

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 Clafin.

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.

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



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

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



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

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.

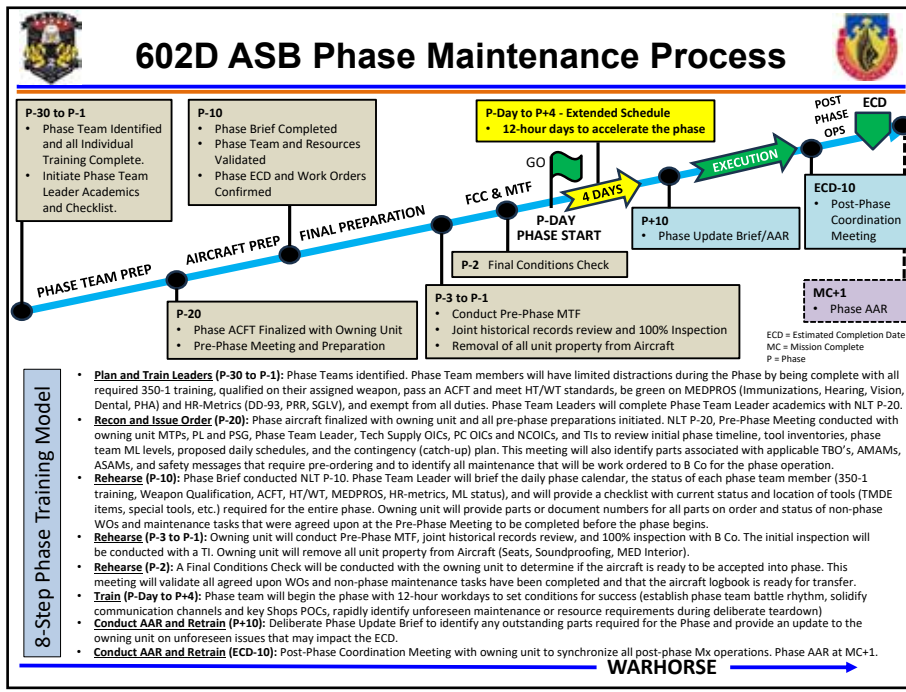
2. Do Not Neglect Pre-Phase Coordination and Synchronization.

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.

¹Please 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



New Jersey U.S. Army National Guard Soldiers perform phase maintenance on a UH-60 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.

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.

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!

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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.

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 person-



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

nel 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 main-

tenance. 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 benefiting 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.

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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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 maintain-

ers 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

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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.

Reference:

Department of the Army. (2020, October 20). *Army aviation maintenance* (Army Techniques Publication 3-04.7). https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN31028-ATP_3-04.7-000-WEB-1.pdf