybe both. Perhaps those early pioneers were creating growth where they saw possibility. As has been wisely noted in the past, the organization cannot seem to exist as "both fully Army and fully Aviation" (Burke, 2018). It can also never be rid of its ghosts until they are acknowledged and replaced by bold adventurism and ambitious goals. Introspection by Army Aviation will create a direction that is for and of the future.

My viewpoint is that the Army has a tremendous number of problems just in aviation alone: pilot retention, quality of life, airframe age, maintenance complexity, inspection schedules, combat training center rotations, and extensive (or sometimes career-permanent) non-aviation duty assignments, to name a few. Big picture and broad thinking (in general) could provide a way to fix those problems in particular. Stated differently, the Army has numerous, specific, and in some cases, stymied problems that might better be served by a return to not only very rigorous and academic thinking, but also open and critical thinking as this nation experienced several decades ago at the highest levels of government.


The Bell V-280 technology demonstrator at Redstone Arsenal, Alabama, August 2024. U.S. Army photo by David Hylton, PEO Aviation.

[1] "Army Aviation became a branch on April 12, 1983," (Morris, 2023).

A Chinook helicopter from the 160th Special Operations Aviation Regiment approaches a beach from off shore during training near Hurlburt Field, Florida. U.S. Army photo by MAJ Jeff Slinker.

Army Aviation frequently involves discussion of outdated concepts, such as coordinating altitudes, which quite literally puts the Army outside joint airspace as a distant (or even non-) participant. Thus, it puts itself in a very quiet Army-centric corner, whereby thinking and collaboration only occur using a ground-based lens and consequently, working little with other branches and partners. What's more, of the things that Army Aviation thinks it "owns," it is in reality a brigade combat team or division that actually creates and dictates that particular airspace plan, and therefore, aircraft utilization. This is the case even though Army flying units work through, influence, and can force multiply every single one of the other Army warfighting functions.

Being careful to not mischaracterize the whole Army Aviation Enterprise and despite these realities for its majority, somewhere out there, some groups of Army Aviators are still operating in these bold, autonomous ways. Of course, there is a Special Operations Aviation Regiment, and there are specialized National Guard and Army Reserve units working with, for example, Air Force close air support platforms and personnel recovery/combat search and rescue squadrons. Recent history has shown dramatic rescues and wildland firefighting efforts by some of the same units. Perhaps the reason these aviators are still operating in this way is that they do not have geographically proximal higher headquarters or long-standing, unbroken, orthodox policies that keep them limited in their scope. Most likely, these units thrive from a somewhat untethered existence or job description, which is one potential solution. That there are units performing these audacious, daring employments of aircraft and mission is promising—and far better than the limited experience of this article's one voice. The best solutions will likely come from reactions and impressions of its reading.

Institutional matters aside, the growing potential for conflict with large national forces, such as the Russian Federation or the People's Republic of China, mean that Army Aviation would assume a far larger role than just a subordinate, supportive one as in present doctrinal theory and practice. Additionally, the Army desires to be a significant joint force collaborator, and it should be, to assure national and allied success in future exercises and combat operations. To perform both in the 21st century well, and for Army Aviation to remain at the forefront of combat capability during the next 100 years, it needs both action and openness to change that matches the joint language written in its publications—and the trailblazing that, though few carry the banner forward, would continue the behavior and legacy of Army Aviation's earliest pilots. Constant evolution in Army Aviation, without considering regeneration, could mean the potential for a lack of growth in a service known not just for transformational vision, but for actually seeing it through.

Biography:

Maj. Mark Stanfield is a pilot and author with 15 years of service in the Navy, Army National Guard, and Air Force Reserve. In all three, he has had the privilege of flying assignments and has become a joint personnel recovery expert. He is qualified in the MH-60S, UC-12M, UH-60M, and C-130H.

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# Fate is the Hunter

## Author, Ernest K. Gann, 1961; Publisher, Simon & Schuster, 390 pages

**A book review by CW5 M. Joshua Muehlendorf**

Step back into aviation's adolescence, a time when technology afforded significant leaps in speed and distance, yet still heavily relied on the crew's expertise for even the most fundamental tasks of calculation and decision-making. Technical expertise and heart-stopping experience were the greatest commodities of the day for pilots. Ernest Gann chronicles his career in aviation from the mid-1930s through the war and post-war era into the 50s.

*Fate is the Hunter* is a must-read classic for any pilot. Gann expertly crafts the narrative in the pilot's mind caught between their fears of failure and the demand to maintain a calm and collected demeanor for the crew. His candid humility can disarm the most stoic aviator and lead them to a peaceful acceptance of their own faulty humanity.

Ernest Gann began his flying career as an entertainer in a flying circus and giving dollar rides to fairgoers in an open cockpit single engine plane. He entered the airlines in the mid-1930s, flying in the Northeast for American Airlines. When World War II started, he volunteered for the Air Transport Command, or ATC, a branch of the United States Army Air Forces. After the war, he flew for various other airlines until the early 1950s when he decided to focus full time on his writing career.

The memoir opens in the cockpit wherein Gann is the CPT paired with the competent first officer, Beattie, as they make their way through the black night from Buffalo to LaGuardia, New York. An annoyed Gann makes a subtle correction to Beattie for having a map light so bright that Gann cannot read his instruments. The correction reveals an altimeter reading 50 feet above the assigned altitude. Gann smoothly corrects the altitude so as not to be thought less of by Beattie for a "sloppy mistake" just in time to avoid another airplane that passes right over the top of them. The whole event was over in 2 seconds, and there wasn't even time to "quicken his breathing." "Those fifty additional feet held only a few minutes previously–so insignificant then–are now revealed as the pinion of our lives" (Gann, 1961, p. 13).


He recalls his first training flight in what was then an airliner, the short-lived DC-2. After successful flight maneuvers and a first landing, his second landing "…is not a single landing but an endless series of angry collisions between the airplane and earth, each separated by spasms of engine roar as McCabe [instructor] tries grimly to terminate the steeplechase" (p. 31). He continues with the candid humility that pervades the book by stating, "In a few stunning moments all of the pride and assurance I had mustered and so carefully nurtured for this occasion have been destroyed" (p. 31).

We witness the maturing of a new airline pilot to a world-traveled seasoned aviator with even more humility and respect for his profession than when he began. His adventures include harrowing navigation to Greenland in the clouds using only time and heading until a radio beacon can be received, narrowly clipping the top of the Taj Mahal and exposing fraudulent pilots on cross-oceanic flights to Hawaii.

Throughout the book, Gann seems to be giving his confession of insecurities and true thoughts he was unable to share at the time. He masterfully describes the cockpit environment where ego and confidence prevent honest vulnerability. It is a social construct wherein decorum is kept at all costs to maintain the hierarchy of CPT and copilot, even to the point of stubborn and proud disaster.

It is easy to see that Ernest Gann is as gifted a writer and storyteller as he is an aviator. We are fortunate to have such teachers that can bridge across generations to share their sage wisdom with our kind. I recommend *Fate is the Hunter* to all new pilots-in-command especially. There is no lonelier feeling than the insecurity of messing up when you are in command and feeling like you are the only one.

In 1964, 20th Century Fox produced the movie, *Fate is the Hunter*. The movie was inspired by the book, but it does not follow the storyline and instead, centers around a crash investigation.

Ernest K. Gann was not only an American Aviator, but an author, sailor, and conservationist. He is known for his novels, *Island in the Sky* and *The High and the Mighty*—and his classic memoir of early commercial aviation, *Fate Is the Hunter*, all of which were made into major motion pictures. He died in 1991.

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Gann, E. K. (1961). *Fate is the hunter.* Simon & Schuster Paperbacks.

# AVIATION SENIOR AND LEGACY LEADERS!

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## *Look for the April-June 2025 Issue:*

# Our Featured Focus Will Be *How We Fight*

CH-47F Chinook helicopters during a recruit sustainment orientation flight at Bellows Air Force Station, Waimanalo Hawaii. Army National Guard photo by SPC Matthew A. Foster/Released.

## Write for *Aviation Digest*!

### *Focus Topic: How we Fight*
### *April-June 2025*
***(Submissions closed-Published on or about 15 May 2025)***

### *Focus Topic: TBD*
### *July-September 2025*
***(Articles due 15 May 2025–Published on or about 15 August 2025)***

### *Focus Topic: TBD*
### *October-December 2025*
***(Articles due 15 August 2025–Published on or about 15 November 2025)***

Along with articles corresponding to the listed focus topics, the *Digest* is always receptive to letters to the editor, leadership articles, professional book reviews, anything dealing with the aviation 7-core competencies, training center rotation preparation, and other aviation-related articles.

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