Army Aviation Maintenance

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Army Aviation Maintenance

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Preface

Army Technique Publication (ATP) 3-04.7 provides guidance concerning aviation maintenance structure, organization, responsibilities, and functions focused from the aviation brigade to the platoon level.

The principle audience for ATP 3-04.7 is for aviation maintenance commanders, leaders, officers, technicians, noncommissioned officers (NCOs), and aircraft repair and maintenance personnel. Trainers and educators throughout the Army will also use this publication.

Commanders, staff, and subordinates ensure that their decisions and actions comply with applicable United States, international, and in some cases host-nation laws and regulations. Commanders at all levels ensure that their Soldiers operate in accordance with the law of wars and the rules of engagement. (See FM 27-10.)

The term ‘aircraft’ refers to all Army aircraft types (rotary-wing, fixed-wing [FW], and unmanned aircraft systems [UAS]), unless a specific aircraft has been identified in this publication. Terms and definitions for which the ATP 3-04.7 is the proponent publication are boldfaced in the text. For other definitions shown in the text, the term is italicized and the number of the proponent publication follows the definition.

ATP 3-04.7 applies to all Active Army, Army National Guard/Army National Guard of the United States, United States Army Reserve, civilian, and contract maintenance personnel. Commanders must consider the contents of this document and the particular circumstances in which they find themselves (national military objectives, available forces, threat capabilities, and rules of engagements) when planning maintenance operations.

The proponent of ATP 3-04.7 is Headquarters, United States Army Training and Doctrine Command. Send comments and recommendations on Department of the Army (DA) Form 2028 (Recommended Changes to Publications and Bland Forms) directly to Commander, United States Army Aviation Center of Excellence, ATTN: ATZQ-TDD-D, Fort Rucker, AL 36362-5263. Email comments to Directorate of Training and Doctrine (DOTD) at usarmy.rucker.avncoe.mbx.doctrine-branch@mail.mil.

This publication has been reviewed for operations security considerations.
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Introduction

ATP 3-04.7 shapes the way Army aviation maintenance is to be conducted. Aviation maintenance is very complex and unlike any other type of combat service support (CSS) organization. Aviation maintainers must be able to support the aviation force as it is designed to fight, not as it is organized for command and control. To accomplish this, aviation units must be modular in design. For aviation maintenance applications, modularity is intended to facilitate, at the tactical level, the task organization of logistics to support a designated aviation task force and to effectively implement “fix forward” aviation maintenance doctrine.

Aviation maintenance support has never been more critical than in today’s operating environment, where personnel and aircraft remain in high demand due to high operational tempo (OPTEMPO). Today’s technically complex aircraft demand equally experienced aircraft maintainers and maintenance managers. The ability of an aviation unit to perform its wartime mission is numerically represented by its aircraft operational readiness rates. Higher operational readiness rates are a direct result of effective maintenance and logistics management by all aviation maintenance commanders/leaders, officers, technicians, and noncommissioned officers in charge (NCOICs).

Maintenance is critical for all aircraft weapon platforms, systems, subsystems, and aviation ground support equipment. The failure of an operating aircraft system or subsystem, resulting from improper maintenance procedures, can have catastrophic and deadly consequences to personnel and equipment. Aviation maintainers must adhere to the latest applicable aircraft technical manuals (TMs) and references when conducting maintenance on their assigned aircraft.

Each aviation maintenance company (AMC) and aviation support company (ASC) now possesses the capability to conduct split-based operations within a single theater of operations. Each AMC is responsible for performing field maintenance on its assigned/attached aircraft. ASCs assigned to aviation support battalions (ASBs) provide field maintenance support by conducting intermediate aviation maintenance according to the maintenance allocation chart (MAC).

Aviation maintenance is training. Commander and leader must balance mission requirements while continuously assessing a unit’s maintenance posture. The critical link between maintenance and readiness cannot be emphasized enough. This ATP ties regulatory guidance to practice, and serves as the primary reference for effectively managing aviation maintenance.
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Chapter 1

Maintenance Fundamentals

This chapter addresses doctrinal guidance and maintenance fundamentals for aviation units. Aviation maintenance underpins all aviation operations; maintenance is training and training maintenance generates combat power and builds readiness. This chapter discusses efficient and effective sustainment functions needed by aviation units to conduct operations while maintaining optimum combat capability. Army Aviation is a critical member of the joint combined arms team. To ensure vital assets remain ready and available to commanders, a thorough Aviation Maintenance Management Program must be in place with sustainable and quantifiable measures to report and track.

SECTION I – GENERAL

1-1. The Army maintenance program has two levels of maintenance: field and sustainment. The goal of Army aviation field maintenance is to support the operations and objectives of the maneuver commander. The primary purpose of the maintenance plan is to enable maintainers to provide the maximum number of operational aircraft available to support the tactical battle.

1-2. Commanders tailor and position maintenance assets and capabilities within the area of operations (AOs) to best support the unit. The maintenance-supply interface is the commander’s fusion point between field and sustainment maintenance management echelons. Sustainment maintenance managers ensure the maintenance system supports and sustains theater forces down to the individual Soldier.

SUSTAINMENT PRINCIPLES

1-3. Sustaining the operational unit requires aviation commanders and staffs to adhere to the sustainment principles—integration, anticipation, responsiveness, simplicity, economy, survivability, continuity, and improvisation. These principles apply, across range of military operations and are essential to maintaining combat power, enabling strategic and operational reach, and providing Army forces with endurance (Army Doctrine Publication [ADP] 4-0).

INTEGRATION

1-4. Integration consists of synchronizing sustainment operations within Army maneuver and aviation operations in a unified action environment. Effective sustainment operations are achieved through an understanding of and synchronization with the maneuver and aviation commander’s intent and concept of operations. Aviation maintenance units should be prepared to be organized and trained to conduct split-based operations.

ANTICIPATION

1-5. Anticipation is the ability to foresee operational requirements and initiate actions that satisfy a response without waiting for an operations order or fragmentary order. Commanders and staffs visualize future operations, identify required support and start the process of acquiring the sustainment that best supports the operation.
RESPONSIVENESS
1-6. Responsiveness is the key characteristic. It means providing the right support, in the right place, at the right time and meeting changing requirements on short notice. Responsiveness includes the ability to anticipate operational requirements. Aviation logistics must anticipate future events and requirements by reviewing and understanding the Aviation Maneuver Commander Operation Plan. While supporting current operations, aviation logistics plan for future operations and consider variations based on changes in the current, unfolding operations.

SIMPLICITY
1-7. Simplicity means avoiding complexity in planning and executing sustainment operations. Standardized mission orders, drills, rehearsals, and standing operating procedures (SOPs) contribute to simplicity.

ECONOMY
Resources are always limited. Economy is the most efficient use of available resources in accomplishing the mission. Commanders must consider economy in prioritizing and allocating resources. Emerging information and communication technologies continue to enhance the economy of critical aviation resources.

SURVIVABILITY
1-8. Commanders determine how much of their logistical support assets are focused on sustainment operations versus security. The larger the number of aviation support Soldiers committed to operations other than sustainment the less effective sustainment maintenance operations are. The commander must weigh the threat against the desired level of support in order to determine the acceptable level of risk. In some cases, ground forces may be available or required to augment security. Being able to protect support functions from destruction or degradation equates to survivability. Robust and redundant security contributes to survivability but may deter economy of operations.

CONTINUITY
1-9. Continuity is achieved through a system of integrated and focused networks linking sustainment across the levels of war, service support capabilities, and other operations. It assures confidence in allowing commanders freedom of action, operational reach, and prolonged endurance.

IMPROVISATION
1-10. Improvisation is the ability to adapt sustainment operations to unexpected situations or circumstances affecting a mission. It includes creating, inventing, arranging, or fabricating what is needed from what is available. The commander must apply operational art to visualize complex operations and understand what is possible at the tactical level.

FUNCTIONAL RESPONSIBILITIES
1-11. The functional responsibilities of Army aviation maintenance are—

- Meet the operational commander’s mission requirements with safe, mission capable aircraft.
- Sustaining materiel in an operational status and/or restoring equipment to a fully mission capable (FMC) condition.
- Enhancing or upgrading aircraft functional usefulness through modification work orders (MWOs), materiel changes, and product improvement.

Fully Mission Capable
1-12. A status condition where FMC equipment or systems are safe and correctly configured as designated by the United States Army. Equipment is fully mission capable when it can perform all of its combat missions without endangering the lives of crew or operators. The terms ready, available, and full mission capable are
often used to refer to the same status: Equipment is on hand and able to perform its assigned mission(s). The FMC percentage is total available hours divided by possible hours and multiplied by 100.

1-13. FMC status is defined as when an aircraft can perform all missions as prescribed by HQDA for the mission-design series (MDS) aircraft listed in (Army Regulation [AR] 700-138) and meets the system/subsystem operational requirements for an FMC status as specified in (AR 700-138).

Mission Capable

1-14. Mission capable is defined as the time that a piece of equipment or system is fully mission capable or partial mission capable. Mission capable status data will be the sum of FMC and partially mission capable (PMC) for purposes of reporting to the Office of the Secretary of Defense.

SECTION II – OBJECTIVES

1-15. The primary objective of aviation maintenance is to provide safe mission-capable aircraft to satisfy mission requirements. The aviation maintenance system has evolved over years of peacetime and combat operational experience to focus on providing the assets necessary to support operational and training needs without compromising safe maintenance standards. Leaders must prioritize resources that most effectively support specific mission requirements and advise the commander on the sustainment effect of various courses of action.

1-16. Aviation maintenance is a complicated and sophisticated business that requires the constant support and participation of commanders and leaders at every level. Mission readiness, training, safety, and standardization all depend on the ability of the aviation commander to ensure that the unit has a viable and effective maintenance program. Aviation commanders must ensure that maintenance is given the visibility and priority commensurate with the time and energy expended by their Soldiers to maintain the fleet.

1-17. Maintenance management uses the following factors to channel maintenance efforts:

- Command emphasis.
- Measures of effectiveness (MOEs).
- Management skills.
- Supervision.
- Motivation.
- Technical skills.

Note. Failure to achieve desired results often stems from failure in one or more of these areas.

COMMAND EMPHASIS

1-18. The commander sets the tone for what is important within the command. Soldiers in the unit translate this tone into action. To place command emphasis on maintenance operations, the commander takes an active interest in these operations and in the materiel readiness of unit equipment. Maintenance leaders use command emphasis and the MOE to influence the maintenance mission. To achieve quantifiable standards, commanders and leaders must aggressively pursue resources and equipment required to perform each mission. By actively tracking the unit MOE, commanders, officers, and NCOs identify strengths and rapidly address weaknesses, improving unit performance and enhancing its capabilities.

MEASURES OF EFFECTIVENESS

1-19. MOE provide the yardsticks to assess the field maintenance operational ability to generate combat power in support of the commander’s tactical goals and missions. The maintenance team, and specifically the maintenance leaders, can direct organizational efforts toward these common goals by clearly defining these measures and capturing them in quantifiable reports and records. The common maintenance operating
picture and measures ensure maintenance personnel can pursue mission goals with minimum guidance and retain high confidence in the direction of their efforts.

1-20. The aviation field maintenance MOEs fall into four categories: combat power measures, maintenance measures, technical supply measures, and core unit measures.

COMBAT POWER MEASURES

1-21. Combat power measures quantify a unit’s ability to perform its core-mission essential task list (METL) and directed-METL tasks. There are three combat power measures:

- Operational readiness (OR) rates or ready-to-launch (RTL) rates.
- Fleet bank time.
- Aircraft recovery operation responsiveness, capabilities, and training.

1-22. OR rates and RTL data provide a quantifiable status for immediate planning, trend analysis and operations. OR percentages indicate a unit's aircraft overall availability over an established historical period of time, but does not reflect a current picture from a real-time perspective. In order to provide commanders and staff with a quantifiable measure of a unit's daily aircraft availability that meet mission capability requirements, maintenance officers at echelon report mission capable aircraft as ready-to-launch by aircraft tail number. Commanders establish RTL standards by considering type of aircraft, unit tactics, techniques, and procedures (TTP), and mission equipment packages required to support operations. Fleet bank time, linked with operational requirements, provides maintenance leaders and commanders the ability to forecast scheduled service requirements. Maintenance leaders synchronize OR rates and RTL to provide commander’s with a representation of the maximum sustainable combat power generated with available maintenance personnel and resources.

1-23. Bank time is a quantifiable measure of maintenance capacity and throughput indicating “available flight time” for mission requirements. Bank time, usually expressed as a percentage of aircraft hours and is considered critical to the aviation maintenance-running estimate providing the commander the operational endurance of unit. Although the standard baseline is 50 percent, actual percentages will fluctuate based on OPTEMPO and maintenance management.

1-24. Fleet bank time, linked with operational requirements, provides maintenance leaders and commanders the ability to forecast scheduled service requirements. These measures work in synchronization to provide the commander a representation of his maximum sustainable combat power generated by available maintenance resources.

1-25. Units reporting high OR/RTL rates, but not supporting high operational requirements, may mask inadequate combat power generation. Additionally, high bank time percentages without corresponding combat or training flight hour execution may demonstrate underutilization and reduced combat presence in sustained operations. Units executing high flight hours against strong OR/RTL rates while sustaining or improving bank time ensure flexibility, predictability, and combat power generation.

1-26. Appropriate level commander will specify goals for readiness rates and bank time by a percentage using existing regulatory standards (AR 700-138, AR 750-1, and Department of the Army Pamphlet [DA PAM] 750-1) and applying known mission considerations. Commanders will report aircraft recovery operations status by unit standards established for deploying a fully-loaded, organic, deliberate recovery operation by air and ground according to FM 3-04.513, as well as the date of the full dress rehearsal. These measures will be reported (figure 1-1, page 1-5) at least monthly and historically tracked for analysis of improvement, degradation, and goals achieved.
MAINTENANCE MEASURES

1-27. Maintenance measures directly affect the unit’s ability to regenerate combat power through repair and scheduled services. The seven maintenance measures are—

- Production index.
- Scheduled maintenance/phase completion standards.
- Annual internal or Army command aviation resource management survey (ARMS) results and corrective progress.
- Special tools acquisition, serviceability status, and replenishment.
- Test, measurement, and diagnostic equipment (TMDE) delinquency and instrument master record file (IMRF) data matching percentages.
- Specially qualified Soldier and personnel status such as nondestructive inspection (NDI), welder, hazardous material (HAZMAT), confined space, or protective clothing and equipment (PCE) (Army term)/personal protective equipment (PPE) (Occupational Safety and Health Administration [OSHA] term).
- Work-order rejection rate percentage (monthly and annually).

1-28. The production index quantifies a unit’s ability to complete work orders in a timely fashion and reflects its ability to reduce or eliminate backlogs. Completion of back logged work orders is a maintenance command goal. The production index is the ratio of work orders accepted by a maintenance unit compared to the number of work orders completed over a given period, generally the calendar month. The goal is 100 percent of accepted work orders completed in the period; this precludes generation of a backlog. If a unit falls below 100 percent in any given period, a backlog is created that must be mitigated as soon as possible. Once a backlog is generated, the maintenance unit must exceed 100 percent for one or several reporting periods to recover from the backlog, or the backlog remains or expands. Successive periods below 100 percent indicate a systemic issue and demands command analysis and attention. Successive periods over 100 percent show positive results against a backlog of work orders and indicate a healthy maintenance operation.

1-29. Unit commanders must set reasonable standards for the completion time allowed to complete scheduled or phase maintenance operations (table 1-1, page 1-6). Although these goals may be achieved at earlier times, quality of the phase should always be the main concern. These operations generate bank time for aircraft fleets and can rapidly enhance or cripple combat power.
1-30. A typical phase team will consist of the phase team lead, four to eight mechanics and an aircraft crew chief. A dedicated technical inspector (TI) will be assigned to the phase team to ensure all performed maintenance inspections/procedures comply with technical manuals (TMs) and applicable references. Back shop support will be work ordered to avionics, engine, sheet metal and prop and rotor as required.

1-31. Competition between units is healthy and should be encouraged in achieving or exceeding the goal. Safety is always the primary consideration. Adjustments to shorten the timelines may be considered if timelines are frequently and easily met. If timelines are habitually missed, the maintenance team must analyze the causes and mitigate the challenges to bring the program back in compliance to support required flying hours.

### Table 1-1. Phase maintenance completion goals

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<td><strong>AH-64D/E</strong></td>
<td></td>
</tr>
<tr>
<td>250 hours</td>
<td>11 days</td>
</tr>
<tr>
<td>500 hours</td>
<td>26 days</td>
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<tr>
<td><strong>CH-47F</strong></td>
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<tr>
<td>200 hours</td>
<td>18 days</td>
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<tr>
<td>400 hours</td>
<td>36 days</td>
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<tr>
<td><strong>UH-60A/L/M</strong></td>
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<tr>
<td>480 hours</td>
<td>20 days</td>
</tr>
<tr>
<td>960 hours</td>
<td>30 days</td>
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</tbody>
</table>

AH-attack helicopter
CH-cargo helicopter
UH-utility helicopter

1-32. Units will conduct internal ARMS surveys annually or substitute the ARMS for the annual requirement. The results establish benchmarks for sustainment and improvement. Commanders will ensure all passing areas retain their satisfactory status and work toward commendable levels of performance. For failing areas, commanders will establish a recurring reporting process to indicate progress on bringing substandard areas into compliance as rapidly as possible. This recurring requirement allows commanders to assess the overall performance of the unit and bring focus to areas needing attention. All major areas below standard should be in compliance by the subsequent evaluation and sustained indefinitely thereafter. Inspectable area progress will be reported to the support operations aviation cell every four months for analysis and assistance. The support operations officer (SPO), or designated representative will re-inspect unsatisfactory and marginal areas prior to the first post-inspection tri-annual progress report.

1-33. Commanders will monitor the status of their special tools compliment and work diligently toward filling the shortages to achieve 100 percent of the commander-approved levels, with matching serviceability ratings. Additionally, the commander will continually update the logistics staff officer (S-4) on funding necessary to acquire all required special tools. Special tools and test equipment will be accounted for on the unit property books.

1-34. Unit leaders will monitor and facilitate the calibration of TMDE within the organization according to this manual, unit SOPs, and supporting regulations. Commanders receive delinquency rate reports and match rate reports between the unit internal TMDE inventory quantity and identity and the supporting calibration center IMRF. Missing or additional items will be identified and addressed immediately to ensure the IMRF report coincides with the unit inventory. The IMRF serves as a quality check against the unit-generated list, not as a unit inventory. Unit TMDE lists and the IMRF reconciliation match rate goal is 98 to 102 percent of the IMRF. The unit TMDE delinquency standard is two percent delinquent or less relative to the IMRF which can be found on the logistics information warehouse (LIW) website.

1-35. Maintenance units require specially qualified and credentialed Soldiers and personnel to perform unique functions. These include but are not limited to maintenance test pilots (MTPs), aviation maintenance technicians (151As), NDI technicians, certified welders, confined spaced trained technicians, PCE/PPE
certified users and maintainers, HAZMAT inspectors, and technicians. The commander will track required positions by grade and qualification to assess the impact on mission performance and assist human resources personnel in prioritizing fills or operations staff officer (S-3) personnel with securing necessary training for currently assigned Soldiers. The percentage filled of these specially trained Soldiers directly impacts unit capabilities. The leadership must monitor and work toward increasing this percentage until capacity and requirements are reached.

1-36. Work orders failing to meet standards according to DA PAM 738-751 will be rejected. The number of rejections against the number of completed work orders will be tracked and reported monthly and annually for possible trend analysis.

1-37. Maintenance measures will be reported (figure 1-2) in brief format to higher commands up to brigade level at least monthly and historically tracked for analysis of improvement, degradation, and goals achieved.

<table>
<thead>
<tr>
<th>Maintenance Measures Report</th>
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<tbody>
<tr>
<td><strong>Oct</strong></td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Production index/ work orders over 90 days</td>
</tr>
<tr>
<td>500 hour service completion average (standard = 15 days)</td>
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<tr>
<td>Workorder rejection rate</td>
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<tr>
<td>Special tools serviceable on hand %</td>
</tr>
<tr>
<td>TMDE delinquency % / IMRF match %</td>
</tr>
<tr>
<td>Specially qualified personnel on hand %</td>
</tr>
<tr>
<td>Last annual ARMS date/ rating %</td>
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</table>

FIGURE 1-2. Maintenance measures reporting example

**SUPPLY MEASURES**

1-38. Supply measures provide immediate support to the maintenance measures and further enable combat power generation through conservation of time and funding. Supply measures exploit success and expose inefficiencies by right sizing parts stockage, minimizing excess, and ensuring funding is applied both for and against unit budget accounts. Supply measures include—

- Average customer wait-time.
- Reparable management.
- Rates for zero balance items with due out requests against them.
- Inventory accuracy and excess management.
- Aviation Class IX (Air) budget reconciliation.

1-39. The supply sections will track and report monthly the average wait time in days required to satisfy standard and high-priority parts requests. This provides an indication to the commander of how well the unit parts and supplies requirements are addressed with items on-hand. This reporting assists in determining when unsatisfied demand rates are low and items are appropriate in the unit and authorized stockage list (ASL).
1-40. Zero balance items with due-out requests against them affect average customer wait times. These items are normally stocked by technical supply for the customer shop, platoon, or unit, but existing quantities are exhausted and require replenishment. Low zero balance with due-out rates indicates a healthy and properly tailored technical supply operation, where high rates may justify increasing quantities on-hand or expediting certain items experiencing unusual delivery delays.

1-41. Frequent inventories of supply operations ensure quantities match automation information reports and the request and fill process will continue to function properly. The inventory match rate for all stockage is 95 percent, which demonstrates good stewardship of parts and supplies. Commanders will set a schedule according to Army Regulation (AR) 710-2 to ensure inventories occur frequently to generate useful data for operations analysis. Commanders will resource supply operations appropriately to improve and ensure inventory accuracy and consistency. The more accurate the inventory the less idle and excess items remain in possession of the unit. The retention of serviceable and unserviceable excess items ties up funds and assets needed by other units and must be avoided. Leaders will ensure excess items receive immediate turn-in actions according to the unit SOP and AR 710-2, which improves unit mobility and supply budget fidelity.

1-42. Supply officers will constantly manage and balance the unit Class IX (Air) budget. The Class IX (Air) budget includes Class IX and limited items of other classes of supply in direct support of aviation maintenance missions. This is an on-going process and should be updated immediately as expenditures and credits occur. Commanders will review the budget monthly to ensure projections and statuses remain in line with available funding. However, since the budget is managed as events occur, the budget report must be available upon demand. Additionally, face-to-face comptroller reconciliations may be required to correct errors detected during budget management or command review. These reconciliations can return unapplied credits to a unit and improve its budget posture.

1-43. These measures will be reported (figure 1-3) in brief format to higher command up to brigade level at least monthly and historically tracked for analysis of improvement, degradation, and goals achieved.

![Figure 1-3. Supply measures reporting example](image-url)
CORE UNIT MEASURES

1-44. While not unique to aviation field maintenance units, core unit measures enable leaders to assess the underlying operations of a maintenance unit supporting both maintenance and tactical operations. Individual Soldier training is significant and reportable but is not included in maintenance unit core measures due to the amount of regulations and guidance available in other publications. Those statistics and requirements are best tracked and reported (figure 1-4 and figure 1-5, page 1-10) to higher commands as training specific goals and measures. With that understanding, core unit measures establish rhythm, pulse, and Soldier identification with unit goals of a maintenance unit. Core unit measures are—

- Vehicle and non-flying system readiness rates.
- Semi-annual safety survey results and hazard log management.
- Monthly individual flying and safety awards presentations.
- Command supply discipline program (CSDP) results:
  - Shortage annex reduction status.
  - Property accountability (cash collection voucher, statement of charges, financial liability investigation of property loss).
  - Unit budget status (Classes II, IV, and VII).
- Unit reenlistment mission accomplishment.
- Uniform Code of Military Justice (UCMJ) action rate.

<table>
<thead>
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<th></th>
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<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
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<tr>
<td>Non-aviation systems and vehicle operational rate</td>
<td>98%</td>
<td>94%</td>
<td>88%</td>
<td>95%</td>
<td>91%</td>
<td></td>
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<tr>
<td>Individual/safety/flight awards</td>
<td>2/4/1</td>
<td>4/5/0</td>
<td>6/10/1</td>
<td>3/4/3</td>
<td>1/2/1</td>
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<tr>
<td>Unfilled shortages/ funds needed for 100% fill</td>
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<td>332/ $74,000</td>
<td>310/ $69,000</td>
<td>303/ $68,000</td>
<td>301/ $67,000</td>
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<tr>
<td>Open hazard log entries</td>
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<td>12</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td></td>
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<tr>
<td>Last semi-annual safety survey</td>
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<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Next semi-annual safety survey</td>
<td>Jun XX+1</td>
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</tbody>
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Figure 1-4. Core unit measures reporting-part A
1-45. Commanders traditionally monitor their motor pools, but in aviation units, additional emphasis must be placed on enablers to ensure availability. Due to their impact on combat power and unique repair requirements, downed aircraft recovery team (DART) systems, material handling equipment (MHE), power generation equipment, aviation ground support equipment (AGSE) and peculiar ground support equipment readiness should receive separate enumeration up the chain of command.

1-46. Annual safety survey results and accident reports establish reference points for the unit and can rapidly populate the hazard log. Commanders will track annual safety survey results and hazard log entries progress toward elimination or mitigation in the same fashion as the production index work order backlog. Hazard log management requires command emphasis to ensure compliance and improve the environment in which Soldiers perform their missions.

1-47. The quantity of awards across the spectrum of individual, safety, and flying indicates the positive health of a unit. By monitoring these quantities, leaders ensure appropriate awards are not neglected, and deserving Soldiers receive timely recognition. Excessive quantities can undermine their value, and insufficient quantities display a lack of consideration for the performance of individuals. By positively tracking these numbers and establishing a history, units can maintain the proper balance and increase unit health. By looking across the MOE, units can identify Soldiers who uniquely contribute to improving those measures and may award them appropriately.

1-48. The CSDP for aviation maintenance units is a critical program and demands direct leader involvement. By ensuring acquisition, retention and maintenance of resources, tools and equipment, leaders reduce the burdens on individuals, sections, and platoons to accomplish their missions. Having the right compliment of serviceable items to perform a maintenance task directly improves the ability, morale, and effectiveness of maintenance units. They ensure equipment needed is on hand and functional. This mentality applies to our maintenance units and the technicians who repair our systems. They deserve and require all equipment on hand and serviceable to perform their combat missions. The Soldiers retain the requirement for securing those items, but the commander owns the acquisition and replenishment responsibility and must meet it through their CSDP. The three pillars of achieving a productive CSDP are shortage annex elimination, reducing loss of accountability actions, and balancing and monitoring the unit budget.
Shortage Annex Elimination

1-49. Once the change of command inventory is complete, the maintenance unit commander possesses a starting point for the shortage annex elimination process. The unit shortage annex will include all components, items, and special tools needed for tracking and elimination through acquisition. This includes new additions to the shortage annex generated by unserviceable turn-ins to unit supply. Each month, the supply sergeant will precisely describe for the commander progress, additions, and setbacks to eliminating the shortage annex, by quantity, class, accounting requirements code, acquisition advice code, and funding required. This enables commanders to apply appropriate resources and surge if necessary to eliminate the shortages. This is an easily quantifiable measure. Procedures for shortage annex can be found according to AR 710-2.

Reducing Loss of Accountability Actions

1-50. Loss of accountability of items demands action according to AR 710-2. Whether an accepted loss, simple cash collection voucher, statement of charges, or a complete financial liability investigation of property loss, maintenance commanders must implement a vehicle to confirm and conclude the reason for loss. The initiation of the chosen vehicle allows integration onto the shortage annex of the item(s) for replenishment and serves as a deterrent to negligence by users and hand receipt holders. A solid commitment to proper accounting prevents carelessness and preserves systems, tools, and special tools for future use. It precludes the frequent repurchasing of lost or damaged items allowing the commander to focus budget resources on additional unit priorities including automation and quality of life requirements.

Balancing and Monitoring the Unit Budget

1-51. The aviation maintenance officer (AMO) /support operations officer (SPO), supply sergeant and G8 comptroller will constantly monitor the unit Class II, IV, and VII budget. This is an ongoing process and should be updated immediately as expenditures and credits occur. Commanders will review the budget monthly to ensure projections and statuses remain in line with available funding. However, since the budget is managed as events occur, the budget report must be available upon demand. Additionally, face-to-face comptroller reconciliations may be required to correct errors detected during unit supply budget management or command review. These reconciliations can return unapplied credits to a unit and improve its budget posture.

MANAGEMENT SKILLS

1-52. Maintenance managers continually look for ways to improve planning, organizing, coordinating, directing, and controlling. Managers must also be proactive (influencing events before they happen) rather than reactive (reacting to events as they happen). Feedback and after-action reviews are proactive tools used by maintenance managers.

1-53. Small improvements in the overall sustainment system produce greater, lasting results than a concentrated effort directed toward one or two specific areas. The maintenance manager must be careful that changes to maintenance operations do not undermine other unit initiatives.

SUPERVISION

1-54. First-line supervisors are the commanders’ first-line of defense in the prevention of mishaps. Reducing or eliminating accidents will retain available manpower and equipment to execute the unit maintenance mission. The commander depends on first-line supervisors to accomplish the day-to-day mission and ensure the welfare of the troops.

1-55. First-line supervisors are the individual Soldier’s primary source of assistance and further professional development. The first-line supervisor’s major challenge lies in ensuring that the people they supervise accomplish the mission correctly the first time. First-line supervisors are responsible for ensuring that maintenance is accomplished according to applicable TM, TBs, and messages. These supervisors need to know the standards and MOE objectives set by the chain of command to direct their Soldiers’ efforts.
1-56. First-line supervisors must be aware of mission requirements and the capabilities and limitations of the Soldiers under their control. Next to the mission, the welfare and professional development of Soldiers is paramount in the supervisor’s mind.

MOTIVATION

1-57. The leadership demonstrated by commanders and supervisors directly influences the motivation of Soldiers. Effective leaders define objectives, communicate them, evaluate how well they are achieved, and provide feedback to Soldiers doing the work. Most Soldiers want to perform well. They need to know the objectives and standards, and receive performance feedback. Superior achievement must receive recognition, and substandard performance rapidly corrected. Leaders will also focus on resourcing their Soldiers appropriately to improve effectiveness and efficiency. Maintenance managers may underestimate the dramatic benefits and improved enthusiasm proper resourcing can generate.

TECHNICAL SKILLS

1-58. Technical skills involve the ability to perform tasks associated with duty positions. On-the-job training enhances these technical skills. A technically and tactically trained Soldier is one of the commander’s most important assets. The commander must continuously strive for high levels of training to broaden the tactical and technical skills in order to provide quality maintenance support to operational units.

1-59. The Army training system depends on the unit commander continuing the training process begun during advanced individual training (AIT). Training resources must be identified and made available to ensure quality training for assigned Soldiers. To the commander and maintenance manager, training on technical tasks is as important as training on tactical skills. Unit task lists (UTLs) and Soldier training publications (STPs) establish the requirements for technical maintenance training.

1-60. Civilian contract maintenance can potentially diminish Soldier technical skills if improperly managed. Over-reliance on contractor maintenance may continue to erode Soldiers’ experience level. The loss of maintenance experience will negatively affect all aviation Soldiers as they progress to higher levels of responsibility. Every experience gained by Soldiers enhances their future leadership qualities and capabilities. Maintenance tasks conducted by contractors can provide training opportunities for assigned Soldiers and their supervisors. Contractors with specialized skills or high levels of experience can effectively serve as trainers, improving Soldier skills. When practical, commanders/leaders should coordinate and create training opportunities involving Soldiers, as well as contractors, performing maintenance procedures.

SECTION III – SUPPORT AND EXECUTION

1-61. Proper maintenance support and execution ensure maximum aircraft availability.

POSITIONING MAINTENANCE SUPPORT

1-62. Maintenance managers will ensure the proper mix (type and location) of maintenance support meets the commanders’ requirements. Early arrival of maintenance support in theater ensures deployed aircraft are made operational in a timely manner upon arrival into theater.

1-63. Each aviation maintenance company (AMC)/aviation maintenance troop (AMT) and aviation support company (ASC) can conduct split-based operations by deploying mission specific field maintenance teams (FMTs) within a single theater of operations. Each AMC/AMT is responsible for performing field maintenance on its assigned/attached aircraft. ASCs assigned to ASBs provide field maintenance support by conducting aviation maintenance.

1-64. Aircraft must be prepared and repaired quickly and as far forward as possible. This requirement implies a forward thrust of maintenance within the combat aviation brigade (CAB) AO. Maintenance assets will move as far forward as the tactical situation permits to repair unserviceable and damaged aircraft to return them to the fight as quickly as possible.
AVIATION MAINTENANCE PLANNING AND EXECUTION

1-65. Maintenance management is required at all levels. Maintenance flow must be synchronized with operational and training requirements and projected on unit training calendars. Increased operational tempo creates maintenance surges before, during, and after training exercises. Commanders at all levels must anticipate this and plan maintenance accordingly. Leaders should be visible in maintenance operations, not just maintenance meetings. This visibility demonstrates the priority of maintenance in the organization.

1-66. Field maintenance operations must be conducted according to ARs, policies, and procedures. An aviation maintenance unit relies on an efficient and effective maintenance program. A sound maintenance plan, at its core, has a dedicated group of maintainers and technicians who apply the sustainment imperatives to the planning and execution of scheduled and unscheduled maintenance.

1-67. This maintenance approach takes into consideration the following elements: problem, plan, people, parts, time, tools, and training (P4T3). P4T3 provides a methodology for aviation commanders and staffs to analyze and coordinate aviation maintenance. It enables commanders to anticipate requirements for optimal readiness of equipment and personnel. P4T3 is a management tool for leaders at all levels. This management tool serves as a common-sense platform for effective leadership, oversight, and management of maintenance. See section IV for a breakdown of P4T3.

1-68. The unit-training plan cannot be executed without an effective maintenance program. Resourcing maintenance to include trained maintainers, time to perform maintenance, and financial support commensurate with hours to be flown requires management at all levels of command. Specific considerations enhance the ability of aviation commanders to perform scheduled and unscheduled maintenance, and include;

- Flying hours and flying hour dollars cannot be separated. Commanders need to receive both as a single resourcing package to support aviation training and maintenance. Budgeting of flying hour dollars should be managed at the battalion/squadron level on an annual basis for accountability and predictability.
- “Maintenance is training, training is maintenance”. An attack reconnaissance squadron (ARS) equipped with AH-64D Apaches and RQ-7B Shadows for example, is manned by Soldiers with several different military occupational specialties (MOSs). Many of them are low-density MOSs, requiring unique and special training. Training must be scheduled and prioritized. Consolidating training from all echelons for low density MOSs optimizes training opportunities and effectiveness, and supports standardization.
- Direct labor time is the amount of time aviation mechanics spend maintaining aircraft. When direct labor is minimized, the level of maintainer performance may not achieve or sustain required readiness levels, nor does it maintain required proficiency. Required direct labor can be projected and needs to be briefed during training briefings. If available direct labor falls below projected requirements, commanders and staffs need to develop a plan to increase time to conduct maintenance. For further information on types of labor see AR 750-1 App B3.
- P4T3 should always be used by commanders and staffs to analyze and coordinate aviation maintenance.

SECTION IV – PROBLEM, PLAN, PEOPLE, PARTS, TIME, TOOLS, AND TRAINING

1-69. P4T3 is a planning tool allowing commanders, leaders, and maintenance personnel to coordinate and plan the personnel and resources required to perform maintenance. Using the P4T3 process will streamline the maintenance and normally same time and resources.
PROBLEM

1-70. The maintenance problem must first be identified. This process can be as simple as identifying a particular scheduled maintenance event, such as a 300-hour service that an assigned/attached aircraft is approaching or replacing rivets in a driveshaft cover.

1-71. The failure of an operating aircraft system or subsystem, resulting from improper maintenance procedures, can have catastrophic and deadly consequences to personnel and equipment. Aviation maintainers must adhere to the most current applicable interactive electronic technical manuals (IETM), aircraft technical manuals (TMs) and references when conducting maintenance on aircraft.

1-72. While conducting scheduled and unscheduled maintenance, maintenance managers or maintainers may encounter problems. Unanticipated/unscheduled maintenance may surface; affecting a mission after the mission has been accepted and planned for execution. Similarly, maintenance teams, when conducting scheduled maintenance (phase maintenance), may encounter problems that hinder timely completion of a scheduled maintenance within goal times.

1-73. When unforeseen problems are encountered during scheduled or unscheduled maintenance, OR, and mission accomplishment is hindered. Likewise, unforeseen problems encountered during scheduled maintenance will affect units’ OR rates. Maintenance managers must devise a maintenance plan that returns unserviceable aircraft to an FMC/RTL status.

1-74. Prescribed troubleshooting procedures are the first maintenance task the crew and maintenance personnel must complete to standard, particularly during unscheduled maintenance:
   - Are maintainers diagnosing the faults using established troubleshooting procedures?
   - Are the components causing the aircraft fault properly identified and repaired?

1-75. Disciplined use of TMs and adherence to troubleshooting procedures and maintenance allocation charts (MACs) are critical to aircraft readiness rates. Incorrect diagnosis at the start of maintenance troubleshooting procedures will waste time, repair parts, and ultimately, affect Class IX (Air) budgets. If the maintainers cannot diagnose the problem, experts (maintenance officers/technicians, technical representatives, and aircraft maintenance contractors) should be involved early.

1-76. The ASC maintenance support personnel or logistics assistance representatives (LARs) will assist when requested. They will also provide maintenance support throughout the troubleshooting process.

PLANNING

1-77. Planning involves implementing measures and devices to correct the problem without discontinuing the mission. The mission dependent unit maintenance SOP and maintenance plan are the first steps toward ensuring a solid basis for production and quality control (QC). In planning maintenance, the production control (PC) officer-in-charge (OIC) will ask—
   - How will we accomplish the task?
   - What is the maintenance plan for performing the task to completion?
   - Who is responsible for performance of the task?
   - Can the maintenance be performed by the owning unit, or will it have to be performed by the AMC/AMT or ASC?
   - Can the maintenance be performed on site, or must the aircraft be relocated?

1-78. The leadership must enforce and execute the maintenance plan. The maintenance plan is continuously reviewed and updated. The planning process continues until the task or event is resolved.

1-79. The maintenance plan for scheduled services must contain adequate details to ensure uniformity. Such details could include the maintainer—
   - Reviewing the maintenance task.
   - Anticipating mandatory replacement parts.
   - Gathering all of the parts in one location.
   - Ensuring required consumable material is on hand.
- Ensuring tools are available in sufficient quantity and type.
- Ensuring TMDE calibration is current.

1-80. Planning for unscheduled maintenance is a team effort calling for platoon leaders and company/troop maintenance personnel to identify necessary resources needed to do the job. Junior leaders can initiate the planning process simply by asking and obtaining answers to P4T3 questions outlined in this chapter.

1-81. Unit supply coordinates with the supply support activity (SSA) to see if parts/components are available locally. If the part is not available at the SSA, check with other aviation units or activities. PC coordinates with similar units with the same MDS aircraft to see if parts are available. PC also coordinates with the commander, QC, airframe repair platoon (ARP), component repair platoon (CRP), and maneuver companies to work after normal duty hours if extended maintenance is required.

1-82. PC should coordinate with the ASC for maintenance support or with contractor field service representatives (CFSRs), maintenance contractors, and LARs for assistance and guidance on accomplishing repair and ordering parts/components if necessary.

PEOPLE

1-83. Maintenance managers will assess available resources to ensure adequately trained personnel and the required level of expertise is available to conduct maintenance (scheduled/unscheduled). The maintenance manager and commander should minimize conflicts between maintenance events and scheduled training (such as weapons qualification and driver training) when they are preparing for major maintenance events. Trained personnel will have the MOS classification or additional skill identifier authorizing them to perform the repairs.

1-84. The MAC will show the level of maintenance required to perform repairs. The maintenance manager uses the MAC to determine if repairs can be done internally (AMC, AMT, or externally ASC /contractors).

1-85. Supervision is an on-going process and accomplished throughout the entire phase of the repair. Section sergeants are responsible for the direct supervision of maintenance personnel who are performing specific jobs or repairs. Additional technical supervision is provided by technical inspectors and aviation maintenance officers.

1-86. AMC/AMT and ASC commanders and first sergeants must continually manage the use of low-density MOS Soldiers. Leaders should ensure the priority is for Soldiers to perform jobs that hone their technical skills instead of working on non-job-related details or duties.

1-87. At every opportunity, new Soldiers should be placed with more experienced Soldiers to conduct specific tasks. This training practice, captured within the digital job book, will ensure the new Soldiers get the training and experience needed to perform the task on their own in the future.

PARTS

1-88. Before performing maintenance, PC personnel should verify they have the correct type and quantity of parts. Parts assessments are necessary to determine what is required and available to correct deficiencies. If parts/components are not available, a request for the necessary parts/components must be processed immediately.

1-89. Before beginning scheduled maintenance events, to reduce not mission capable supply (NMCS) time, PC will ensure owning unit personnel order time-change components with ample lead-time. Additionally, crew chiefs and maintenance personnel must accurately identify the correct types and quantities of parts/components required to facilitate the maintenance action.

1-90. If the primary stock number is not available, check federal logistics (FEDLOG) and Global Combat Support System-Army (GCSS-A) material master data for substitute or interchangeable stock numbers. In some cases, parts, components, and common hardware may have multiple stock numbers because more than one manufacturer produces the same part.
Note. QC personnel will notify maintenance officers and NCOs when 100 hours remain until replacement of hourly components and/or when two months remain until replacement of calendar components. Obtain this information from the Unit Level Logistics System-Aviation (Enhanced) (ULLS-A [E]), Unmanned Aircraft Systems Initiative (UAS-I), or aircraft notebook (ACN).

1-91. Aircraft maintainers and crew chiefs must ensure removed components are properly cleaned and inspected to determine serviceability. They must properly tag and store serviceable parts removed from an aircraft and inspected by a TI to ensure parts are on-hand and serviceable when it is time to reinstall them. Aircraft maintainers and crew chiefs must properly tag unserviceable components, have QC technically inspect and sign the tag, and promptly turn in components to the technical supply section.

1-92. If repairs are beyond their capacity, then a DA Form 2407 (Maintenance Request) is generated by ULLS-A (E) and submitted to the ASC PC for support. Prompt submission of an ULLS-A (E) generated DA Form 2407 to a higher-level maintenance support is essential to facilitate ASC personnel in acquiring the necessary parts. This form is used by ASC maintainers to record accomplishment of maintenance requested on the work order.

1-93. Maintenance managers will encounter maintenance or sustainment challenges that may ultimately affect the unit assigned mission. Maintenance managers must consider time and tools to minimize or eliminate these challenges.

TIME

1-94. For the maintenance manager, time is critical to mission accomplishment. Maintenance managers must accurately evaluate time constraints when determining if the available time to accomplish a maintenance repair is adequate.

1-95. Maintenance managers should consider the following questions when conducting maintenance procedures:

- How much time is required to complete the maintenance action?
- Is there sufficient time free from detractors to affect the repair?

1-96. The estimated completion date of maintenance that brings an aircraft to fully mission capable status is crucial in forecasting combat power availability. Leaders must allow adequate time for aircraft maintainers to perform maintenance on the equipment.

1-97. If additional problems or shortages of resources occur resulting in an extension of the estimated completion date, platoon leaders must inform the PC OIC immediately.

TOOLS

1-98. The maintenance manager, when assessing maintenance procedures, should consider if the unit has the correct type and quantity of tools to perform the maintenance tasks. This is especially true during split-based operations.

1-99. Supervisors must identify tools required to do a job and make sure they are on-hand, serviceable, and, if required, calibrated. Leaders must educate themselves on the different tools and enforce IETM/TM/technical bulletin (TB) standards when aircraft maintenance is performed.

TRAINING

1-100. Conducting effective training in conducting aircraft maintenance and leader development must be a top priority of senior leaders.
LEADER TRAINING AND DEVELOPMENT

1-101. Commanders must afford junior maintenance leaders the opportunity to develop an understanding of maintenance operations and management. This leadership training is an essential building block critical to leadership development. Maintenance leadership skills taught and reinforced every day in garrison translate well to a field environment, to include a tactical and combative environment. Leaders must know the maintenance standards to enforce it and the MOE to improve them.

1-102. Fundamentals of maintenance management can be observed and learned by involvement in regularly scheduled PC meetings reflected on the unit training schedule. Attendance and involvement in the battalion or ASC PC meeting is only one level of maintenance management and is an enabler in the development of junior leaders.

1-103. Another enabler is time management. Time management is critical to maintenance planning, preparation and execution of maintenance support missions.

1-104. Maintenance leaders mentor junior leaders in the many facets of developing a sound maintenance plan and timeline. Once trained, junior maintenance leaders will, at a minimum—

- Know the aviation maintenance MOE and quantify them into a usable report(s) according to the units SOP.
- Assess the maintenance mission and maintenance requirements in support of the operational maneuver battalion.
- Compare the time needed to accomplish the maintenance objectives with allocated time, personnel, and equipment and ensured they are aligned before a maintenance action begins.
- Compare the time needed for maintenance actions with the allocated time and determine if additional courses of actions are available to safely expedite maintenance procedures.
- Maximize the skill and experience of assigned maintenance personnel to minimize supported units aircraft downtime.
- Be assertive in providing guidance to maintenance personnel.

1-105. Maintenance development at all levels is an important aspect of leadership. Maintenance management affects mission training/execution of essential warfighting missions. Development of junior leaders is critical for their professional development; it also prepares them for the next level of responsibility. Junior maintenance leaders are functional members of the maintenance team. Preparing them to operate in a fluid maintenance environment enables them to be in synchronization with the unit maintenance support plan and achieve aviation maintenance MOE goals.

MAINTENANCE TRAINING

1-106. Soldiers receive initial technical training (skill-level 1) at AIT; however, AIT should not be considered the end of individual training for the aviation maintainer. Successfully completion of AIT, the soldier is equivalent to that of an apprentice. The gaining aviation unit commander assumes the responsibility for enhancing and expanding the training (skill-level 2) soldiers received in AIT. This enhanced unit training will increase the maintainers’ ability, skill, and knowledge. This training includes the integration of airframe and support maintenance specialties. An apprentice possesses entry-level knowledge and skill set that must be carefully groomed and honed to develop into a master or seasoned maintainer (skill-level 3 and 4).

1-107. Maintenance training is an integral component to combat readiness training in an aviation unit. To a maintenance company/troop commander, training on technical tasks is as important as training on tactical skills. It must be incorporated into scheduled training periods. Maintenance management training may be scheduled as a part of leader development training, or individual Soldier training. Similarly, hands-on instruction by maintenance supervisors must be incorporated into scheduled and unscheduled maintenance periods.

1-108. Maintenance training is often best achieved through on the job training. When key maintenance tasks are assigned to maintenance contractors, Soldiers maintainer proficiency is diminished. Leaders need to ensure the full spectrum of maintenance duties are trained and proficient as we draw down and transition
from civilian to military in maintenance. Soldiers or contractors proficient in certain tasks may supervise untrained Soldiers in execution of those maintenance tasks.

1-109. A time proven model has an aviation mechanic gaining proficiency under the supervision of an experienced phase maintenance team chief in a more structured environment, prior to becoming a crew chief. Established scheduled and unscheduled maintenance (battle-rostering) teams assists developing efficient operations. Just as units periodically change aircrew battle-rostering, the teaming of maintenance crews must be rotated to prevent the normalization of standards deviance. In addition, maintenance supervisors must keep good records to ensure that training of critical tasks are not overlooked in the training plan. The digital job book located on the DTMS website will be the means in the near future for tracking training and qualifications.

1-110. Leaders at all levels must understand basic maintenance management principles. Training leaders in maintenance operations is a major element of aviation leader development. This includes how to plan for and manage flow charts, bank time, scheduled and unscheduled maintenance, aircraft performance deficiency write-up procedures, and the Army’s supply system. Training must also include cross training of enlisted maintenance personnel to maximize their benefit to the unit and their own professional development.

1-111. Commanders will initiate and maintain a maintenance personnel-training program that addresses MOS sustainment and continuation training requirements by skill-level. Maintenance leaders will coordinate with the command to establish and schedule effective training and evaluation. According to the commander’s guidance, subordinate leaders, and supervisors will identify critical or high frequency tasks and establishes their recurring training requirements. Training within Corpus Christi Army Depot (CCAD) for repair and overhaul of rotary-wing aircraft should be considered. Corpus Christi Army Depot provides worldwide readiness, sustainment, and training support for all Army rotary-wing aircraft. MOS training must encompass the use of TMs to reinforce proper maintenance procedures. Supervisors will ensure critical tasks in support of the METL and unit mission receive formal training at a frequency outlined in the appropriate STP for each skill level. If no current STP exists, supervisors will establish a critical task-training plan and submit a DA Form 2028.

Note. Interface with the technical training bases to assists in unit program development when STPs are not available.

1-112. While deployed, commanders must continue this process to sustain or retrain certain tasks as needed. The commander’s program will include individual training for Soldiers in the unit to routinely evaluate and document their MOS proficiency. The MOS training program must integrate individual training with phase and progressive maintenance operations, and other collective training. The MOS training plan will maximize utilization of sister unit integration (for low density MOS), cross training, train-up, and sustainment programs.

1-113. Conducting daily maintenance operations provides opportunities for NCOs (primary trainers) to conduct formal MOS sustainment training, based on established procedures, with applicable standards from approved publications. Increased risk of damage to equipment and injury to personnel could result when approved procedures are not followed. To develop an effective unit training program, commanders will employ a seven-step cycle:

- Step 1. Establish maintenance-training objectives.
- Step 2. Plan resources (personnel, time, facilities, and training aids).
- Step 3. Train the trainers.
- Step 4. Provide resources.
- Step 5. Assess risk and safety considerations.
- Step 6. Conduct training.
- Step 7. Evaluate results based on the objectives.

Note. All completed training will be annotated in DTMS/Digital job book.
1-114. Training individual tasks to standard and relating individual training to collective mission essential tasks remain the responsibility of trainers. Training documentation will be maintained that includes:

- Supervisor or training instructor.
- Date(s) of training.
- Maintenance task and title (subject).
- Publication and dates of publication used for the training.
- Printed names and signatures of students/participants.
- Whether the training was classroom or hands on.
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A comprehensive unit maintenance program is critical for the sustainment of weapon platforms, aircraft systems and subsystems, and ground support equipment (GSE). A well-established and managed maintenance program exponentially increases the availability of operational assets for aviation maneuver commanders conducting training and tactical missions.

SECTION I – TWO-LEVEL MAINTENANCE

2-1. AR 750-1, Department of the Army Pamphlet (DA PAM) 750-1, and DA PAM 738-751 outline the concepts, roles, responsibilities, and authority requirements of the Army maintenance program. Field- and sustainment-level maintenance comes under the Army national maintenance program (NMP). The CAB/air cavalry services (ACS) commander are responsible for providing resources, assigning responsibility and training the Soldiers for field-level maintenance.

2-2. The aviation maintenance strategy provides maintainers with the ability to replace forward and repair in the rear. In contiguous and noncontiguous areas, the rear is generally defined as an area with higher security and capability. Aviation maintainers will continue to repair limited items forward within the ASB, returning repaired components to the customer or stock shop.

FIELD MAINTENANCE

2-3. Field maintenance is performed by CAB/ACS personnel assigned to maneuver companies/troops, AMCs/AMTs, and ASCs. Flight companies perform authorized maintenance procedures within their capability. AMCs/AMTs assigned to aviation maneuver battalions and squadrons provide maintenance support to maneuver companies. Aviation maneuver battalion AMCs and squadron AMTs are more agile, flexible, and mobile than ASCs because of reduced sets, kits, outfits, and tools (SKOT).

2-4. The AMC/AMT and ASC are authorized to perform field-level maintenance according to the source maintenance and recoverability (SMR) code and MAC. Specific task will be accomplished based on modified table of organization and equipment (MTOE) set, kits, and outfits assigned to the command and qualified personnel available to perform the required task. The ASC provides pass-back capability to sustainment level.

2-5. UAS are maintained under the two-level maintenance concept. Field maintenance is performed by UAS unit military and/or contractor personnel. UAS maintenance personnel perform authorized maintenance procedures within their capability. Depot or forward repair activities generally perform sustainment maintenance beyond unit-level repair. Contractor logistics support (CLS) may or may not be provided by original equipment manufacturer (OEM) representatives. If the product support strategy calls for CLS, these elements generally co-locate in the brigade support area along with the ASB.

2-6. The 15E unmanned aircraft systems repairer performs the following maintenance functions on the RQ-7B and the MQ-1C Gray Eagle:

- Preventive maintenance daily (PMD) aircraft and system.
- Troubleshooting.
- Removal and replacement of inoperative chassis-mounted components and line replaceable unit (LRUs) down to card level.
- Functional tests and built-in tests.
Periodic inspection or replacement to comply with scheduled maintenance requirements, corrosion prevention, detection, and removal.

Electronic maintenance covering payloads and electronic-based components repair by removal and replacement of LRUs.

The 15W UAS operator performs the following maintenance tasks that are intended to keep the system operational and prevent deterioration. Operators will perform—

- Preventive maintenance daily (PMD) system.
- Preoperational tests to verify the system is ready to operate using built-in tests.
- Visual inspection and built-in test analyzer.

**SUSTAINMENT MAINTENANCE**

According to ADP 4-0, sustainment maintenance is the Army strategic support. The strategic support base is the backbone of the NMP and the sustainment maintenance system. At this level, maintenance supports the supply system by economically repairing or overhauling components. Maintenance management concentrates on identifying the needs of the Army supply system and managing programs to meet the supply system demands.

Sustainment maintenance support is divided and primarily performed by three separate entities. The original equipment manufacturers (OEMs) and their CFSRs. The Army sustainment facilities, located at fixed-bases in the continental United States (CONUS); and by the national maintenance (NM) source of repair (SOR).

On a case-by-case basis, the CAB may request a letter of authorization (LOA) asking for specialized repair authorization or aircraft repair authorization from Aviation and Missile Command (AMCOM) LARs to perform limited sustainment-level repairs on specific equipment classified as sustainment-level according to the MAC. These LOAs can also request one time repair from depot field teams or theater aviation sustainment maintenance group (TASMG). Figure 2-1 depicts two-level maintenance illustrating the supported and supporting relationships of field and sustainment maintenance.

![Figure 2-1. Two-level maintenance](image-url)
2-11. Sustainment maintenance personnel perform UAS component repair, part replacement, fault detection, and fault isolation of specific parts. At this level of maintenance, maintainers focus on repair of component items and their return to the distribution system. Component repair includes items such as major assemblies, LRUs, and repairable line items. Corps and theater maintenance activities, special repair activities, or contractors on the battlefield can perform sustainment maintenance.

2-12. Sustainment maintenance actions typically involve repair of reparable Class IX components, off-system, for return to the supply system. Soldiers, DA civilians, or contractors perform sustainment maintenance. The decision to have sustainment maintenance includes detailed off-system, inside-the-box repair of LRUs through shop replaceable unit repair/replacement; and rebuild of engines or transmissions.

SECTION II – AVIATION FIELD MAINTENANCE STRUCTURE

2-13. Field level maintenance is accomplished throughout the CAB by aviation flight companies/troops and aviation maintenance companies/troop within each of the aviation maneuver battalions and aviation support company within the ASB.

FIELD MAINTENANCE CHARACTERISTICS

2-14. CAB assets primarily perform field maintenance. Aviation field maintenance is characterized by using “on-system maintenance,” generally replacing components or performing component repair and return to the user. Aviation field maintenance capabilities vary based on SKOT, personnel assigned, and the authority directed by AR 750-1.

FIELD MAINTENANCE TEAMS

2-15. CAB maintenance unit flexibility is enhanced through the formation of FMTs. FMTs vary in composition depending on the support requirements, duration, and availability of personnel. Maintenance managers must know the estimated duration of a mission and the supported aircraft type to plan, forecast, and compose FMTs. Since most heavy tools, sophisticated TMDE, and shop sets are single or low density and generally cannot be divided; these FMTs provide the specialized split-based operations capability resident in the aviation maintenance units.

2-16. Commanders and maintenance managers send FMTs, parts, TMDE, and tools forward to conduct maintenance. FMTs also conduct battle damage assessment and repair (BDAR) and/or DART operations. See FM 3-04.513 for specific aircraft recovery operations.

2-17. When employing contractor FMTs, positioning them within the maintenance operational facilities can produce many teams consolidated in one location, multiple teams distributed across a geographic area, or a combination of heavy consolidation with some distributed teams. The aviation maintenance team will address the contractor employment considerations in the logistics estimate and planning for the organization, and continually evaluate efficiencies to determine any required adjustments.

Note. Establishing separate geographical FMTs will impact maintenance productivity in other locations.

FLIGHT LINE AND COMPANY/TROOP OPERATIONS

2-18. Maneuver company/troop maintenance activities primarily focus on field level maintenance to include operational inspections (preflight, post flight, and daily), scheduled and unscheduled maintenance within the unit’s capabilities. Allowing unit maintainers a degree of ownership in their assigned aircraft will enhance the quality and standards of maintenance performed, thus improving overall unit readiness. The maneuver company/troop will complete field level maintenance unless METT-TC and P4T3 dictate otherwise. If METT-TC/P4T3 dictates, they will submit automated work order request through the aircraft logbook for approval by PC. Companies/troops will submit all parts requests through the automated logbook for PC approval. Aviation maintainers operate and maintain assigned GSE.
2-19. When deficiencies are identified and entered in the aircraft logbook, company/troop personnel must initiate corrective action, submit the entry for work order assignment, or confirm a document number against the entry as quickly as possible.

2-20. Company maintenance test pilots manage and prioritize the company’s maintenance program based on personnel available and mission requirements. Crew chiefs and aviation maintenance personnel also perform aircraft launch and recovery operations, maintenance operational checks (MOCs), vibration analysis, and document maintenance in aircraft logbooks and historical records.

AVIATION MAINTENANCE COMPANY/TROOP

2-21. The AMC/AMT manages the battalion/squadron maintenance program, operates a centralized tool room, and performs field-level maintenance and scheduled services. The primary mission of the AMC/AMT is to create combat power in support of the battalion/squadron mission. The AMC/AMT conducts phase maintenance, troubleshoots airframe and component malfunctions, performs maintenance and repair actions, removes and replaces aircraft components, and performs maintenance test flights (MTFs) and MOCs.

2-22. The AMC/AMT provides sustainment support by processing, requesting, and storing Class IX stock shop and bench stock. Supply personnel operate unit-level Army Logistics Information Systems (LIS), requisition Class IX (Air) serviceable spares, and manage the battalion/squadron Class IX (Air). The AMC/AMT performs unit-level repairs on aviation life support systems. Aviation maintainers operate and maintain assigned GSE. In coordination with elements of the forward support company, the AMC/AMT conducts battalion-/squadron-level forward arming and refueling point (FARP) operations according to ATP 3-04.94.

2-23. The transportability requirement of the AMC/AMT is 100-percent and the unit transports 75 percent of their table of organization and equipment (TOE) in one movement using organic vehicles.

2-24. The AMC/AMT commander and PC OIC coordinate and schedule maintenance at forward locations of the battalion/squadron using FMTs. The members of these forward elements must be able to diagnose aircraft damage or serviceability rapidly and accurately. FMT operations follow these principles:

- FMTs may be used for aircraft, structural, component, avionics, or armament repair.
- When the time and situation allows, FMTs repair on site, rather than evacuate aircraft; these repairs includes BDAR.
- FMTs must be 75 percent mobile and transported by the fastest means available (usually by helicopter) or temporarily attached to customer units for extended repairs.
- FMTs may be oriented and equipped for special tasks to include recovery operations; type of aircraft recovery will depend on the assets available.

2-25. The AMC/AMT conducts BDAR and aircraft recovery operations and can be assisted by the ASC. Soldiers from the AMC/AMT can repair aircraft onsite or prepare them for evacuation if necessary. In these situations, maintenance procedures may be expedited to meet operational objectives. In such cases, the unit commander may authorize the use of BDAR.

2-26. BDAR uses specialized assessment criteria, repair kits, applicable TMs, and trained personnel to return damaged aircraft to the battle as soon as possible. These repairs are often a short-term solution; temporary repair methods are used to meet operational needs only. Temporary repair methods will not be used if the tactical situation allows application of standard repair methods. When the tactical situation allows, permanent repairs are conducted on aircraft that received temporary repairs.

2-27. The AMC/AMT is organic to aviation battalions/squadrons. Figure 2-2, page 2-5, depicts an AMC organic to a general support aviation battalion (GSAB). AMCs Figure 2-3, page 2-5, and AMTs, Figure 2-4, page 2-6, are comprised of a headquarters (HQ) platoon, ARP, and CRP. The AMC of the attack reconnaissance battalions (ARBs) retain a nearly identical structure as a GSAB or assault AMC Figure 2-5, page 2-6. However, the ARB, AMC, and AMT add an armament repair capability to the avionics and electrical repair section under the CRP resulting in a systems repair section.
Figure 2-2. Aviation maintenance company/GSAB

Figure 2-3. Aviation maintenance troop/reconnaissance
Figure 2-4. Aviation maintenance company/attack

Figure 2-5. Aviation maintenance company/assault
HEADQUARTERS PLATOON

2-28. The HQ platoon consists of a PC, QC, and supply section (figures 2-2 and 2-3, pages 2-5).

Headquarters

2-29. The HQ of the maintenance company/troop contains the command team and performs administrative and unit functions including:

- Personnel actions.
- Training management.
- Information management.
- Reenlistment.
- Safety.
- Unit supply and arms room.
- Communications support.
- Chemical, biological, radiological, and nuclear (CBRN).

Quality Control Section

2-30. The QC section is accountable directly to the commander, thereby eliminating potential conflicts of interest among the PC section, the maintenance shops, and the supported units. This accountability structure allows the inspectors to maintain objectivity in the performance of their inspection duties. QC should be composed of the most qualified and technically proficient maintainers. QC follows the priorities that PC provides and maintains constant communication pertaining to the status and progress of maintenance.

2-31. QC enforces aviation maintenance standards within the following areas:

- Component repair.
- Overhaul.
- Weight and balance.
- Modification.
- Ensures compliance with the Army oil analysis program (AOAP).
- Safety-of-flight (SOF), airworthiness release (AWR), and other required maintenance functions.
- Oversight of compliance with safety regulations in maintenance areas and historical records.

Production Control Section

2-32. The PC manages maintenance production within the AMC/AMT to maximize maintenance resources. The PC performs the following:

- Receives and processes work requests.
- Coordinates external support within the ASC.
- Coordinates, schedules, and prioritizes maintenance and shop workloads.
- Maintains the status of aircraft parts and shop reports.
- Materiel readiness.
- Coordinates inspections, MOCs, and MTFs.
- Returns repaired aircraft and equipment to supported units.
- Directs supply operations.

Technical and Shop Supply Section

2-33. The technical and shop supply section is within the PC, which obtains, stores, and issues Class IX (Air) repair parts, special tools, bench stock, and shop stock. The PC OIC and NCOIC manages the Class IX (Air) budget for the commander. See chapter 8 for more information on supply operations.
AIRFRAME REPAIR PLATOON

2-34. The ARP provides supported aviation units (maneuver company/troop) field-level scheduled and unscheduled maintenance support when requested. Daily and operator-level scheduled maintenance is the primary responsibility of the maneuver company/troop. Prolonged scheduled maintenance such as aircraft phases or compliance with aviation safety action messages (ASAMs) are best performed by the ARP and can be requested by the maneuver company/troop through the PC office. If the maneuver company/troop cannot complete the unscheduled maintenance based on METT-TC and P4T3, it should contact the PC office and request maintenance support.

2-35. Maneuver company/troop maintenance managers, PC OICs, and QC should communicate daily in scheduling and prioritizing scheduled and unscheduled maintenance support. Coordination must also include the supply section to ensure required aircraft repair parts and components are available before commencing maintenance procedures.

General Support Aviation Battalion

2-36. A GSAB AMC ARP has a headquarters and two repair sections (figure 2-2, page 2-5). The repair sections are CH-47 and UH-60.

Assault Battalion

2-37. The assault battalion AMC ARP has a headquarters and a UH-60 repair section (figure 2-4, page 2-6). The assault battalion AMC HQ platoon and CRP are structured as depicted in figure 2-6.

![Figure 2-6. Assault battalion AMC ARP](image)

Attack Reconnaissance Battalion/Squadron

2-38. The ARB AMC ARP and ARS AMT ARP are structured as depicted in figure 2-4, page 2-6.

COMPONENT REPAIR PLATOON

2-39. The CRP assigned to an AMC/AMT provides component repair support functions to their supported unit assigned aircraft (figures 2-2 and 2-3, page 2-5). Component repairs to aircraft systems entail field-level maintenance repairs according to applicable TMs.
2-40. The CRP contains specialized sections to repair subsystems associated with their supported aircraft including power plant, powertrain, structural, pneumdraulics, avionics/electrical, and systems repair sections. The systems repair sections, organic to the ARB AMC and AMT CRPs, perform armament, avionics, and electrical repairs.

General Support Aviation Battalion and Assault Helicopter Battalion

2-41. A GSAB and assault helicopter battalion (AHB) AMC CRP contains a headquarters and five shop sections (figure 2-2, page 2-5). The five shop sections are power plant, powertrain, structural (airframe), pneumdraulics (hydraulics), and avionics/electrical.

2-42. Each shop section performs maintenance of aircraft components and structures requiring specialized technical skills. Assigned maintainers perform scheduled and unscheduled maintenance, troubleshoot components, remove and replace aircraft components and LRUs, perform BDAR procedures, and manage deployment support kits (Class IX aviation spares and shop stock) at the platoon level.

Attack Reconnaissance Battalion/Squadron

2-43. The CRP (figure 2-7) contains a headquarters, four shop sections, and a system repair section. The four shop sections are power plant, powertrain, structural, and pneumdraulics.

2-44. The system repair section is subordinate to the CRP and separate from the shops section. The armament section is responsible for troubleshooting and repairing armament systems, subsystems and components. Personnel assigned to the armament repair section conduct preventive maintenance, testing and troubleshooting of aircraft weapons systems and subsystems to include configuration changes. They are also responsible for repairing and replacing weapons platform components according to applicable publications and references.
SHADOW PLATOON

2-45. Shadow platoons are comprised of MOS 15W operators and MOS 15E maintainers providing flying and maintenance support of UAS aircraft and components. These Shadow platoons share the same organization and equipment, whether in the brigade combat team (BCT), or Special Forces Group (SFG). Field maintenance is performed by personnel assigned to maneuver platoons, with support from CFSR personnel for sustainment maintenance, Class III (P), and Class IX (Air) reparable. Figure 2-8 shows the Shadow platoon organization.

2-46. The Shadow platoon leader and maintenance NCOIC coordinate and schedule maintenance at forward locations using a combination of organic Soldiers, CLS, and supporting unit personnel. The members of these Platoons must be able to diagnose UAS component damage or serviceability rapidly and accurately.

2-47. The transportability requirement of the Shadow platoon is 100 percent, and the unit transports their entire table of organization and equipment (TOE) in one movement using organic vehicles.

2-48. Shadow platoon maintenance activities are focused on two primary responsibilities. The first is on operational inspections (preflight, post flight, and daily) and unscheduled maintenance. When deficiencies are identified and entered in the UAS component logbook, company personnel must initiate corrective action, submit the entry for work order assignment, or confirm a document number against the entry as quickly as possible. Crew chiefs and aviation maintenance personnel also perform aircraft launch and recovery operations, maintenance operational checks (MOCs), and maintain UAS component logbooks. Shadow platoon when detached from their organic organization should receive area support from the AMC/AMT when performing unscheduled back shop maintenance. All MOCs will be performed according to AR 95-23 and TM 1-1500-328-23.

2-49. The second focus is on managing the platoon maintenance program, operating a tool room, and performing field-level maintenance and scheduled services. The Shadow Platoon troubleshoots UAS component malfunctions, performs maintenance and repair actions, removes and replaces UAS components, and MOCs. The Shadow platoon receives sustainment support from the CFSR by processing, requesting, and storing Class IX (Air) aircraft repair parts. Platoon maintenance personnel operate unit-level Logistics Information Systems (LIS), requisition Class IX (Air) serviceable spares, and manage the platoon Class IX (Air) parts. Aviation maintainers operate and maintain GSE.

SHADOW PLATOON IN AVIATION BATTALION/SQUADRON

2-50. Shadow platoons that are within an aviation battalion/squadron have Field maintenance performed by personnel assigned to maneuver companies/troops, with support from AMCs/AMTs, ASCs, and CFSR personnel for sustainment maintenance, Class III (P), and Class IX (Air) reparable.
2-51. The transportability requirement of the Shadow platoon is 100 percent, and the unit transports all of their table of organization and equipment (TOE) in one movement using organic vehicles.

2-52. The Shadow platoon leader and maintenance NCOIC coordinate and schedule maintenance at forward locations using a combination of organic Soldiers, CLS, and supporting unit personnel. The members of these platoons must be able to diagnose UAS component damage or serviceability rapidly and accurately.

2-53. Shadow flight platoon maintenance activities are focused on operational inspections (preflight, post flight, and daily) and unscheduled maintenance. When deficiencies are identified and entered in the UAS component logbook, company personnel must initiate corrective action, submit the entry for work order assignment, or confirm a document number against the entry as quickly as possible (no longer than 96 hours). Crew chiefs and aviation maintenance personnel also perform aircraft launch and recovery operations, maintenance operational checks (MOCs), and maintain UAS component logbooks. All MOCs will be performed according to aircraft specific -23 series TM 1-1500-328-23.

2-54. The battalion/squadron PC manages both the Aircraft and UAS maintenance program, operating a centralized tool room, and performing field-level maintenance and scheduled services. The AMC with assistance from the CFSR troubleshoots UAS component malfunctions, performs maintenance and repair actions, removes and replaces UAS components, and MOCs. The AMC works with the CSFR to provide sustainment support by processing, requesting, and storing Class IX (Air) UAS component repair parts. Technical supply personnel operate unit-level logistics information systems (LIS), requisition Class IX (Air) serviceable spares, and manage the company Class IX (Air) parts. Aviation maintainers operate and maintain GSE.

GRAY EAGLE COMPANY OPERATIONS

2-55. Gray Eagle company is organized into two MTOE configurations. The two configurations are divisional and echelon-above-division (EAD). In the divisional configuration, the company UAS assets are broken out by platoons to support two separate sites. In the EAD configuration, the company is broken out by platoons to support three separate sites. Figure 2-9, page 2-11, shows the Gray Eagle company organization.

2-56. The transportability requirement of the Gray Eagle company is 100 percent, and the unit transports 100 percent of their table of organization and equipment (TOE), in one movement using organic vehicles.

2-57. The Gray Eagle company commander and PC OIC coordinate and schedule maintenance at forward locations (platoons) using a combination of organic Soldiers, CLS, and supporting unit personnel. The members of these platoons must be able to diagnose UAS component damage or serviceability rapidly and accurately.

![Figure 2-9. Gray Eagle company organization](image-url)

2-58. Gray Eagle company maintenance activities are focused on two primary responsibilities. The first is on operational inspections (preflight, post flight, and daily), and unscheduled maintenance. When
Chapter 2

deficiencies are identified and entered in the UAS component logbook, company personnel must initiate corrective action, submit the entry for work order assignment, or confirm a document number against the entry as quickly as possible. Crew chiefs and aviation maintenance personnel also perform aircraft launch and recovery operations, maintenance operational checks (MOCs), and maintain UAS component logbooks. Gray Eagle company flight platoons when detached from the company receive area support from the AMC/AMT when performing unscheduled back shop maintenance. Per AR 95-23, TM 1-1500-328-23, and the applicable MTF manual, qualified personal perform all MTFs and MOCs according to specific aircraft TMs.

2-59. The second focus is on managing the company maintenance program, operating a centralized tool room, and performing field-level maintenance and scheduled services. In coordination with other support elements, conducts company-level FARP operations according to ATP 3-04.94. The Gray Eagle company troubleshoots UAS component malfunctions, performs maintenance and repair actions, removes and replaces UAS components,) and MOCs. The Gray Eagle company provides sustainment support by processing, requesting, and storing Class IX (Air) UAS component repair parts. Technical supply personnel operate unit-level logistics information systems (LIS), requisition Class IX (Air) serviceable spares, and manage the company Class IX (Air) parts. Aviation maintainers operate and maintain GSE.

CONTRACT LOGISTICS SUPPORT
2-60. Contractors play a key role in the Army ability to support their mission, and provide a responsive alternative to increasing the number of support personnel necessary to perform the mission. During each phase of an operation, contracting support is used to augment the support structure. Contracting personnel establish their operations with, or near, the local vendor base to support deployed forces. Contracting support bridges gaps that occur as military logistics support resources mobilize, and may be necessary for the duration of the contingency.

2-61. Commanders must understand their role in directing contractors on the battlefield, and train their staff to recognize, plan, and implement contractor requirements. ATP 4-10 provides basic understanding of contracting and contractor management.

AVIATION SUPPORT COMPANY
2-62. The ASC provides field-level maintenance and support to AMCs/AMTs. The ASC primarily performs field level maintenance support, phase maintenance and reinforces that support upon request according to the applicable TMs.

2-63. The ASC is capable of supporting CAB split-based and aviation logistics support operations. The transportability requirement of the ASC is 100-percent, with the unit transporting 50-percent of their TOE in one movement using organic vehicles.

2-64. The ASC consists of a HQ platoon, ARP, CRP, armament repair platoon and avionics repair platoon (figure 2-10). The five platoons of the ASC perform similar functions as the corresponding AMC/AMT platoons.
COMPANY HEADQUARTERS

2-65. The ASC headquarters provides command and control (C2), administration, and logistics support required to conduct aviation maintenance operations. The commander has direct control over the company administrative functions. The commander coordinates training and operational matters and conducts consolidated training for low-density maintenance MOSs authorized in the ASC and in forward support company of aviation battalions and squadrons assigned to the CAB. The commander is also responsible for the care, maintenance, and accountability of ASC equipment. Key functions of the company headquarters include, but are not limited to:

- Perform route reconnaissance.
- Organize the unit for movement and issue movement orders to ASC personnel.
- Request additional transportation through the ASB S-4.
- Maintain situational awareness and understanding of CAB aviation operations in coordination with the ASB intelligence/operations staff officer (S-2/S-3).
- Provide C2 of ASC in response to an air or ground attack.
- Coordinate base defense.
- Establish communications.
- Coordinate CBRN readiness, maintenance, and defense.
- Information systems management.
- QC functions.

Production Control Section

2-66. The PC officer is the principal maintenance manager of the ASC, and is the single point of contact (POC) between ASC and supported units on aviation maintenance matters. The PC officer also coordinates for sustainment level maintenance support as required. A 151A assistant PC officer, a 15Z NCOIC, and a 15-series clerk assist the PC officer. The section sets up formal standing operating procedures (SOPs) to maximize the efficient use of maintenance resources. The PC performs the following:

- Receives and processes work requests.
- Coordinates, schedules, and prioritizes maintenance and shop workloads.
- Monitors the status of TMDE.
- Maintains the status of aircraft parts and shop reports.
- Materiel readiness.
- Coordinates inspections, MOCs, and MTFs.
• Returns repaired aircraft and equipment to supported units.
• Directs supply operations.

**Technical and Shops Supply Section**

2-67. The technical supply section is within PC, which obtains, stores, and issues Class IX (Air) repair parts, special tools, bench stock, and shop stock. The PC OIC and NCOIC manages the supply requisitions and the SPO/S4 manage the Class IX (Air) budget for the commander. See chapter 8 for more information on technical and shops supply operations.

**Quality Control Section**

2-68. The QC section is accountable directly to the commander, thereby eliminating potential conflicts of interest among the PC section, the maintenance shops, and the supported units. This accountability structure allows the inspectors to maintain objectivity in the performance of their inspection duties. QC should be composed of the most qualified and technically proficient maintainers. QC follows the priorities that PC provides and maintains constant communication pertaining to the status and progress of maintenance.

2-69. QC enforces aviation maintenance standards and manages the following areas:
• Component repair.
• Overhaul.
• Weight and balance.
• Modification.
• Ensures compliance with the Army oil analysis program (AOAP).
• Monitors compliance with safety-of-flight (SOF), airworthiness release (AWR), aviation safety action message (ASAM), and other required maintenance functions.
• Oversight of compliance with safety regulations in maintenance areas and historical records.
• Maintains the master technical library.
• Performs quality deficiency reports (QDR).

**Maintenance Test Flight Section**

2-70. The MTF section performs test flights on aircraft to troubleshoot problems, confirm repairs, and conduct initial break-in of major components. The section can perform scheduled MTFs or limited test flight support after aircraft repairs are accomplished. The section also provides MTPs and maintenance test pilot evaluator (ME) support for the maintenance test pilots (MPs) in the AMCs/AMTs and maneuver companies/troop of the CAB aviation battalions/squadrons.

**AIRFRAME REPAIR PLATOON**

2-71. The ASC ARP (figure 2-10, page 2-13), primary role is to generate combat power by performing field-level maintenance, to include aircraft phase, scheduled and unscheduled maintenance to support AMC/AMT assigned aircraft. The ASC ARP can also provide technical assistance and maintenance support when requested by the AMC/AMT PC section and coordinated through the ASC PC office. When requested by the ASC PC section, AMCOM LARs will issue a LOA enabling ASC ARP maintainers to perform an authorized sustainment-level maintenance repair.

2-72. The ARP is capable of supporting aviation units through contact maintenance teams using shop equipment. ARP contact maintenance teams provide in-depth troubleshooting and diagnostics of aircraft systems, subsystems, and components.

2-73. The ASC ARP has a headquarters and three repair sections (figure 2-10, page 2-13). The headquarters has a 15A platoon leader and a 15-series platoon sergeant. The three repair sections are—
• Attack reconnaissance (AH-64) with four repair teams.
• Assault (UH-60) with three repair teams.
• Heavy lift (CH-47) with three repair teams.
COMPONENT REPAIR PLATOON

2-74. The ASC component repair platoon CRP (figure 2-10, page 2-13) provides field-level maintenance component repair support functions to the AMC/AMT supported aircraft. The ASC CRP can also provide component repair support when requested by the AMC/AMT PC section and coordinated through the ASC PC office. The ASC CRP can perform limited sustainment-level maintenance repairs according to applicable TMs and the MAC. When requested by the ASC PC section, AMCOM LARs will issue an LOA enabling ASC CRP maintainers to perform a maintenance engineering call (MEC).

2-75. The ASC CRP has a headquarters, five shop sections, and three avionics repair sections. The headquarters contains a platoon leader and a platoon sergeant. The five shops sections are power plant repair, structural repair/machine shop, powertrain repair, pneudraulics repair and electric repair. The three avionics repair sections are communications/equipment repair, navigation/flight control repair, and the electronic equipment test facility.

Note. Electronic equipment test facility systems will remain in ASC until completion of their retrograde and assignment to sustainment level organizations by AMC.

2-76. The CRP sections are capable of supporting aviation units through contact maintenance teams using shop equipment contact maintenance vehicles. CRP contact maintenance teams provide support to all subordinate AMCs/AMTs and can extend support outside to other aviation units with approval from the ASC PC office.

ARMAMENT REPAIR PLATOON

2-77. The ASC armament repair platoon has a headquarters and two sections. The headquarters contains a 151A aviation maintenance technician and a platoon sergeant. The two shops section are fire control repair and weapons system repair.

2-78. The armament repair platoon is capable of supporting aviation units through contact maintenance teams using shop equipment. The armament contact maintenance teams provide in-depth troubleshooting and diagnostics of weapon systems, subsystems and components as well as fire control radar repair. The armament repair platoon also provides personnel for technical assistance, contact teams and recovery teams.

SUPPLY PLATOON HEADQUARTERS

2-79. The headquarters has a platoon leader and a platoon sergeant. The platoon headquarters supervises and controls platoon functions in support of the ACS.

Technical and Shops Supply Operations Section

2-80. This section has a technical supply operations officer and a section NCOIC. The technical supply operations officer and NCOIC monitor and direct the daily supply activity in support of all units assigned or attached to the ACS. The technical supply section in the ASC headquarters platoon performs technical supply functions for the headquarters and repair platoons (see chapter 8).

Shipping and Receiving Section

2-81. The shipping and receiving section receives and accounts for all Class IX (Air) repair parts coming from supply sources, field returns, and shipment redirects. It also packages and crates supplies when required.

Storage and Issue Section

2-82. The storage and issue section stores supplies and performs warehouse storage operations such as shelf-life monitoring, protection from weather, and security against pilferage. It assigns storage locations, maintains stock location systems, and administers document control procedures. It is also responsible for selecting materiel for issue or shipment and for preparing materiel release orders.
Reparable Exchange

2-83. The reparable exchange (RX) section provides exchange of selected reparable items to supported units and receives, stores, and issues items. RX of selected reparable is handled as a simple exchange of an unserviceable for a serviceable item.

SECTION III – AVIATION MAINTENANCE COMPOSITION, RESPONSIBILITIES, AND ROLES

2-84. Army aviation maintenance is a primary focus of the aviation commander as it drives the availability of operational aircraft that can be used in support of the ground maneuver commander’s operational requirements. An efficient, properly resourced maintenance program will provide the maximum number of aircraft available on a consistent basis for mission support.

BRIGADE COMMANDER

2-85. The brigade commanders establish and enforce maintenance standards according to applicable regulatory policies and procedural guidance. They prioritize and allocate resources, provide training guidance, and retain responsibility for safely executing the maintenance mission, QC, and materiel readiness.

2-86. As the overall maintenance team leader, the brigade or ACS commander sets the maintenance priorities for their subordinate units in support of mission requirements, balances operational pace/tempo against maintenance and sustainment capabilities and resources their subordinate maintenance structure to assure high ratings across the MOE. They receive the MOE roll up reports from the brigade aviation materiel officer (BAMO) or AMO for review and consideration and usually lead aviation resource council meetings to ensure a common picture and vision for the entire maintenance team. Additionally, when MOE require reinforcing, the ACS commander directly applies assets and resources appropriately to achieve the desired results in concert with his aviation maintenance team vision.

BATTALION/SQUADRON COMMANDERS

2-87. Battalion/Squadron commanders execute the brigade commander maintenance priorities in support of mission requirements, balance operational pace/tempo against maintenance and sustainment capabilities and resource their subordinate maintenance structure to assure high ratings across the MOE. They receive the MOE roll up reports from the ASC or AMC/AMT commanders for review, consideration, and submission to the BAMO. When MOE require reinforcing, these commanders directly apply assets and resources appropriately to achieve the desired results.

AVIATION SUPPORT BATTALION COMMANDER

2-88. ASB commander execute the brigade commander maintenance priorities providing maintenance augmentation to aviation battalions and ground field maintenance, network communications, resupply, and medical support in support of mission requirements.

MAINTENANCE AND SUPPORT COMPANY/TROOP COMMANDERS

2-89. The company/troop commander plans, directs, and supervises the operations and employment of the company/troop through skilled application and synthesis of all unit Soldiers and assets to achieve the MOE goals established by their higher commanders. These leaders provide the battalion and squadron commanders with status and recommendations regarding all maintenance operations of their unit, and serve as the single point of entry for all issues related to maintenance in support of their parent organizations. They are the primary advisor to their battalion or squadron commanders regarding all maintenance issues. Maintenance and support company and troop commanders present the MOE reports to the battalion or squadron commander identifying progress, negative trends, and required resources to maintain or improve the MOE. Maintenance and support company and troop commanders make direct coordination with battalion and squadron staff sections in pursuit of MOE goals.
MAINTENANCE OFFICERS

2-90. Maintenance officer’s plan and direct aviation maintenance and logistics operations.

BRIGADE AVIATION MAINTENANCE OFFICER

2-91. The BAMO is the brigade commander’s primary advisor on generating aviation combat power. The BAMO is the technical advisor to the commander for aircraft readiness, logistical support, maintenance policy and procedures, and force modernization while conducting interface between subordinate units, division, corps, installation, major Army command, and DA.

2-92. The BAMO coordinates field and sustainment-level maintenance operations and works closely with the staff, ASB SPO, and subordinate units to sustain aviation operations. BAMOs provide aviation sustainment analysis to the S-3 and S-4 during all planning processes. They identify and address unit maintenance capability gaps with respect to doctrine, organizational, training, materiel, logistics, and facilities. In concert with the ASB, ASC, and AMC/AMT commanders and PCs, the BAMO recommends actions and forecasts future capabilities based on the existing maintenance posture.

2-93. The BAMO coordinates maintenance actions based on operational necessities in consultation with the brigade/squadron aviation maintenance leadership, and reviews the daily status of all aircraft in the CAB. The BAMO is normally a ME, responsible for the following:

- Provides advice to the brigade/ACS commander on aviation maintenance and sustainment issues.
- Coordinates for and monitors contract maintenance personnel.
- Assists in resolving aircraft maintenance standardization issues to include maintenance capability gaps.
- Monitor the flying hour execution and class IX (Air) budget.
- Primary member of the safety and standardization council.
- Attends the brigade/ACS safety and standardization meeting.
- Advises the commander on aircraft modifications and safety-of-flight, and aviation safety action messages.
- Serves as a senior aviation maintainer responsible for standardization of all maintenance training and evaluations.
- Develops the brigade concept of support for aviation.
- Supports internal safety and ARMS evaluations.
- Consolidates the MOE reports.
- Monitor aviation maintenance training and aircraft deployment planning and execution.
- Leads the maintenance synch meeting, set at a battle rhythm dictated by operations.
- Participate in Training and Doctrine Command (TRADOC) doctrine development and review.
- Coordinate with LARs, OEM, and program management office for non-standard repairs.

BATTALION AVIATION MAINTENANCE OFFICER

2-94. The Battalion aviation maintenance officer (AMO) is the senior maintenance officer in the battalion/squadron and is part of the special staff. The AMO is by MTOE a chief warrant officer four ME. The AMO advises the battalion/squadron commander on maintenance personnel management, supply, equipment, and facility assets to maintain the commander’s fleet of aircraft. The AMO participates in the concept of support planning as a key advisor and subject matter expert. AMOs work in concert with the AMC/AMT PC officers, commanders, and unit maintenance officers in support of maintenance operations. The AMO is directly responsible to ensure standardization of all aviation maintenance training, evaluations, and records keeping for all assigned maintenance personnel. The AMO also provides the same support to the battalion/squadron commander as the BAMO does to the CAB commander.
**SUPPORT OPERATIONS OFFICER**

2-95. The support operations officer (SPO), (logistics corps major) operates under the supervision of the ASB commander and in close coordination with brigade staff. The ASB’s chief warrant officer five aviation materiel officer serves in the support operations section of the ASB headquarters to facilitate any brigade-level sustainment expediting or special staff actions in support of brigade sustainment operations.

2-96. The SPO provides technical supervision of daily sustainment functions and supervises his aviation section led by the aircraft materiel officer, an aviation captain who should be a graduate of the aviation maintenance course. If not attached to the ASC as an augmentation leader performing duties such as executive officer or platoon leader, the aircraft materiel officer in the support operations office coordinates and provides technical advice relating to maintenance conducted within the ASC. The SPO, aircraft materiel officer, and ASB AMO interface with the brigade and battalion/squadron supply officers (S-4s) and BAMO to assist in accomplishing maintenance priorities and resolve maintenance support issues. The supply and services cell in the ASB support operations section assists the aviation materiel officer by tracking distribution and availability of Class IX (Air) repair parts and any special tools or equipment.

2-97. The support operations section provides centralized, integrated, and automated C2 and planning for all distribution management operations within the ASB. The support operations section coordinates with sustainment operators in the fields of supply, maintenance, and movement management for the support of all units assigned or attached in the brigade area. The primary concern of the support operations section is customer support and increasing the responsiveness of support provided by subordinate units.

**MAINTENANCE TEST PILOTS**

2-98. Maintenance test pilots (MTPs) manage and execute the unit commander’s maintenance program. They provide advanced troubleshooting skills within their specific aircraft mission design series to facilitate efficient repairs and maintenance, and are responsible for conducting maintenance test flights to determine the airworthiness of the unit’s aircraft. Per AR 95-23, TM 1-1500-328-23, and the applicable MTF manual, qualified personal perform all MTFs and MOCs according to specific aircraft TMs. They are primary advisors and are appointed by the unit commander to fill maintenance specific MTOE positions within the CAB. The MTP serve as the primary advisor to the commander on all issues related to the aviation maintenance training program. Selected MTPs will fill maintenance examiner (ME) positions to train, develop, and evaluate unit MTPs to enhance skills and proficiency.

**MAINTENANCE PLATOON AND SECTION LEADERS**

2-99. Maintenance platoon and section leaders ensure the operation of their respective platoon or section supports unit mission goals, priorities, and MOE. They must understand and ensure standardization according to regulations and publications and monitor maintenance procedures for strict compliance with the TMs. They constantly receive reports, monitor progress, and provide specific missions and tasks to their warrant officers and NCOs. They track and report the movement of the MOE assessment in support of their commander guidance and actively pursue necessary resources to ensure and improve platoon performance. They are the senior advisor to the PC officer and retain control over the employment of their formations in support of mission accomplishment. The platoon leader provides administrative direction for the platoon as well as serves as the primary resource manager for their organizations ensuring accountability, maintenance, and serviceability of assigned assets.

**AVIATION MAINTENANCE TECHNICIAN**

2-100. Aviation maintenance technicians are aviation system integrators, technical experts, and managers directing daily operations of their assigned sections to generate operational availability according to DA mandated goals, regulations and command guidance. They serve as key aviation maintenance advisors to the commander from the AMC, ASB, through theater support commands. They manage aircraft maintenance based on a thorough knowledge of aircraft maintenance requirements for power plants, power trains, electrical systems, avionics, armament systems, mechanics, and pneumdraulics. They manage the removal, disassembly, inspection, repair, assembly, installation, maintenance operational checks, and adjustments of aircraft structures, components, and subsystems as well as the maintenance of technical publication libraries.
They ensure compliance with regulations governing forms, records, and reports pertaining to aircraft maintenance. They insure the proper use of tools, measuring, and diagnostic equipment to isolate faults in aircraft systems and subsystems. They ensure observation of quality control procedures during aviation maintenance, and direct the use of computer systems and software for maintenance and supply requesting, reporting and management. At the ASC, as aviation materiel officers, they monitor and evaluate aircraft maintenance operations, processes, procedures, and materiel readiness status. They provide guidance and technical input to subordinate aviation maintenance elements and other staff elements, manage PC, provide technical advice to allied services using United States Army aircraft, and perform duties pertaining to resource management and aircraft procurement activities.

**UAS Operations Technician**

2-101. UAS operations technicians (150U) provide subject matter expertise on the tactical employment of UAS during the operations process. Their roles and responsibilities include managing safety, maintenance, and reporting programs; coordinate UAS airspace and frequencies, and other requirements to facilitate UAS operation; manage UAS logistical requirements, and interface with appropriate UAS system managers.

**Noncommissioned Officers**

2-102. Noncommission officer advises and directs aviation maintenance and logistics operations.

**Command Sergeant Major**

2-103. As the senior enlisted leader in any formation, the command sergeant major ensures the right NCO leaders and Soldiers receive assignment to the appropriate positions. With their extensive background, they serve as the primary advisor to the battalion, squadron, or brigade commander on all issues related to Soldiers assigned to maintenance positions and units. Additionally the CSM participates in Training and Doctrine Command (TRADOC) doctrine development and review processes. Commanders will always consider their input when formulating decisions against the maintenance MOE.

**First Sergeants**

2-104. The company or troop first sergeant serves as the senior enlisted leader in any ASC or AMC/AMT formation. The first sergeant ensures the right NCO leaders and Soldiers receive assignment to the appropriate positions. With their extensive background, they serve as the primary advisor to the company or troop commander on all issues related to Soldiers assigned to maintenance positions and units. Commanders will always consider their input when formulating decisions against the maintenance MOE. The first sergeant also directs the headquarters operations supporting administrative functions of the company or troop.

**Platoon Sergeants**

2-105. Platoon sergeants direct the performance of assigned Soldiers through their section sergeants. Platoon sergeants serve as first-line supervisors, responsible for ensuring all assigned aircraft receive maintenance according to regulatory policies, standards, and procedures. Platoon sergeants are responsible for the training and development of the NCOs and soldiers within their platoon. Platoon sergeants ensure accountability of all platoon resources and that maintenance operations meet or exceed the established MOE. The platoon sergeant ensures that platoon /shop personnel are familiar with the latest aircraft and component TMs and changes affecting maintenance and repair procedures. They prepare reports supporting the MOE for the platoon leader to review for presentation to the commander, and manage the work-order load. Additionally, they perform administrative support functions for the platoon in concert with the platoon leader.

**Section Sergeants**

2-106. The section sergeant monitors individual Soldier activities and assists with new or unfamiliar tasks. Section sergeants are the primary trainers who conduct the MOS sustainment training of soldiers within their section. Section sergeants mentor Soldiers on procedures and their connection with the maintenance MOE. They assess, develop, and counsel individual Soldiers to ensure appropriate progression, growth and skill
improvement. Section sergeants ensure Soldiers under their charge complete required individual tasks related to aviation maintenance operations and the MOE.

**TEAM LEADERS**

2-107. Team leaders have overall responsibility for assigned scheduled/phase maintenance operations. They coordinate special tools, repair parts, and personnel to facilitate and expedite maintenance actions. The Forces Command (FORSCOM)-established goals for periodic/phase completion by MDS are as follows:

- AH-64D/E–250-hour inspection should not exceed 11 working days. A 500-hour inspection should not exceed 26 working days.
- CH-47F 200–hour PMS should not exceed 18 working days. A 400-hour PMS should not exceed 36 working days.
- UH-60A/L/M–360-hour PMI should not exceed 20 working days. A 720-hour PMI should not exceed 30 working days.

**ADDITIONAL STAFF**

2-108. Aviation organizations have a variety of unique staff to assist the commander in managing the production and quality of aviation maintenance.

**PRODUCTION CONTROL OFFICER AND NONCOMMISSIONED OFFICER-IN-CHARGE**

2-109. The PC OIC is the principal maintenance manager and coordinator in the ASC or AMC/AMT and coordinates maintenance at the company/troop and battalion/squadron level. The PC OIC is the AMC/AMT or ASC commanders’ primary maintenance advisor for all internal production and maintenance activities. The PC OIC (captain) in the ASC also serves as the second in command for those organizations and must possess sufficient maintenance experience and background to direct these large operations, as well as command the ASC in the commander absence.

2-110. The PC NCOIC coordinates all maintenance actions in the absence of the PC OIC. The PC NCOIC assists the PC OIC; and in the PC OIC absence, coordinates and establishes priorities of work with QC, ARP, CRP, technical supply, and maneuver companies as required.

*Note.* See chapter 4 for a detailed explanation of PC activities.

**QUALITY CONTROL OFFICER AND NONCOMMISSIONED OFFICER IN CHARGE**

2-111. The QC OIC is responsible for the internal management of the QC section to include quality assurance of all work performed by the TIs. The QC OIC will coordinate priority of work with the unit PC OIC/NCOIC. To avoid conflict of interest, the QC OIC is accountable to the commander.

2-112. The QC NCOIC is directly responsible for the operational management of the QC section. The NCOIC assists the QC OIC in coordinates, and establishes priority of work with the PC OIC. The QC NCOIC is responsible for the technical training and development of the TIs in the shop. The NCOIC distributes the work and supervises the TIs for quality assurance of work assigned.

*Note.* See chapter 5 for a detailed explanation of QC activities.

**TECHNICAL AND SHOPS SUPPLY OFFICER AND NONCOMMISSIONED OFFICER-IN-CHARGE**

2-113. The technical supply officer is responsible for and performs oversight of the internal management and daily operations of the technical supply section to include requesting, processing, issuing, stockage, and turn-in of Class IX (Air) repair parts, special tools, and components. The officer coordinates high-priority urgency of need (UND) A and B parts requests with the unit PC OIC. If authorized by the commander, the
OIC certifies and authorizes all high-priority Class IX (Air) requests. The technical supply OIC balances the unit Class IX (Air) budget in detail for review by the commander.

2-114. The technical supply NCOIC coordinates high-priority (UND A and B) requisitions with the technical supply officer. The NCOIC directs and supervises all technical supply actions assigned to the logistics clerks. The technical supply NCOIC is directly responsible to the technical supply officer.

Note. See chapter 8 for a detailed explanation of technical supply activities.

SECTION IV – AVIATION SUSTAINMENT MAINTENANCE STRUCTURE

2-115. Sustainment maintenance is off-system component repair and/or end item repair and return to the supply system unless by exception to the owning unit, performed by national level maintenance providers. The OEM CFSRs may be placed within the CAB/ACS to provide a limited forward sustainment maintenance capability.

2-116. In special circumstances (normally caused by the lack of repair parts or components in the supply pipeline), the CAB may obtain a specialized repair authorization, one time repair, or aircraft repair authorization. This authorization, requested through the AMCOM logistics assistance representative (LAR), will enable the CAB/ACS to perform limited sustainment-level repair(s) on specific equipment classified as sustainment maintenance, if approved by AMRDEC engineering. A CAB/ACS may also request authorization to perform non-standard field maintenance through a maintenance engineering call (MEC). Typically, MECs are used for minor or limited non-standard field repairs and are normally not considered sustainment maintenance.

UNITED STATES ARMY MATERIEL COMMAND

2-117. The United States Army Materiel Command (USAMC) mission is to provide superior technology, acquisition support and logistics to ensure dominant land force capability for soldiers, and the United States and its allies. The USAMC operates research, development, and engineering centers; Army Research Laboratory; sustainment facilities; arsenals; ammunition plants; and other facilities. Subordinate commands provide specific aviation support within the USAMC structure. These commands include AMCOM and the Army Communications-Electronics Command (CECOM).

2-118. The USAMC—

- Equip and sustains the Army and provides support to the Joint Force pursuant to 10 USC.
- Acts as the Army’s logistics integrator.
- Responsible for the Army’s logistics mobilization and contingency capability and capacity. It also maintains and stores assigned war reserve stocks, prepositioned stocks and activity sets.
- Responsible for lifecycle sustainment for assigned Programs of Record and provides integrated materiel life cycle management of systems and equipment in partnership with Program Executive Offices (PEOs) and program/project/product managers.
- Supports capability and materiel developers with materiel supportability analysis in the requirements determination process.
- Provides basic and applied research, development and engineering, through laboratories and Research, Development and Engineering Centers, leading to new and improved operational capabilities, and facilitates technology transition and integration into current capabilities.
- Exercises mission command over the Army Organic Industrial Base (arsenals, depots).
- Commands assigned forces and establishes command and support relationships through subordinate commanders to build and sustain readiness.
- Supports planning and execution of transformation, integration, concept development, and experimentation activities to shape the Logistics Future Force.
- Supports the execution of operations plans (OPLANS), contingency plans, contingency operations, joint training, joint exercises, and joint experimentation with ready and responsive forces.
• Provides and executes installation logistics requirements, services, and strategic power projection at posts, camps and installations.
• Acts as the national level sustainment maintenance process owner.
• Manages and executes installation and procurement contracting support; provides expeditionary and contingency contracting to the Army Service Component Commands (ASCCs) and COCOMs at the strategic and operational level; and provides mission command for contracting missions.
• Provides materiel and services to other nations through the security assistance programs that support COCOM theater security cooperation strategies and plans.
• Manages and executes the Army’s Logistics Civilian Augmentation Program.
• Is the Department of Defense Executive Director for conventional ammunition and exercises mission command over the Armaments Industrial Base.
• Manages and executes the Army’s standardization program as the Army Standardization Executive.
• Provides bulk petroleum (CLIII [B]) requirements planning and mission execution support for Army expeditionary and installation operations worldwide.
• Acts as the Army's Treaty Implementing Agent for management and compliance with the Chemical Weapons Convention; provides centralized management for assessment and destruction of Recovered Chemical Warfare Materiel, and oversees the Army Chemical Stockpile Emergency Preparedness Program.
• Is the authoritative source of certified system level performance data, joint service authenticated weapons effects data, and the associated systems analysis to enable critical acquisition and sustainment decisions across the materiel lifecycle.
• Recommends procedures for reviews and implementation of corrective actions to support the Engineering for Transportability program.
• Manages the Defense Production Act of 1950 responsibilities and the Diminishing Manufacturing Sources and Material Shortages Program as the Army's Executive Agent.
• Manages and administers the Government Industry Data Exchange Program as the Army's Executive Agent.

UNITED STATES ARMY AVIATION AND MISSILE COMMAND

2-119. AMCOM is a major subordinate command of the USAMC. It is responsible for commodity management of aeronautical equipment, including—
• Design, research, and development.
• Maintenance engineering.
• Supply and stock control.
• Logistics assistance for all Army aviation and aerial delivery equipment.
• Provide the Logistical Assistance Representatives (LAR) program to the field.
• Provides oversight on MCDS to track parts and help manage maintenance programs.
• Airworthiness release authority for the field (MWOs, SOFs, and ASAMs).

2-120. AMCOM has direct operational control of the NM sources of repair, Corpus Christi Army Depot, Letterkenny Army Depot, Aviation Field Maintenance Directorate (AFMD), and new equipment training teams.

NATIONAL MAINTENANCE SOURCES OF REPAIR

2-121. The NM manager is responsible for managing all sustainment-level reparable and selected field-level reparable items according to AR 750-1. The NM manager uses various sources of repair. The NMP distributes sustainment maintenance workload across sustainment-level and non-sustainment-level activities based on national needs. The NMP manager may establish the use of a theater aviation sustainment manager within a specific theater. The theater aviation sustainment manager provides a unified aviation maintenance
life-cycle management command focused on the use of theater assets providing airframe maintenance, overhaul of aviation subassemblies, and crash/battle damage repair.

CORPUS CHRISTI ARMY DEPOT

2-122. Corpus Christi Army Depot is the Army’s organic facility for the repair and overhaul of rotary-wing aircraft. Corpus Christi Army Depot provides worldwide readiness, sustainment, and training support for all Army rotary-wing aircraft. Corpus Christi Army Depot is partnered with industry to overhaul, repair, modify, retrofit, and modernize Army aircraft and related engines and components. Corpus Christi Army Depot also provides hands-on training for Reserve, National Guard, and active-duty personnel. On a case-by-case basis, Corpus Christi Army Depot provides additional on-site sustainment maintenance support for crash damage analysis and repair. Sustainment maintenance is employed primarily in CONUS. However, it projects itself worldwide through maintenance support teams using organic assets and through contract programs.

2-123. Corpus Christi Army Depot provides the following maintenance support:
- Overhauls, repairs, modify, retrofits, and modernize aircraft systems.
- Maintains a mobilization and training base to provide capability for missions.
- Provides maintenance support services for aeronautical equipment worldwide.
- Provides project development and design services for special projects, as assigned.
- Provides worldwide telephone hot line and on-site technical assistance for the inspection, maintenance, and repair of customer aircraft and engines.
- Provide soldier development through LAR University.

LETTERKENNY ARMY DEPOT

2-124. Letterkenny Army Depot provides a variety of support to the Army. AH-64 target acquisition designation sight/pilot night vision sensors and aviation ground power units (AGPUs) are two aviation-specific systems that are overhauled and returned to the NMP. AGPU reset and overhaul are functions of the service life extension program. Letterkenny Army Depot also provides sustainment-level maintenance for Hellfire launchers and air-to-air Stinger pressure bottle refurbishment.

AVIATION FIELD MAINTENANCE DIRECTORATE

2-125. As the Army’s central coordination proponent for contract field maintenance support, AFMD manages the Army’s regional aviation field maintenance (AFM) contracts supporting Commanders throughout all phases of the sustainable readiness model. These field and sustainment (by exception) maintenance services include, but are not limited to the following subjects.

Enduring Services

2-126. The following is a list of enduring services provided by ARM:
- Unit field level maintenance support mobilization support.
- Back shops and AGSE support.
- Installation and regional support.
- Aircraft modifications (MWOs).
- National Maintenance Program (NMP).
- Airframe condition evaluation (ACE).
- Multi-modal strategic movement support.
- AFM contract management/oversight.
- Foreign military sales (FMS) support.
- Mobilization support.
- LUH maintenance support.
Non-Enduring Services

2-127. The following is a list of non-enduring services provided by ARM:
   - Aircraft and sub-system reset (wings and tanks, SATS) MWO installation.
   - Unit-maintained equipment support.
   - In-theater contract oversight.
   - Army Aviation Assessment Team (A3T).
   - Trans-modal movement support (Rota, Spain).
   - Airframe inspection maintenance and sustainment (AIMS).
   - FORSCOM training support.
   - ARI maintenance support.

2-128. AFMD has a Logistics Readiness Center-Aviation (LRC-A) collocated with each CONUS CAB and forward deployed in Germany. The LRC-A’s consist of personnel (USG and contractor), dedicated facilities, and specialized tooling not organic in the CAB that support the installation’s tenant/non-tenant units. Required specialized tooling and often mimics the installation’s DOL ground capabilities, but is specialized for aviation support. This includes, but is not limited to, dedicated hangar/workspace, aircraft/component painting and stripping, flexible engine diagnostic system (FEDS), aircraft wash racks, blade and composite repair, and unique aviation component repair tooling. Collectively, the LRC-As fill the CABs maintenance shortfall within the Active Component CABs (roughly 22 percent in fiscal year [FY16]). The LRC-As and other contracted support sites fall under the operational control (OPCON) of the Regional Aviation Sustainment Manager (RASM) for each Region. Overseas sites are under OPCON of the Theater Aviation Sustainment Manager—outside continental United States (TASM-O):
   - RASM-East at Fort Bragg, North Carolina.
   - RASM-Central, Fort Campbell, Kentucky.
   - RASM-West at Fort Hood, Texas.
   - RASM-Pacific at Joint Base Lewis McChord, Washington.
   - TASM-OCONUS currently at Illesheim, Germany.

Note. The AFMD web site is located on Army Knowledge Online (AKO) at https://www.us.army.mil/suite/page/416874.

NEW EQUIPMENT TRAINING TEAMS

2-129. The logistics assistance and new equipment training division is a subordinate division of the directorate for readiness. Its mission is staff supervision and operational control of worldwide logistics assistance programs (LAPs) for Army aircraft and related support equipment. The division also provides representatives to make command staff visits and to manage all aspects of the new equipment training and support services.

2-130. Army aircraft mobile training teams consist of specialists or contract technical services personnel trained in the support of a particular aircraft. These teams are controlled by AMCOM and assist the commander in improving the proficiency of maintenance personnel at the AMC/AMT and ASC. When the team completes a job, it prepares and forwards a report to AMCOM with consolidated findings.

DEFENSE LOGISTICS AGENCY

2-131. The Defense Logistics Agency (DLA) provides supply support and technical and logistics assistance to the SPO cell in the ASB and battalion/squadron technical supply officers. DLA manages, stores, and distributes hardware and electronics used in the maintenance and repair of equipment and weapons systems. Refer to DLA customer assistance handbook for assistance in contacting the various sources of supply managers. To obtain an online version of this handbook, go to http://www.dla.mil/

2-132. DLA maintains three supply centers in the following locations:
• Defense Supply Center, Richmond (DSCR), Virginia.
• Defense Supply Center, Columbus (DSCC), Ohio.
• Defense Supply Center, Philadelphia (DSCP), Pennsylvania.

2-133. DSCR is the designated aviation supply chain manager and can be contacted at http://www.dla.mil/Aviation.

2-134. With internet access to DSCR the following functions are possible:
   • View current flight safety critical parts list.
   • Input requisitions through direct online ordering option; using this option does not preclude inputting/submitting the requisition into the user appropriate command requisitioning system.
   • Query the system for back-ordered items.
   • Access the asset visibility (AV) system.

2-135. DSCC is the designated land and maritime supply chain manager and manages electronic items. Contact DSCC at http://www.dsc.dla.mil.

2-136. DSCP is the Soldier support and construction supply manager providing food, clothing, textiles, medicines, medical equipment, and construction supplies and equipment. The general and industrial commodities (nuts and washers, bolts and studs, screws, packing and gaskets, pins, rivets, and springs), are managed by DSCC and DSCR detachments located at DSCP. The following agencies support the BAMO tracking and managing sustainment, maintenance, and supply transactions:
   • DLA national item identification number (NIIN) and national stock number (NSN) search at http://www.dla.mil/HQ/InformationOperations/LogisticsInformationServices.aspx.
   • General Services Administration (GSA) approved products and services from GSA contracts at https://www.gsaadvantage.gov/advgsa/advantage/main/start_page.do.

ARMY COMMUNICATIONS-ELECTRONICS COMMAND

2-137. The CECOM mission is to provide, integrate, and sustain command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) readiness to enable unified land operations. CECOM controls and operates Tobyhanna Army Depot (TYAD). TYAD is the largest, full-service electronics maintenance facility in DOD. TYAD’s mission is to provide superior logistics support, sustainment, manufacturing, integration, and field support for C4ISR systems for the Joint Warfighter – Worldwide. Levels of support encompass total sustainment, design, repair, and overhaul of hundreds of electronic systems. These include satellite terminals, radio and radar systems, telephones, electro-optics, night vision and anti-intrusion devices, airborne surveillance equipment, navigational instruments, electronic warfare, guidance, and control systems for tactical missiles, and Blue Force Tracking installation kits.

THEATER SUSTAINMENT MAINTENANCE

2-138. The theater sustainment maintenance program consists of the theater sustainment maintenance HQ and four TASMGs. The locations of the HQ and TASMGs are—
   • Theater sustainment HQ is Edgewood, Maryland.
   • 1106th TASMG is Fresno, California.
   • 1107th TASMG is Springfield, Missouri.
   • 1108th TASMG is Gulfport, Mississippi.
   • 1109th TASMG is Groton, Connecticut.

2-139. The TASMG can support manned and unmanned aviation assets. The TASMG focuses on the repair of specified components in support of the NMP as directed by USAMC. The repaired components are returned to the supply system. The TASMG may assist in port-opening operations but is not solely
responsible for this function. The TASMG can perform repair and return of components and end items when required. The theater aviation sustainment maintenance HQ and the four TASMGs make up the theater aviation sustainment maintenance program.

2-140. The TASMG consists of a—
- Headquarters and headquarters detachment.
- ASC.
- Group support company.

2-141. The TASMG provides theater-level support for all aviation sustainment and maintenance requirements, including—
- Sustainment maintenance of airframes and components in theater as directed by USAMC.
- Field-level maintenance to support theater surge requirements.
- Repair and return of depot-level repairable components to the theater ASL.
- Selected depot-level airframe repair.
- Oil analysis.
- Calibration of TMDE.
- Limited rapid parts fabrication capability and selective circuit card repair.

2-142. The theater aviation maintenance program (TAMP) tasks executed by the TASMG are—
- Provide technical assistance.
- Provide SSA for Class IX (Air) in the theater of operations and a storefront for aviation sustainment at echelon above corps.
- Provide limited sustainment and backup field maintenance.
- Support the sustainment classification mission.
- Assist units in reception, staging, onward movement, and integration (RSOI) at aerial port of debarkation and/or seaport of debarkation.
- Provide contact teams.
- Validate estimated cost of repair.
- Provide application of MWOs.
- Forecast and support theater aviation maintenance surge requirements in support of operations plan.
- Provide special test and troubleshooting capability.
- Establish/manage staging areas, wash points, and inspections.
- Repair crashed or battle-damaged aircraft.
- Receive, manage, and distribute ASL (aviation) within theater.
- Obtain special repair authority from AMRDEC liaison engineer.
- Facilitate and coordinate engineer requirement and authorization before repair.
Chapter 3

Brigade Aviation Maintenance Officer and Support Operations

The combination of the BAMO and support operations efforts in support of the CAB mission ensures synchronized mission goals and reduced duplicity of resource commitments. By applying the advice of the brigade most senior maintenance warrant officer to the support operations focus on supporting subordinate units, every aviation maintenance and sustainment challenge receives the most skilled level of attention. These experts work to improve resource allocation within the CAB.

SECTION I – BRIGADE AVIATION MAINTENANCE OFFICER

DUTIES AND RESPONSIBILITIES

3-1. The BAMO fills positions assigned by MTOE/table of distribution and allowance (TDA). Refer to DA PAM 611-21 to determine who is authorized to fill BAMO positions. The BAMO assigned to the CAB should work hand-in-hand with AMC/AMT PC and support operations personnel (if applicable) as a key supporting member of the maintenance team.

3-2. The BAMO advises the brigade commander on maintenance personnel management, supply, equipment, and facility assets to maintain and repair Army rotary, fixed-wing, and unmanned aircraft. Additionally the BAMO may help organize maintenance elements in support of CAB operations. They provide expertise in preparing, implementing, and maintaining SOPs for management of maintenance activities. The BAMO participates in internal maintenance evaluations organized by the support operations section and conducted by subordinate commands.

3-3. The BAMO interprets regulations, TMs, and orders pertaining to maintenance and sustainment actions of Army aircraft for commanders and subordinates. The BAMO normally works alone; however, depending on the unit and the MTOE structure, additional personnel may be assigned to the section to assist. The BAMO office provides continuous maintenance and logistical information to the brigade commander and staff on aviation and aviation-related systems matters. The BAMO keeps the command informed of current and future capabilities based on the current maintenance posture. The BAMO consolidates the MOE reports as necessary to ensure maintenance situational awareness to the brigade commander and staff.

3-4. In coordination with the entire aviation maintenance leadership team, the duties and responsibilities of the BAMO also includes the following:

- Provides aircraft maintenance and related activity reporting.
- Coordinates and submits a monthly aircraft readiness report.
- Responds to all levels of staff concerns regarding aviation maintenance (P4T3) and execution of the maintenance plan.
- Coordinates recurring aviation maintenance resource management meetings at the brigade level.
- Serves as principal staff advisor to develop and maintain aircraft maintenance and logistics deployment plans.
- Serves as a senior aviation maintainer responsible for standardization of all maintenance training and evaluations.
- Assists in determining composition of the deployment or redeployment team.
- Assists in determining resources required to execute the deployment and redeployment.
● Monitors the deployment execution and provides procedural guidance when necessary.
● Monitors and advises commanders at all levels on—
  ■ AMC/AMT operations (TM 1-1500-328-23 and this training circular).
  ■ ASC operations.
  ■ Sustainment maintenance and combat retrograde MWOs.
  ■ Nonstandard equipment applications; for example, AWR, statement of airworthiness qualification (SAQ), or LOA.
  ■ Organizing for BDAR and DART missions (FM 3-04.513).
  ■ TMDE compliance (AR 750-43).
  ■ AOAP compliance (AR 750-1).
● Facilitates effective scheduled maintenance forecasting and planning with all units for brigade assets in support of mission requirements, the flying-hour program, and the MOE bank time goals.
● Tracks, advises, and reports on performance goals in Classes III, III (packaged), V, and IX (Air).
● Assists in SOP development.
● Participate in Training and Doctrine Command (TRADOC) doctrine development and review.
● Supports maintenance policy development and adherence, including the following actions:
  ■ Organizes routine aviation maintenance readiness councils, conferences, or meetings.
  ■ Monitors maintainer utilization and effectiveness.
  ■ Monitors automation execution and information technology discipline.
  ■ Ensures adherence to applicable references, publications, and maintenance information messages (MIMs).
● Serves as an evaluator during internal maintenance unit ARMS inspections.
● Assists units in coordinating maintenance procedures for nonstandard repair applications between LARs, OEM, CFSRs and the applicable project management office. BAMO may discuss issues with contracting officials on aviation contract performance affecting brigade/battalion assets.
● Facilitate/coordinate external inspections, ASE, ARMS.
● Coordinate with logistics readiness center for any additional maintenance support.
● If appointed as contracting officer representative (COR) or administrative contracting officer representative (ACOR):
  ■ Participates in Army command contractor staffing missions.
  ■ Helps project contractor staffing levels to meet additional maintenance requirements.
● Monitors brigade aviation resource management, to include:
  ■ Flying-hour program execution and effect on the allocated Class IX (Air) budget.
  ■ Contracting resources.
  ■ GSE maintenance.
  ■ Nonstandard equipment acquisition and sustainment funding.
  ■ BAMO equipment purchase and sustainment.

GOVERNMENT FLIGHT REPRESENTATIVE

3-5. The BAMO is trained to become the government flight representative, project officer/COR, or the ACOR. If not retained by the ASB or other command, these duties may become the responsibility of the BAMO when aircraft, equipment, or property is maintained by contractors, to include MTF of aircraft.

3-6. Performance of these duties is essential when the primary providers of the contract are not collocated with the unit receiving maintenance support. The performance of these duties can take place in garrison or while aviation units are deployed from home station.

3-7. In addition, life support and system support for these contractors will typically fall to the government flight representative, COR, or ACOR assigned to a CAB. The BAMO performing any of these roles remains responsible for managing those related contractors and providing for their overall welfare.
COORDINATING ACTIONS

3-8. The BAMO submits a monthly aircraft readiness report and coordinate with logistics readiness center for any additional maintenance support as required.

AVIATION READINESS REPORTING CAPABILITIES

3-9. The BAMO is required to forward an airframe roll-up report to the logistics support agency (LOGSA). The following steps are necessary:

- Generation of the daily readiness report.
- Automated roll up of the reporting unit at the brigade/battalion maintenance office to the division.
- Automated transmission of reports from the BAMO to the division or higher HQ.
- Automated transmission to LIW.

MANAGING AIRCRAFT AND WEAPONS SYSTEMS

3-10. When aircraft are identified for aircraft or weapons systems modifications, improvements, or upgrades, the BAMO has unique responsibilities. The BAMO will outline the brigade responsibilities and manage all coordination efforts to ensure smooth maintenance and logistics support between unit personnel and personnel responsible for aircraft or weapons system modifications, improvements, and upgrades. These responsibilities include—

- Coordinate new equipment training for maintainers and operators when required.
- Assisting commanders in determining how equipment and weapons system improvements are going to affect the unit assigned mission.
- Assisting units with coordinating and arranging a systematic flow of aircraft into maintenance for scheduled modifications, upgrades, and improvements.
- Tracking all completed aircraft and weapons system improvements.
- Ensuring availability of up-to-date technical information to maintain improved and upgraded systems.
- In concert with support operations, ensuring all required parts for systems upgrades are on-hand before maintenance actions begin.
- Ensure monitoring brigade/battalion personnel follow policies and procedures to ensure pertinent forms and records are updated to reflect the addition of new items and deletion of replaced items.
- Facilitating the completion of multiple MWOs on the same piece of equipment at the same time.

COORDINATING AUTOMATED ACTIONS

3-11. The BAMO retrieves reports from the LIS. These reports provide the BAMO with the flexibility to go into the automated system and retrieve any reports needed to support the brigade mission. The BAMO will coordinate with the Sustainment Automation Support Management Office (SASMO) for evaluation and maintenance support of the BAMO. With LIS the BAMO monitors maintenance man hours, aircraft repair parts and components, maintenance work orders, and aircraft historical data. Chapter 7 addresses specific functions and reports of the LIS.

SECTION II – BATTALION/SQUADRON AVIATION MAINTENANCE OFFICER

3-12. The AMO is the senior maintenance officer in the battalion and is part of the battalion’s special staff. The AMO positions is a chief warrant officer four (ME) assigned by MTOE/TDA. Refer to DA PAM 611-21 to determine who is authorized to fill AMO positions.
3-13. The AMO advises the battalion/squadron commander on maintenance personnel management, supply, equipment, and facility assets to maintain the commander’s fleet of aircraft. As the battalion/squadron maintenance examiner the AMO is the standardization officer for the maintenance test pilots (MTP) responsible for training, development and evaluation of the battalions MTPs. They provides quality control for the ATP through the commander’s standardization program. They provide expertise in preparing, implementing, and maintaining SOPs for management of maintenance activities. Additionally, the AMO participates in internal maintenance evaluations organized by the support operations section and conducted by subordinate commands.

3-14. The AMO interprets regulations, TMs, and orders pertaining to maintenance and sustainment actions of Army aircraft for commanders and subordinates. The AMO provides continuous maintenance and logistical information to the battalion commander and staff on aviation and aviation-related systems matters to include tracking information of aircraft repair parts affecting the operational readiness posture of assigned aircraft. The AMO keeps the command informed of current and future capabilities based on the current maintenance posture. They also assist maintenance companies and troops in planning maintenance actions based on operational necessities.

3-15. The AMO assists the PC officer as an additional MTP to support unit aircraft as well as tracking requisitions that are keeping the aircraft in a NMCS status. The AMO monitors the TMDE program to ensure the unit’s calibration program to ensure DA standards are met.

3-16. The AMO conducts ME responsibilities for the battalion:
- MTP training and progression.
- Annual Proficiency and no-notice MTP evaluations.
- Monitors the MOS sustainment and technical training for the maintainer and nonrated crewmember training.

3-17. The AMO will participate in the battalion aviation standardization programs to include the following:
- Ensure training flight hours to include maintenance training.
- Oversees the planning and development of MOS sustainment and technical training for the maintainer and nonrated crewmember training.
- Identifies the high frequency/critical maintenance task that needs to be trained.
- Directly responsible to ensure standardization of all aviation maintenance training, evaluations, and record keeping for all assigned maintenance personnel.
- Plan and develop nonrated non-crew member performance standards.
- Plan and develop maintainer performance standards.

3-18. The AMO will monitor battalion aviation resource management, to include the following:
- Flying-hour program execution and effect on allocated Class IX (Air) budget.
- If appointed as contracting officer representative (COR)—
  - Participates in Army command contractor staffing missions.
  - Helps project contractor staffing levels to meet additional maintenance requirements.
- AGSE maintenance.
- Aviation life support equipment (ALSE) resources.
- Nonstandard equipment acquisition and CSS funding.
- Equipment purchase and sustainment.

SECTION III – SUPPORT OPERATIONS SECTION

3-19. The support operation section provides supervision of the CAB’s daily sustainment functions and logistical services for all aviation and ground.
**DUTIES AND RESPONSIBILITIES**

3-20. The support operations section coordinates with the brigade and battalion S-4 and the BAMO to establish maintenance priorities and resolve maintenance and logistics support issues under the supervision of the ASB commander. The support operations section is organized to coordinate logistics support and provide distribution management to the CAB. It is also staffed to accomplish contracting, petroleum, ammunition, movement control, and transportation and to assist in tracking and expediting release of supplies (repair parts).

3-21. Under the direction of the support operations officer (SPO), this section provides centralized, integrated, and automated C2 and planning for distribution management operations within the battalion. It coordinates with logistics operators in the fields of supply, maintenance, and movement management for the support of units assigned or attached in the brigade area. The primary concern of the support operations section is customer support and increasing the responsiveness of support provided by subordinate units. This section continually monitors the support and advises the battalion commander on the ability to support future tactical operations.

3-22. The support operations section coordinates required annual internal ARMS inspections for aviation support and maintenance companies and troops. It also collects, consolidates, and archives tri-annual maintenance unit ARMS progress reports for command review. Along with this function, the support operations section will conduct a semi-annual logistics award recommendation council for logistics unit commanders and representatives to advise in logistics award preparation and submission processing.

3-23. With in-transit visibility (ITV)/total AV, battle command sustainment and support system (BCS3), joint battle command-platform (JBC-P), and the maneuver control system, the support operations section has access to significant, useful information and receives such information in near-real time. This access allows support operations personnel to identify problems quickly and allocate resources efficiently. BCS3 provides support operations with the visibility of the logistics status from the ASB back to theater level. This staff section serves as the POC for supported units. It directs problems to appropriate technical experts within subordinate branches. The support operations section—

- Conducts continuous logistics support analysis.
- Plans and coordinates aerial resupply and plans for landing zones in the vicinity of the BSA.
- Develops the sustainment synchronization matrix.
- Submits sustainment forecasts to the sustainment brigade support operations/distribution management center.
- Manages all flat-racks throughput to and retrograding from the BSA.
- Coordinates and provides technical supervision for the ASB sustainment mission, which includes supply activities, maintenance support, and coordination of transportation assets.
- Identifies tentative force structure and size to be supported.
- Coordinates the preparation of the support operations estimate on external support.
- Provides support posture and planning recommendations to the ASB commander.
- Sets up and supervises the logistics operations center.
- Provides centralized coordination for units providing external support to the brigade.
- Coordinates with the CAB S-3 for air routes for supply and medical support.
- Analyzes the effect of BCS3 reports.
- Advises the battalion commander on the status of logistics support.
- Coordinates logistics support for units passing through the brigade area.
- Analyzes contingency mission support requirements.
- Revises customer lists (as required by changing requirements, workloads, and priorities) for support of tactical operations.
- Coordinates external logistics support provided by subordinate units.
- Advises the battalion commander on the supportability of ASB missions and of shortfalls that may affect mission accomplishment.
- Serves as the single point of coordination for supported units to resolve logistics support problems.
• Plans and coordinates contingency support.
• Develops supply, service, ground maintenance, and transportation policies.

3-24. The SPO will perform functions as the BCS3 manager. The SPO must work with the S-2, S-3, S-4, and signal staff officer (S-6) to establish and manage the BCS3 network and database. The SPO must maintain field level supply point and maintenance data entered into the system. The following are specific tasks for the SPO:
• Develops the commander’s tracked item list to track supply point items of interest.
• Sets message handling tables to correctly route supply logistics messages.
• Sets status thresholds for supply point items.
• Establishes reporting times for subordinate direct support (DS) units.
• Sets support to supported relationships to reflect which supply points support which units.
• Establishes and sets continuity operations pairing according to guidance from the CAB S-4.
• Support operations assist supported units in locating needed parts.

3-25. When an aircraft is NMCS for a minimum number of aircraft repair-parts, the PC officer must insure that a high priority request is submitted and the BAMO has been notified. The requisition must be in Military Standard Requisitioning and Issue Procedures (MILSTRIP) 80-column format and carry the highest priority a unit can assign. The RDD must be “N_” or “999” according to DA PAM 710-2-1. The BAMO manages the “999” process to ensure the expeditiously processing of requisition with priority dedicated transportation. Requisitions with a “999” provides higher visibility and tracking on NMCS parts; in that it is designed to supply items which when placed on the aircraft will return the aircraft immediately to mission capable status. High priority parts requests are approved by the commander or may be delegated in writing on a DA Form 1687 (Notice of Delegation of Authority-Receipt for Supplies). Once a high priority parts request is approved, the technical supply section processes the request through the SSA. High priority requests are processed directly to an SSA. High priority requests are transmitted by the most expeditious means.

3-26. To qualify as a high priority request, the following conditions must be met:
• The aircraft is on the ground—X Grounded—and is reporting NMCS.
• A requisition(s) has not been previously submitted for the part(s) currently required.
• Receipt of this part will return the aircraft to a mission capable status.
• The requisition must be in Military Standard Requisitioning and Issue Procedures (MILSTRIP) 80-column format and carry the highest priority a unit can assign. The RDD must be “N_” or “999” according to DA PAM 710-2-1.

3-27. The support operations section will conduct sustainment horizontal and vertical searches for critical serviceable parts in support of the unit maintenance mission. Once a part is located, steps and actions covering procurement of aircraft repair parts and/or the requisition process must be followed as outlined in the unit maintenance SOP. If a SSA is not collocated with the supported unit, request information must be transmitted to the SSA. The BAMO will monitor high priority requisitions until the unit receives the ordered components.

3-28. DLA logistics information services is another avenue that can track parts and requisitions. Logistics Information Services offers logistics applications designed for logistics data support for tracking DOD supply requisitions and inventory items and for placing or modifying DOD requisitions. Logistics Information Services logistics applications allow queries by telephone or email messages or from World Wide Web forms. Logistics Information Services logistics applications are located at all 19 DOD inventory control points, and are available for aviation maintenance customers 24 hours a day, seven days a week.

INTEGRATED LOGISTICS ANALYSIS PROGRAM

3-29. The support operations section leverages the integrated logistics analysis program (ILAP) to effect rapid acquisition of assets and provide positive tracking. ILAP is available to brigade logistics and leaders to retrieve logistics and financial data while tracking Class IX (Air) budget matters. ILAP operates at all echelons of the Army to provide management capability to unit, corps, installations, component, and theater levels.
3-30. Financial data is pulled from defense finance and accounting service data sites. Logistics data is obtained from appropriate supply and maintenance sites. These cross-functional data are integrated and aggregated to upper echelons to provide summary decision support views and detailed information drill-down capabilities to the document detail level. This process of assembly and aggregation affords Army departmental users the opportunity to do Army-level analysis and data query.

3-31. The traditional tools imbedded in the current LIS and financial systems do not provide managers the detailed report needed in today’s fluid environment. Thus, managers must gather data from various sources to perform their jobs. The process of gathering data consumes a great deal of time and makes it difficult for managers to share information, which generally leads to incomplete and untimely answers. ILAP provides a computer-based tool that integrates the data. Register at the following site, https://liw.logsa.army.mil, to gain access to ILAP on LIW.

SUPPLY SUPPORT ACTIVITY INTERACTION

3-32. The relationship of the SPO, the SSA accountable officer, and the BAMO is crucial to the sustainment of serviceable aircraft systems and subsystems, as well as GSE. To foster a professional relationship, the SPO and BAMO should—

- Conduct a face-to-face meeting with the accountable officer to ensure aviation needs, including shortages of critical aircraft repair parts, receive documentation, and discuss resolution planning.
- Ensure the responsible accountable officer is aware of ever-changing aircraft repair parts requirements and priorities.
- Request the accountable officer provide timely information of logistical issues to include LIS shortcomings.
- Allow the accountable officer to serve as a POC for tracking aircraft repair parts/components off the installation.
- Allow the accountable officer to provide guidance on turn-ins, credits, excesses, forms and records, and reports.
- Obtain assistance from the accountable officer on all sustainment issues (such as ASL, bench stock, and shop stock).
- Obtain tracking numbers for brigade/battalion/unit-generated document numbers on and off the installation.
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Chapter 4

Production Control

This chapter provides aviation maintenance management principles required to maintain, repair, overhaul, and apply modification work orders, safety-of-flight messages, and other mandated maintenance functions. Utilizing these principles will ensure the airworthiness of all assigned/attached aircraft.

SECTION I – DUTIES AND RESPONSIBILITIES

4-1. The PC officer is the principal maintenance manager-coordinator in the aviation maintenance company/troop or ASC and coordinates maintenance and sustainment actions at the company/troop and battalion/squadron level.

PRODUCTION CONTROL OFFICER-IN-CHARGE

4-2. The aviation maintenance unit commander selects the PC OIC based on skills, qualifications, experience, and leadership abilities. In the AMC/AMT, the PC officer is a warrant officer graduate of the aviation maintenance officer course and the MTP course. In the ASC, the PC OIC is either a captain or a 151A, preferably a graduate of the Warrant Officer Basic Course.

4-3. The PC OIC is the principal maintenance manager-coordinator in the AMC/AMT or ASC and coordinates maintenance and sustainment actions at the company/troop and battalion/squadron level. The PC OIC is the AMC/AMT or ASC commander’s primary maintenance advisor for all internal production and maintenance activities. Additionally the PC Officer manages the supply section within the AMC/AMT.

4-4. In the absence of the maintenance commander, the PC OIC can act as the battalion/squadron primary maintenance advisor at battalion/squadron level. The PC OIC controls daily maintenance operations and workflow within the maintenance or support company/troop. The PC OIC must assist the commander in balancing unit maintenance priorities with unit mission requirements. The PC OIC orchestrates maintenance efforts and priorities by coordinating with commanders, BAMO, and the SPO on maintenance issues requiring command-level attention.

COMMAND RELATIONSHIPS

4-5. The AMC/AMT or ASC commander has overall responsibility for aviation maintenance activities. The PC OIC is responsible for prioritizing aviation maintenance production matters according to command guidance and acts as the direct link between the unit commanders and the maintenance or support company/troop platoons, and sections for internal and external production issues.

4-6. The AMC/AMT PC OIC is the main POC between AMC/AMT, aviation operational companies and troops, and the ASC. The ASC PC OIC is the primary POC to the supported units. The commander and staff must be kept informed of critical maintenance issues and the operational status of battalion/squadron equipment.

4-7. The PC OIC establishes, coordinates, and directs priorities of work with the maintenance leadership, to include QC, ARP, CRP, technical supply, and maneuver companies/troops. Responsibilities include but are not limited to—

- Analyzing, planning, and coordinating required support for all maintenance activities.
- Supervising preparation of reports and records.
- Coordinating with the AMC/AMT and/or ASCs as required.
Establishing maintenance priorities based on command guidance and mission requirements.

Provides unit level Class II, III, V, and IX air support.

Facilitating appropriate DART capability and responsiveness according to FM 3-04.513.

PRODUCTION CONTROL OFFICER RELATIONSHIPS

4-8. The PC OICs, AMOs, and the BAMO must interact and closely coordinate all sustainment activities, which aids in mutually achieving high rates on the maintenance MOE. The support operations officer (SPO), is responsible for sustainment support management. The SPO, with the BAMO, facilitates sustainment support to all AMC/AMT and ASC PC officers. When airframes are experiencing NMCs issues, the PC OIC will coordinate logistic actions with the SPO to expedite release of high-priority repair parts.

ASSISTANT PRODUCTION CONTROL OFFICER

4-9. In the ASC, the PC office consists of an assistant PC officer and a 151A aviation maintenance officer/technician. Assistant PC officers provide depth to the ASC and assist in managing the larger quantities of work orders. They also enable 24-hour PC operations when required. The assistant PC officer reinforces the PC officer in the execution of duties and serves as the PC officer in his or her absence.

PRODUCTION CONTROL NONCOMMISSIONED OFFICER-IN-CHARGE

4-10. The commander and PC OIC select the PC NCOIC based on skills, qualifications, experience, and leadership abilities. The PC NCOIC is usually one of the most senior and experienced maintenance NCOs assigned to the unit. The PC NCOIC should be a graduate of the senior leaders course (SLC).

4-11. The PC NCOIC will coordinate all maintenance actions in the absence of the PC OIC and assistant PC OIC, and will act on his or her behalf when required. The PC OIC, assistant PC OIC, and PC NCOIC must function as a team. When one acts, the other must be aware of all decisions and priorities.

PRODUCTION CONTROL CLERK

4-12. In AMC/AMTs, the commander, PC OIC, and first sergeant will select the PC clerk based on skills, qualifications, and experience. The PC clerk should be a senior-grade specialist with knowledge of supported aircraft systems and subsystems. The position requires a working knowledge of automated systems LIS and related software. The PC clerk should demonstrate sufficient knowledge to assist the PC NCOIC in managing the battalion/squadron LIS server. In the ASC, the flight operations specialist in the PC section also serves as the PC clerk. The PC OIC, assistant OIC, and NCOIC will train this Soldier to support their mission and the MOE.

4-13. The PC clerk is responsible to the PC OIC, assistant PC OIC, PC NCOIC, and ultimately, the commander for—

- Execution of administrative PC functions, processing, and updating of ULLS-A (E) information.
- Updating and processing forms, records, and work orders pertaining to aircraft systems and subsystems according to appropriate regulatory guidance, manuals, and the ULLS-A (E) end-users guide.
- Distribution and evacuation of work-ordered unserviceable aircraft repair parts and components to the ASC or sustainment-level support agencies.
- Generation of internal work orders for maintenance support from assigned shops and maintenance sections.
- Reconciliation of work orders with the supporting and supported units according to the SOP.
- Reconciliation of work orders within the maintenance unit.
- Reconciliation of evacuation work-order from external maintenance activities and agencies as required.
• Distribution of forms and records to QC and flight operations for inspection according to AR 25-400-2 and DA PAM 738-751.

SECTION II – OPERATIONS

4-14. PC operations provide guidance and priority of aviation maintenance production matters per command guidance and are the direct link between unit commanders, the aviation maintenance company/troop, and the ASB’s ASC for internal and external production issues.

MEETINGS

4-15. The PC meeting allows consolidation, coordination, and synchronization of internal and external maintenance and sustainment actions. Unscheduled maintenance from previous day/night operations are discussed to prioritize workflow from a previous plan. This meeting ensures leaders and maintenance managers have a clear picture of current or projected aircraft availability and work order and scheduled maintenance status; however, a formal PC meeting is not always necessary.

AGENDA

4-16. The agenda of each PC meeting should follow a specific and well-defined format. The PC meeting agenda should facilitate the organization of workflow, priorities, and coordination among sections, platoons, and companies. The agenda can be built as the duty day progresses so information is not forgotten at the following PC meeting.

4-17. The PC meeting is a team-building event that should not exceed one hour. The PC meeting provides essential personnel/leaders with situational awareness, not only in and around their areas of responsibility but of the overall maintenance posture.

4-18. PC personnel in the meeting must be immediately notified of any maintenance support performed in their absence. When these maintenance actions take place, they are the exception rather than the rule. Periodic follow-ups and updates throughout the day to PC are made to ensure an accurate and current picture of aircraft readiness. Table 4-1 and table 4-2 (page 4-4) are examples of an agenda shell and may be tailored as required.

<table>
<thead>
<tr>
<th>Roll call</th>
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<tbody>
<tr>
<td>PC OIC</td>
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<td>PC NCOIC</td>
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<tr>
<td>PC clerk/PC ULLS-A (E) administrative</td>
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<td>QC</td>
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<td>Technical supply</td>
</tr>
<tr>
<td>Airframe repair platoon</td>
</tr>
<tr>
<td>Component repair platoon</td>
</tr>
<tr>
<td>Maneuver units</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Administrative data/notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC OIC/NCOIC</td>
</tr>
<tr>
<td>PC/ULLS-A (E) clerk</td>
</tr>
<tr>
<td>ULAS-A (E) send/receive update and production index</td>
</tr>
<tr>
<td>Forms/records</td>
</tr>
<tr>
<td>QC–trends, policy changes, and/or issues</td>
</tr>
<tr>
<td>Technical supply NMCS report brief/zero lines shop stock/recoverable items report status</td>
</tr>
<tr>
<td>Airframe Repair Platoon</td>
</tr>
<tr>
<td>Component Repair Platoon</td>
</tr>
</tbody>
</table>
Table 4-1. Typical AMC/AMT meeting agenda cont’d

<table>
<thead>
<tr>
<th>Maneuver company/troop (each company/troop briefs major changes and support requirements)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maneuver company/troop status brief (changes)</td>
</tr>
<tr>
<td>Flight schedule</td>
</tr>
<tr>
<td>Scheduled maintenance</td>
</tr>
<tr>
<td>Unscheduled maintenance</td>
</tr>
<tr>
<td><strong>AMCOM LAR</strong></td>
</tr>
<tr>
<td><strong>CFSRs</strong></td>
</tr>
<tr>
<td>Aircraft manufacture representative</td>
</tr>
<tr>
<td>Specific aircraft component representative</td>
</tr>
<tr>
<td>Support contract team leader</td>
</tr>
<tr>
<td><strong>PC resource prioritization plan</strong></td>
</tr>
<tr>
<td><strong>Section confirmation briefs</strong></td>
</tr>
<tr>
<td><strong>PC outsourcing requirements brief</strong></td>
</tr>
<tr>
<td><strong>Alibis</strong></td>
</tr>
<tr>
<td><strong>PC back brief</strong></td>
</tr>
<tr>
<td><strong>Commanders closing comments</strong></td>
</tr>
</tbody>
</table>

Table 4-2. Typical ASC PC meeting agenda

<table>
<thead>
<tr>
<th><strong>Roll call</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>PC OIC and assistant PC OIC</td>
</tr>
<tr>
<td>PC NCOIC</td>
</tr>
<tr>
<td>PC clerk/PC ULLS-A (E) admin</td>
</tr>
<tr>
<td>QC</td>
</tr>
<tr>
<td>Technical supply</td>
</tr>
<tr>
<td>Airframe repair platoon</td>
</tr>
<tr>
<td>Component repair platoon</td>
</tr>
<tr>
<td>MTF Section</td>
</tr>
<tr>
<td><strong>Administrative data/notes</strong></td>
</tr>
<tr>
<td>PC OIC, assistant PC OIC, and NCOIC</td>
</tr>
<tr>
<td>PC/ULLS-A (E) clerk</td>
</tr>
<tr>
<td>ULLS-A (E) update and production index</td>
</tr>
<tr>
<td>Forms/records</td>
</tr>
<tr>
<td>QC—trends, policy changes, and/or issues</td>
</tr>
<tr>
<td>Technical supply NMCS report brief and zero balance shop stock/recoverable items report status</td>
</tr>
<tr>
<td>Airframe repair platoon</td>
</tr>
<tr>
<td>Component repair platoon</td>
</tr>
</tbody>
</table>

AMCOM - Aviation and Missile Command
CFSR – Contractor Field Service Representative
LAR – Logistics Assistance Representative
NCOIC – Non Commissioned Officer In Charge
NMCS – Non Mission Capable Supply
OIC – Officer in Charge
PC – Production Control
QC – Quality Control
ULLS-A(E) – Unit Level Logistics System Aviation (Enhanced)
Table 4-2. Typical ASC PC meeting agenda cont’d

<table>
<thead>
<tr>
<th>MTF section</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMCOM LAR</td>
</tr>
<tr>
<td>CFSRs</td>
</tr>
<tr>
<td>Aircraft manufacture representative</td>
</tr>
<tr>
<td>Subcomponent representative</td>
</tr>
<tr>
<td>Support contract team leader</td>
</tr>
</tbody>
</table>

Scheduled maintenance status

Evacuated work order status

PC resource prioritization plan

Section confirmation briefs

Alibis

PC back brief

Commanders closing comments

<table>
<thead>
<tr>
<th>AMCOM - Aviation and Missile Command</th>
<th>OIC – Officer in Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFSR – Contractor Field Service Representative</td>
<td>PC – Production Control</td>
</tr>
<tr>
<td>LAR – Logistics Assistance Representative</td>
<td>QC – Quality Control</td>
</tr>
<tr>
<td>MTF – Maintenance Test Flight</td>
<td>ULLS-A(E) – Unit Level Logistics System</td>
</tr>
<tr>
<td>NCOIC – Non Commissioned Officer In Charge</td>
<td>Aviation (Enhanced)</td>
</tr>
<tr>
<td>NMCS – Non Mission Capable Supply</td>
<td></td>
</tr>
</tbody>
</table>

ATTENDEES

4-19. Commanders will ensure junior leaders attend the PC meeting as an opportunity to observe and develop an understanding of maintenance operations and management, which is an essential building block of leader development. Senior leadership is critical to the success of any maintenance program; therefore, weekly attendance is highly encouraged.

- Battalion/squadron commander.
- Battalion/squadron executive officer.
- Battalion/squadron assistant S-3.
- BAMO.
- Command sergeant major.

4-20. The following personnel should frequently attend PC meetings:

- AMC/AMT or ASC commanders/first sergeants.
- Flight company/troop commanders/first sergeants (aviation operational units only).
- Platoon leaders/sergeants (maneuver platoon, ARP, and CRP).
- SPO and NCOIC.
- PC OIC/assistant PC OIC/NCOIC (meeting facilitator).
- Aviation safety officer (ASO) or unit safety manager.
- PC clerk.
- ULLS-A (E) administrator/clerk.
- Technical supply officer/NCOIC.
- QC OIC/NCOIC.
- Shops officer/NCOIC.
- Maintenance officers/NCOIC.
- MPs.
- Armament officer/NCOIC.
- Contract support maintenance team lead.
- CFSR.
- LAR.
EVALUATING AND ESTABLISHING PRIORITIES OF WORK

4-21. The PC OIC is responsible for evaluating and establishing work priorities. The company/troop commander sets the goals for the MOE, but the ultimate work prioritization responsibility to achieve these MOE falls on the PC OIC. When conflicts arise between supported units and the PC OIC, the PC OIC should establish work priorities in the best interest of the overall battalion/squadron maintenance program with the support of the maintenance leadership team.

4-22. This continuous evaluation of work priorities requires close supervision and follow-up at all levels. Effective communication skills are required to best determine and relay the priorities of the day or week. The establishment of work priorities by the PC OIC results in a balance of workload.

4-23. Incorporating maintenance training to include support personnel that will provide training opportunities in a garrison environment to enhance their military occupational skills and increase overall maintenance performance. The management of military support maintenance, compared to contract support maintenance, must be carefully balanced to maintain Soldier proficiency.

APPLICATION

4-24. Using P4T3 will result in a smoother, more predictable environment for the supported and supporting elements in the performance of inspections or services. Outlined below is an example of the P4T3 process that can be used in the PC meeting to increase communications and establish professional working conditions between the supported and supporting team elements.

AIRCRAFT MAINTENANCE STATUS PROCESSING

4-25. The aircraft daily status report is based on data migration, local area network, or wireless from the maneuver companies. PC will continually update the aircraft status. The LIS server is automatically updated once data migration is complete. The PC clerk is responsible for informing the PC OIC, assistant PC OIC, and NCOIC of any changes.

PRODUCTION CONTROL STATUS BOARD

4-26. The PC board (table 4-3) is a depiction of displayed data on aircraft status, shop operations, or unique issues. Accurate and prompt information recorded on the board is used to control current operations, plan anticipated work, and measure work performed. Although maintenance managers have quick access to information through ULLS-A (E), a well-planned and informative PC board (equipment status board) can serve as a handy, quick-look source of information for the commander and other personnel (such as platoon leaders and section chiefs). The status board serves as a good source of information on the progress of non-standard goals or missions associated with the MOE.

Table 4-3. Example PC board layout

<table>
<thead>
<tr>
<th>Aircraft/System</th>
<th>Status</th>
<th>Fault/Issue</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>037</td>
<td>/</td>
<td></td>
<td></td>
</tr>
<tr>
<td>954</td>
<td>X</td>
<td>Hard landing</td>
<td>Awaiting tool-Bell</td>
</tr>
<tr>
<td>Special tool fabrication</td>
<td>In progress</td>
<td>Spanner wrench out of round</td>
<td>TASMG accepted fabrication work order on 10 Feb 09</td>
</tr>
</tbody>
</table>

4-27. The design of the PC board should be simple and easy. The organization of the board is determined by the individual. Some suggested entries are:

- Current aircraft/system status (updated throughout the day as the status changes).
- Priority of work.
- Status of special tools and equipment (such as hoists, tugs, AGPs, and test sets).
- Reasons for stopped work.
- Work awaiting receipt of parts (can be used to track status of parts for NMCS aircraft).
- Document number and status.
- Significant evacuation work order tracking.
- Phase status (for example, "75 percent" [estimated percentage complete]).

**Maintenance Completion Estimates**

4-28. The PC officer must be able to accurately plan maintenance flow and back brief his commander on aircraft status to complete assigned operational mission cycle. Accurate reporting to higher headquarters is important; however, it is more important to give an accurate estimate to the responsible operational company commander.

4-29. Maintenance completion estimate should incorporate an evaluation of the training level of assigned personnel. The evaluation process allows for the development and training of supportive maintenance crews, which sometimes may extend maintenance downtime on the front end. Variables include but are not limited to number of personnel, individual Soldier experience and time in service/MOS, availability and condition of tools and equipment, and work environment (such as arctic, desert, in a hangar, outside, day, or night). Some variables are easier to assess than others; however, as the maintenance manager gains experience, his or her estimates will become more refined and accurate. The goal is accurate and timely reporting of man-hour estimates to the commander to assist in managing the units and meeting operational requirements.

**Work Order Tracking and Filing System**

4-30. LIS provides an efficient tracking mechanism for maintenance and supply actions. This automated system provides maintenance section and shop personnel with a snapshot in time of maintenance actions taking place within their areas of responsibility.

4-31. Tracking work order status within LIS is the preferred method. There are methods for tracking the status of work orders outside of LIS in the event LIS is not working or available. PC shops will track work orders using the following categories:

- Parts required.
- Waiting parts.
- In shop.
- Maintenance in progress.
- Inspection.
- Test flight.
- Delivery/pick-up.

**Component Exchange**

4-32. Component exchange and be performed in two ways, repairable exchange and control exchange.

**Repairable Exchange**

4-33. RX stock is maintained at the ASB distribution company SSA. The SSA provides on-hand recoverable repair items for issue on a one-for-one basis. RX items are normally repaired by the ASC component repair section and then placed back into stockage at the SSA. If the component or LRU cannot be repaired, it is retrograded through supply channels. An RX listing (containing the NSN, item description, end-item application, and authorization) is distributed to all units supported by the ASB. RX items are not normally authorized on the unit stock shop list. For further guidance regarding RX items, see DA PAM 710-2-1.
CONTROLLED EXCHANGE

4-34. Controlled exchange is the removal of serviceable components from unserviceable, economically reparable end items for immediate reuse in restoring a like item or weapon system to a mission capable condition. AR 750-1 sets forth the following criteria:

- Approval authority remains with the commander of the organization in formal control of the system.
- Controlled exchange is authorized only when—
  - It is the only means of providing a mission capable (MC) end item or weapon system to a supported unit within the period indicated by the initial priority designator (PD) on the maintenance request.
  - Approved by the commander, or a designated representative.

4-35. Controlled exchange is an Army maintenance management tool according to approvals as directed in AR 750-1 and TM 1-1500-328-23. Aviation maintenance SOPs must contain controlled exchange policies and procedures. Controlled exchange actions require stringent and meticulous record-keeping procedures, particularly when transferring historical data between aircraft records. There must be a continuous dialogue between PC, QC, technical supply, and maintenance personnel before, during, and immediately after the controlled exchange.

UNSCHEDULED MAINTENANCE MANAGEMENT PROCEDURES

4-36. An unscheduled maintenance requirement occurs when an aircraft experiences an unexpected malfunction, premature component breakdown, or battle damage. The PC OIC/assistant PC OIC/NCOIC prioritizes, coordinates, manages, and tracks unscheduled repairs.

SCHEDULED MAINTENANCE MANAGEMENT PROCEDURES

4-37. Scheduled maintenance takes place anytime an aircraft phase, preventive maintenance service, or scheduled component replacement is conducted.

SCHEDULED SYSTEM

4-38. A scheduling system promoting efficient workflow is needed to ensure customers receive their aircraft with the least possible delay. Many factors must be considered when developing a scheduling system. These factors may include the current workloads and priorities of the supported units, the availability of tools, and the supply of major components, parts, and hardware.

4-39. A PC operation requires a scheduling system and preplanned workflow. The PC element must track the following information to establish maintenance week priorities compatible with the unit mission:

- Mission requirements and priorities of supported commanders, to include numbers of aircraft and scheduled systems, and specific capabilities required for those aircraft and systems.
- Aircraft maintenance flow, by flying hours remaining for each assigned aircraft until upcoming scheduled maintenance inspections.
- Current total number of flight hours, status of avionics and armament, and the operational status of each assigned aircraft.
- Work in progress and work deferred/delayed.
- ASC work in progress and work deferred/delayed.
- Time-change requirements for components, by individual assigned aircraft tail number.
- Non-flying enabling systems scheduled maintenance intervals.

SCHEDULED MAINTENANCE MANAGEMENT

4-40. Scheduled maintenance takes place anytime an aircraft phase, progressive phase maintenance, preventive maintenance service, scheduled component replacement or non-flying system service (such as night vision goggles or GSE) is conducted. Scheduled maintenance actions and procedures can suffer from a
lack of coordination and communication. Poorly coordinated scheduled maintenance events will have a negative effect on the battalion/squadron aircraft readiness. FORSCOM established goals for periodic/phase completion by MDS are as follows:

- AH-64D/E-250hr inspection should not exceed 11 working days. 500hr inspection should not exceed 26 working days.
- CH-47F-200hr PMS should not exceed 18 working days. 400hr PMS should not exceed 36 working days.
- UH-60A/L/M-360hr PMI should not exceed 20 working days. 720hr PMI should not exceed 30 working days.

4-41. To ensure minimum disruption to the supported unit mission (training/tactical) and aircraft/system readiness, PC personnel will ensure a suitable maintenance program is in place to coordinate all maintenance and sustainment actions. Contents of the maintenance program must be fully communicated, by way of a maintenance SOP, to all levels of command within the battalion/squadron. Battalion/squadron leadership must accept responsibility and provide command emphasis in support of the maintenance program.

4-42. Maintenance functions are designed to maintain the fleet and systems to a standard allowing the operational commander to accomplish the mission on time, every time. The PC office should have visibility on all major scheduled maintenance requiring internal and external support. The visibility of maintenance actions allows the PC OIC/assistant PC OIC/NCOIC to coordinate and forecast support, allowing for reaction time.

**DEFERRED/DELAYED MAINTENANCE MANAGEMENT**

4-43. The PC OIC/assistant PC OIC/NCOIC prioritizes maintenance actions daily. Occasionally, insufficient personnel, equipment, and/or time may exist and the PC OIC/assistant PC OIC/NCOIC decides which aircraft/components are repaired or deferred/delayed.

4-44. The commanders designated representative is the approval authority for all deferred maintenance actions. Deferred/delayed maintenance actions cannot be postponed indefinitely, they must be coordinated and scheduled to be performed at the earliest opportunity. Deferred/delayed maintenance actions should be completed when an aircraft experiences an unscheduled maintenance requirement or is scheduled for a preventive maintenance service or phase. If a deferred/delayed maintenance procedure is not corrected during an unscheduled repair, preventive maintenance checks and services (PMCS), or phase, then the owning unit commander will sign or validate the explanation in the logbook extending the deferral/delay beyond the repair opportunity. The PC section ensures all follow-on deferrals/delays receive command review and signature.

4-45. Deferred/delayed maintenance should be monitored and minimized by PC and maneuver platoons/companies. In monitoring deferred/delayed maintenance work orders, PC evaluates the open fault status for each aircraft during mandatory monthly, or more frequent, recurring logbook reviews for excessive deferred/delayed maintenance. The trending of deferred/delayed maintenance should be tracked for faults and work orders of less than 30 days, 31 to 60 days, and more than 60 days. Faults or work orders deferred/delayed for 31 to 60 days should receive PC office and maneuver platoon/company/troop emphasis and those more than 60 days should receive command review to determine the validity and reasons for the deferral/delay. PC sections resource as necessary to eliminate work order backlogs. These work orders are associated with a system requirement and indicate an area where combat power can be generated. The backlog report, as part of the production index, is part of the unit MOE.

**INTERNAL MAINTENANCE SUPPORT COORDINATION**

4-46. Internal maintenance support is coordinated at the daily PC meeting by the PC OIC/assistant PC OIC/NCOIC. Internal maintenance support, whenever possible, is aligned with the daily operations of the maneuver companies to ensure a matched and responsive support effort. Internal maintenance support not only conducts work-order requests for maintenance, but the PC section will also assist the maneuver units by reviewing aircraft logbooks during each reporting period to identify open faults for coordination with PC.
EXTERNAL MAINTENANCE SUPPORT COORDINATION

4-47. The AMC/AMT PC OIC/NCOIC plans and coordinates all external maintenance requests with the ASC PC office. He or she also conducts daily transmittals of LIS information as necessary to track ongoing maintenance actions. The ASC PC officer will coordinate for all evacuation work orders outside the brigade or ACS. The PC OIC/assistant PC OIC/NCOIC should plan and allow for as much lead-time as possible to maximize the P4T3 process.

BATTLE DAMAGE ASSESSMENT AND REPAIR

4-48. The purpose of BDAR is to rapidly return disabled equipment to combat or enable the equipment to self-recover. BDAR is the responsibility of the commander (based on mission, enemy, terrain and weather, troops and support available, time available, and civil considerations) and is accomplished by the operator/crew and field maintenance personnel. The commander is responsible for the training and resourcing of BDAR and DART operations and delegates those missions to an OIC. See FM 3-04.513 for more information.

4-49. The assigned OIC is responsible for training, coordinating, organizing, assembling, and assigning the appropriate DART package to affect aircraft recovery. The AMC/AMT OIC will coordinate with the ASC if recovery is beyond the capability of the AMC/AMT. If assigned to the ASC, the OIC will coordinate with the AMC/AMT to effect recovery of the downed aircraft.

MAINTENANCE OPERATIONAL CHECKS AND MAINTENANCE TEST FLIGHTS COORDINATION

4-50. The PC OIC will coordinate all MOCs and MTFs at the PC meeting with the supported company/troop and, on case-by-case basis, throughout the duty day as required. The ASC will coordinate MOCs and MTFs at PC meetings with the MTF section representative. After a successful MOC or MTF, the aircraft status symbol is changed according to DA PAM 738-751.

AIRCRAFT PHASE MAINTENANCE PROGRAM MANAGEMENT

4-51. Each maneuver company/troop is individually responsible for managing the flow of aircraft into phase by hours or days (figure 4-1, page 4-11). The companies work with one another and the AMC/AMT PC OIC/NCOIC to sequence major inspections that reduce lag times created by limited assets for performing inspections.
4-52. Maintenance units can support a predetermined number of aircraft in phase at any time (capacity), and aviation maneuver units want to avoid a large percentage of assets in scheduled maintenance simultaneously. This multi-phase condition reduces operational flexibility and limits training opportunities. When managing the scheduled maintenance program, predetermined hourly intervals generally determine approximate induction dates for a phase or progressive maintenance scheduled inspection. This process places some limits on predictability but maximizes the hours flown between scheduled maintenance. To enhance predictability when using the hourly method, units either fly or rest aircraft to support the sequential flow of systems into the program, as phase capacity becomes available.

4-53. In operations with high or very predictable tempos, predetermining a date of induction, regardless of hours flown on the aircraft, can yield a predetermined amount of bank time sufficient to support foreseeable operations. This method will sometimes induct aircraft into scheduled maintenance early, sacrificing short-term bank hours for overall program sustainment. This date generated predictability can ease pre-maintenance supply and verification operations challenges such as phase kit ordering, time between overhaul (TBO) acquisition, MTF scheduling and logbook pre-inspection, while producing the required available aircraft hours between scheduled events.

4-54. The AMC/AMT PC OIC will assist the maneuver companies in their flow management and manage the overall battalion/squadron phase flow to ensure multiple company/troop aircraft are not in phase at the same time. The PC OIC/NCOIC monitors and manages spacing between major scheduled maintenance events and phase maintenance inspections.

4-55. The coordinated scheduled maintenance effort includes consultation with the BAMO/AMO and ASC PC. This ensures adequate phase maintenance work orders reach the ASC to maintain proficiency.
Chapter 4

COORDINATING PHASE MAINTENANCE PROCEDURES

4-56. PC should coordinate closely with QC personnel when preparing inter-shop maintenance requests and accompanying forms and records. DA Form 2408-13-1 (Aircraft Inspection and Maintenance Record), DA Form 2408-13-2 (Related Maintenance Actions Record), DA Form 2408-13-3 (Aircraft Technical Inspection Worksheet), and DA Form 2407 should specify, in detail, all work required or inspections to be performed. The following sequence applies to a typical phase maintenance (TM 1-1500-328-23):

- Logbook review and phase parts requisition.
- Prephase brief.
- Prephase MTF.
- Aircraft arrival.
- Forms and records flow.
- Final inspection.
- Post-phase MTF inspection.
- Release of aircraft.

Logbook Review and Phase Parts Requisition

4-57. Prior to induction and near the five-percent system hours remaining point, the accepting unit will conduct a thorough logbook review of entries, deferrals/delayed entries, and historical data to prepare for induction. This allows supply and management anticipation for components, parts, stock, and special tools.

Prephase Maintenance Test Flight Inspection

4-58. During the prephase test flight inspection, maintenance personnel should conduct the following actions:

- Whenever practical, MPs should perform a prephase test flight on aircraft scheduled for phase.
- The maintenance and PC officers should review the results to determine the platoon and/or section work assignments.
- All faults discovered during the MTF or MOC event are entered on the DA Form 2408-13-1 with the appropriate aircraft status symbol.
- The assigned TI should participate in the test flight when possible.

Aircraft Arrival

4-59. Upon aircraft arrival at the maintenance facility, the—

- QC personnel and the owning unit crew chief or representative perform a joint DA Form 2408-17 (Aircraft Inventory Record) inventory.
- PC accepts the aircraft and logs it on DA Form 2405 (Maintenance Request Register).
- PC, along with QC, receives and reviews aircraft forms and records to include DA Form 2407, the aircraft equipment logbook, historical files, and LIS computer.
- QC personnel conduct a joint aircraft inventory with the supported unit before acceptance is considered complete.

Forms and Records

4-60. When reviewing forms and records, PC and QC personnel will conduct the following reviews:

- PC personnel will complete DA Form 2407; a copy of the receipt and inventory sheet go to the supported unit representative.
- PC assigns and directs the workflow through the various platoons and/or shops, entering all maintenance requirements on the PC board and LIS.
- As work progresses through the platoons, shops, and sections, QC personnel conduct in-progress inspections.
Final Inspection

4-61. Before and during final inspection, the following will occur:

- PC personnel receive and consolidate all documents relating to the aircraft maintenance performed to ensure all required maintenance was completed.
- The phase team NCOIC notifies QC the aircraft is ready for final inspection; the phase team NCOIC provides necessary forms and records. This inspection—
  - In addition to recorded in-progress inspections, ensures thorough, quality maintenance has occurred and an airworthy aircraft is presented to the owning unit.
  - Verifies inspection plates and panels have been correctly reinstalled and the aircraft has been properly serviced and cleaned.
- QC personnel check forms and records in the aircraft equipment log assembly (records) to ensure all entries are neat, correct, and up-to-date.

4-62. After final inspection, the following will occur:

- The TI signs DA Form 2407.
- The TI determines whether an MOC or MTF is required according to TM 1-1500-328-23 or appropriate aircraft manuals; if an MOC or MTF is required, PC is notified.
- Maintenance personnel will annotate in the aircraft logbook if an MOC or MTF is required.
- Authorized maintenance personnel will make appropriate entries in the LIS computer.

Postphase Maintenance Test Flight Inspection

4-63. After phase inspection completion, a MTF inspection will be conducted:

- During the test flight, a qualified MTP will perform the post-phase test flight inspection of the aircraft.
- If the MTP does not release the aircraft after the test flight, the MTP makes the required entry on DA Form 2408-13-1. The deficiency or fault is corrected and another test flight is conducted. This cycle continues until the aircraft test flight is acceptable.
- Maintenance personnel ensure all inventoried equipment is inside and properly stored in the aircraft after the test flight, and then the aircraft is ready for release.
- QC personnel return the completed paperwork, forms, and records to the PC shop.
- PC personnel notify the owning unit the aircraft is ready for delivery.

Release of Aircraft

4-64. When releasing the aircraft to the owning unit, the following will occur:

- QC personnel and the owning unit crew chief or representative perform a joint DA Form 2408-17 inventory.
- The PC clerk enters the Julian date on form when aircraft maintenance was completed.
- The owning unit representative completes DA Form 2407, signifying acceptance and delivery of the aircraft.
- Authorized maintenance personnel will make appropriate entries in the LIS computer.

MANAGING AIRCRAFT SCHEDULING FLOW

4-65. An efficient, properly managing aircraft schedule flow will provide the maximum number of aircraft available on a consistent basis for mission support.

Block Scheduling Method (Flow Chart)

4-66. The benefits of the block scheduling system include the following:
Flight companies have flexibility in selecting aircraft for missions during the operation. Flight companies can match the aircraft to the mission. It spreads the responsibility of aircraft assignments and staggers the aircraft on a flowchart. The maintenance officer can plan his workload instead of having to react to everyday changes in missions and unscheduled maintenance. The flowchart posture should still be at an optimum level after the mission/operation.

4-67. Block scheduling provides flight companies with flight-hour blocks computed from the battalion average. The PC maintains the overall battalion flow chart in the AMC. For this system to be successful, battalion commanders must reinforce their maintenance officers’ guidance and ensure that flight companies do not over fly their given block times. To determine how many hours that each aircraft will be allowed to fly during a given period, the maintenance officer uses the following formula:

- **Step 1:** Find the average hours per aircraft by dividing the total number of hours to be flown by the number of aircraft to be flown (for example, 180 hours to be flown, divided by 9 aircraft, equals 20 average hours per aircraft).
- **Step 2:** Plot the average hours per aircraft on the flowchart below the highest-time flyable aircraft; then draw a line parallel to the optimum bank-time line.
- **Step 3:** Compute the difference between each aircraft’s current position on the flowchart and the new parallel line; these figures are the maximum amount of flight hours that the particular aircraft can fly during the mission. (For example, aircraft 955 is 26 hours above the lower optimum line; therefore, it will be given a block time of 26 hours to fly.)

4-68. The company flight schedule allows the maximum hours required to support the mission. The platoon sergeant or maintenance officer assigns aircraft aligned with the anticipated flight schedule requirements. Aircraft are assigned to flight crews with a minimum and maximum flight-hour requirement that must be flown to establish and maintain the flow of aircraft into scheduled maintenance events or to provide aircraft separation as required. When planning scheduled maintenance events, the assigned flight crews should fly the anticipated scheduled times. Under flying is, at times, as harmful to the flow of scheduled maintenance as over flying the aircraft.

**SLIDING SCALE SCHEDULING METHOD (FLOWCHART)**

4-69. The maintenance manager should observe the following rules when he uses the sliding scale maintenance scheduling method (flowchart):

- Update the chart at least once each day that aircraft fly (if using ULLS-A, ensure that aircraft data are sent to PC daily).
- Fly aircraft that are above the optimum line to attempt to get them down to the line.
- Hold (do not fly) aircraft that are below the optimum line to attempt to bring them up to the line, or fly the minimum number of hours.
- Count aircraft that are in phase inspection zero towards actual bank time.
- Count aircraft that are grounded for any reason (other than phase) towards actual bank time.

*Note.* Remember that total actual bank time is only a relative indicator of the maintenance scheduling process.

4-70. Phase/periodic inspection planning is a critical part of mission readiness for aviation units. Aviation commanders/PC must ensure that aircraft phases are planned well into the future. Although many factors influence the best time for accomplishing aircraft phases, training exercises and deployments can have a major effect on the unit’s bank time.

4-71. Flying more than one aircraft into phase at one time can severely affect and reduce the unit’s operational readiness. To alleviate crisis management, the unit’s flying-hour program, deployments, training, bank time, and the availability of resources (such as tools, maintenance personnel, repair parts, and special equipment) must be carefully considered when maintenance personnel are planning phases.
4-72. The aircraft flowchart is an important tool for scheduling aircraft for phase and for deciding which aircraft should fly certain missions. Figure 4-2 shows an example of a typical flowchart for a typical assault unit. The diagonal line represents the optimum bank time, or time until phase, for each individual aircraft. This flowchart demonstrates a unit with good total actual bank time (above optimum) and good separation between phases.

![Aircraft Flowchart](image)

**Figure 4-2. Aircraft flowchart with good bank time**

4-73. If every aircraft were exactly on the optimum line, this would represent the ideal bank time, or 1,750 flying hours, available. The optimum bank time could be expressed in terms of percentage available; for example, 50 percent bank time. Obviously, this is unrealistic because some aircraft will be above the line and some will be below the line. Therefore, the only way to obtain the actual bank time is to add the total flying hours remaining on all aircraft until the next phase/periodic inspection.

4-74. Thus, total actual bank time is only a relative indicator of how well the maintenance scheduling process is working compared to the ideal, or optimum, bank-time formula. Under heavy flying conditions (surge), bank-time available will obviously be lower than desired. In preparation for a surge, it is possible to push aircraft into phase earlier than under a normal flying regimen to increase the overall bank time available to the commander.

4-75. Figure 4-3, page 4-16, shows a flowchart of a unit with less than the optimum bank time. This unit has one aircraft (953) in phase and three aircraft within 25 hours of phase (970, 988, and 989). This unit has aircraft “stacked up” and awaiting phase. Although this unit may be posting good operational readiness rates on its end-of-month report, the unit is not able to schedule certain aircraft for missions because of low hours on nearly half of its fleet. Because of the low availability of aircraft hours, the unit’s effectiveness to perform tactical/training missions is reduced.
4-76. The flowchart is a simple, but effective, method that maintenance officers use. Using the flowchart—
- Prevents an unnecessary backlog of scheduled maintenance inspections under normal conditions.
- Prevents a corresponding sudden surge in requirements for aircraft parts.
- Allows the unit maintenance officer a degree of control over individual aircraft hours flown.
- Provides a graphic depiction of future scheduled maintenance requirements.

OPERATIONAL READINESS FLOAT

4-77. AR 750-1 authorizes operational readiness float (ORF) as an Army aviation maintenance regeneration enabler. ORF is a strategic asset deployed to an installation consisting of an authorized quantity of assets used to maintain established readiness levels or meet training availability requirements during peacetime. These assets are maintained by TDA and MTOE maintenance activities with a field or sustainment maintenance mission to exchange with supported units when repairs cannot be accomplished within Army command-established guidelines.

SECTION III – LOGISTICS INFORMATION SYSTEMS FUNCTIONS

4-78. PC, with assistance from QC personnel, commissions and decommissions the deployed server. The LIS deployed server allows a unit the flexibility to “push” aircraft away from the primary database to support area operations. The deployed server enables maintenance personnel to migrate maintenance-related data back to PC for flight hours and readiness reporting purposes.

4-79. When conducting split-based operations, the deployed server function provides a unit with the capability of deploying aircraft to support operations away from the unit primary database. The deployed server allows maintenance managers access to management functions, except program administrator functions, while tracking maintenance actions. The PC functions for LIS software are innovative and assist the PC user with various tools to enhance the following:
- Tracking aircraft status, reporting, and flying hours according to AR 700-138.
- Maintaining a work-order log.
- Initializing and processing work-order requests.
- Facilitating aircraft transfers.
- Initiating and tracking parts requisitions.
- Monitoring overall maintenance operations and generating required reports.

DEPARTMENT OF THE ARMY FORM 1352-1

4-80. The DA Form 1352-1 (Daily Aircraft Status Record) provides an accurate reporting of aircraft inventories, maintenance status, and flying time. The DA 1352-1 daily screen is displayed, providing access to the authorized user for making desired individual entries onto the form.

DEPARTMENT OF THE ARMY FORM 1352

4-81. The Army Materiel Status System End of Report period report and DA Form 1352 (Army Aircraft Inventory, Status and Flying Time) provide HQDA and commanders at all levels, with accurate reporting of aircraft inventory, status, and flying time. Commander’s statement along with the aircraft status, which requires mandatory comment by aircraft serial number, will include logistics support problems causing other than FMC aircraft. For further information see the following link: https://www.us.army.mil/suite/folder/5248722.

4-82. DA Form 1352 provides PC personnel with an updated account of the following:
- Total aircraft hours flown.
- Total FMC time.
- PMC supply time.
- PMC maintenance time.
- Total NMCS.
- Total sustainment maintenance time.
- Total field-level maintenance (ASC) time.
- Total AMC time.
- Daily aircraft hours flown.
- Total number of landings.
- Total number of autorotations.

MONITORING NOT MISSION CAPABLE SUPPLY DOCUMENT NUMBER STATUS

4-83. The PC OIC/assistant PC OIC/NCOIC monitors the daily status of Class IX (Air) repair parts affecting the status of a work order or the overall mission readiness of an aircraft.

4-84. Technical supply reports the status of all high priority (NMCS) and anticipated non mission capable supply (ANMCS) parts requests during the daily PC meeting. Any changes in the status of these repair parts are briefed as soon as possible to the PC OIC/assistant PC OIC/NCOIC.

4-85. The PC OIC/assistant PC OIC tracks the weekly expenditures on bench stock and unscheduled repair part requests, as well as turn-in credit. This information is provided by the technical supply OIC to the PC section and the maintenance unit commander to track the unit overall aviation funding financial fitness. The BAMO, AMO, and the SPO must be notified if prolonged maintenance downtime results from the lack of NMCS/ANMCS and high PD requested repair parts.

4-86. The source of supply (SOS) item manager is the source for tracking information on a given high PD and/or high priority repair part request. They focus on processing high PD requests and the release and shipment of critical repair parts. Through LIS PC personnel can track high PD information, financial transactions, and open the document register.
AIRCRAFT TRANSFERS

4-87. TM 1-1500-328-23 identifies the standards of serviceability for aircraft transfers. A transfer is defined as a change of property accountability from one organization to another. The cost of transfer, inspections, and maintenance is the responsibility of the transferring activity.

4-88. Historical forms and records provide commanders and maintenance managers with information on aircraft transfers (gains/losses). These records must be controlled and kept safe from loss or damage and are sent to the gaining unit separate from the aircraft.

Note. Before any type of aircraft transfer, a DA Form 1352 must be completed with gain/loss code and the gain/loss comments on the back of the form.
Chapter 5
Quality Control

This chapter provides QC personnel with a “how-to” for identifying and reviewing standards of repair, overhaul, modification, SOF, and other required maintenance functions. This chapter also provides QC personnel with an overview of QC management operations procedures. Technical inspections are the command system of checks and balances. These inspections ensure high-quality maintenance and safety of Army aircraft.

SECTION I – DUTIES AND RESPONSIBILITIES

5-1. The quality control section is responsible for the quality assurance of all work performed by assigned technical inspectors. This is an extremely technical position and requires a high-level of technical expertise and aircraft systems understanding.

QUALITY CONTROL OFFICER-IN-CHARGE

5-2. The AMC/AMT or ASC commander selects the QC OIC, on orders, based on his or her skills, qualifications, and experience. It is preferred that the QC OIC be a graduate of the aviation maintenance officer course. The officer is responsible for the internal management of the QC section, to include quality assurance of all work performed by TIs. The QC OIC coordinates priority of work with the unit PC OIC and QC NCOIC. The QC OIC executes the ULLS-A (E) unit training program.

QUALITY CONTROL NONCOMMISSIONED OFFICER-IN-CHARGE

5-3. The QC NCOIC is an authorized MTOE position; the Soldier chosen is placed on orders by the AMC/AMT or ASC commander based on his or her skills, qualifications, and experience. Generally, the NCOIC is one of the senior maintenance NCOs assigned to the unit. Preferably, the QC NCOIC is a graduate of the senior leader course. The NCOIC is directly responsible for the operational management of the QC section. The QC NCOIC is responsible for the development and execution of the TI training program as well as training and progression of the TIs. They coordinate and establish priorities of work with the QC OIC. In the absence of the OIC, the NCOIC performs all duties of the QC OIC. Additionally, the NCOIC distributes the work and supervises the TIs for quality assurance of work assigned. The QC NCOIC also coordinates the efforts of the QC section.

QUALITY CONTROL TECHNICAL INSPECTORS

5-4. The unit commander selects TIs, on orders, based on their skills, qualifications, and experience. Preferably, TIs are advanced leader course graduates. They are responsible to the QC OIC, QC NCOIC, and ultimately, the aviation maintenance commander for quality assurance. TIs are placed on orders signed by the first Lieutenant Colonel in the chain of command. This procedural step enables flexibility in the inspection of aircraft across the entire unit.

5-5. TIs are under the operational control, not supervision, of the PC officer. TIs train according to the established TI program in the QC section. The QC OIC or NCOIC distributes the work and supervises the TIs to meet the PC officer operational maintenance requirements. TIs serve as primary instructors for ULLS-A (E) training program.
5-6. The QC OIC or NCOIC will serve as the TIs’ rater. If the QC section does not have an OIC or NCOIC, the assigned commander rates the TI. This rating scheme allows TIs to remain objective in their quality assurance duties and ensures the crews’ overall safety remains their goal.

5-7. TIs are the commander-designated representatives in aircraft SOF areas and responsible for:
- Airworthiness of the aircraft.
- Component and shop inspections.
- Maintaining the master reference library.
- Reviewing publications, forms, and records for currency and accuracy.
- Ensuring all performed maintenance procedures comply with TMIs and applicable references.

*Note.* Most aviation maintenance contracts require technical inspection completion as part of any procedure. Ensuring contractor TIs possess appropriate certification to inspect aircraft maintenance tasks is challenging when complying with ARs. The entire maintenance team, to include COR and GFR, agree on and publish the requirements baseline for contractor TIs and determine validation and approval procedures to support their contractor mission.

### SECTION II – MANAGEMENT

5-8. The importance of the technical inspector cannot be underestimated and must be closely managed.

#### DELEGATION OF AUTHORITY ORDERS

5-9. The unit commander must approved delegation of authority orders for performing specific duties. This authority is designated, in writing, by memorandum. The memorandum will state the functions, responsibilities, and duration of assigned duties.

5-10. Completed delegation of authority orders (memorandums) are maintained on file until revoked, rescinded, or no longer applicable. Units will maintain orders (memorandums) on:
- Commander (assumption of command orders).
- TIs (DA PAM 738-751).
- Limited TIs (DA PAM 738-751).
- MEs and MPs (AR 95-1 and TM 1-1500-328-23).
- Unit safety officer and NCO (AR 385-10).
- Personnel signing equipment and component condition tags for turning in components and equipment (aircraft maintenance only) (DA PAM 738-751).
- Personnel authorizing evacuation of aircraft with a grounding condition (X) status for a one-time evacuation mission (DA PAM 738-751).
- Personnel authorized to change an aircraft with a grounding condition (X) status to (—) status for the performance of a one-time test flight (DA PAM 738-751).
- Personnel inspecting aircraft first aid kits (TM 1-1500-328-23).
- Weight-and-balance technician (AR 95-1) and (AR 95-23).
- Technical supply officer.
- TMDE support coordinator and alternate (AR 750-43).
- Publications officer or NCO (DA PAM 25-40).
- Corrosion prevention and control (CPC) program monitor (TM 1-1500-328-23).
- Foreign object damage (FOD) prevention officer and NCO (AR 385-10).
- Personnel responsible for the FOD prevention plan (AR 385-10).
- AOAP monitor (TB 43-0211).
- Unit maintenance (PC) officer (AR 750-1).
- Controlled exchange officer (AR 750-1).
• Records management officer (AR 25-400-2).
• ULLS-A (E) administrator.

5-11. Army publications affecting the above designations are reviewed periodically for changes and revisions.

LIMITED TECHNICAL INSPECTOR APPOINTMENT

5-12. The commander may appoint a Soldier on limited TI orders who has not met the recommended requirements according to paragraph 5-3. The TI limitations are annotated on the memorandum, and the Soldier is required to remain within the written limits. Limited TIs train according to the TI training program established by the QC shop.

COMMANDER’S TECHNICAL INSPECTOR INTEGRATION

5-13. Commanders should interview or assess TI candidates to ensure proper integration into the unit QC operation. This is especially useful during high turnover or high tempo operations and provides the commander with a standard of reference when assigning duties to newly assigned or recommended TI candidates. This allows commanders to match personnel with the proper amount of TI responsibility relative to their skills and experience.

PROCEDURES

5-14. QC of a completed maintenance procedure with the appropriate logbook and form entries by the TI completes the maintenance cycle; these procedures are considered a management function. This process ensures maintenance is performed according to maintenance manuals for specific aircraft. QC management is coordinated with PC and matched to the maintenance workload to maintain maximum productivity, efficiency, and effectiveness.

5-15. Well-designed QC procedures assure published quality assurance standards are met and maximum effective production is balanced with quality without lowering standards.

SECTION III – RESPONSIBILITIES

5-16. The quality control section is responsible for the oversite of time before overhaul items, shop inspections, and test, measurement, and diagnostic equipment (TMDE).

AIRCRAFT AND COMPONENT INSPECTIONS

5-17. Safety of the aircraft and crew depends on—
• A rigorous aircraft inspection before, during, and after a maintenance action is conducted.
• Compliance with all applicable maintenance publications and references.

Note. TM 1-1500-328-23 contains information on the preventive maintenance inspection system, acceptance inspection, transfer inspection, and in-storage inspection.

TRACKING AIRCRAFT TIME BEFORE OVERHAUL AND RETIREMENT LIFE COMPONENTS

5-18. QC personnel use computerized printouts or a TBO and retirement life component chart to monitor the in-service time of all aircraft components requiring replacement on an hour, cycle, meter, or calendar basis. For a list of these components, refer to the applicable aircraft maintenance manual. To track TBO by MDS refer to https://tammssarestone.army.mil then select “MCDS” in the upper left corner of the page and follow the instructions.

5-19. TIs ensure the TBO or retirement life is not over-flown unless specifically authorized in TM 1-1500-328-23. TIs review the TBO chart or computerized printouts and update information periodically but not less
than the reporting period (see AR 700-138 for reporting criteria) and when reportable components are replaced.

**Note.** Any method of tracking TBO or retirement components is acceptable; however, the preferred method is through ULLS-A (E). The importance of not over-flying a repair part or component cannot be overstated.

5-20. The three variations of the TBO chart are:
- Time-change component schedule chart (figure 5-1).
- Time-change bar graph component chart (figure 5-2, page 5-5).
- TBO report generated by ULLS-A (E) (table 5-1, page 5-5).

5-21. TBO reports (major component listings) produced by ULLS-A (E) track replacement of aircraft components and are generated by part number or work unit code. If computerized printouts are used, ensure they contain all required information (table 5-1, page 5-5) and maintain a separate disk copy in the QC office. QC personnel notify PC, maintenance officers, and NCOs when 100 hours or less remain until replacement of hourly components and/or when two months remain until replacement of calendar components. In most cases, this notification allows adequate time for advance ordering of replacement parts. TBO notification hours may vary depending on OPTEMPO and/or operational environment.

**Note.** Coordination and follow-up of existing aircraft TBO parts requests are made by unit maintenance personnel according to the unit maintenance SOP.

![Figure 5-1. Sample format for a time-change component schedule chart](image-url)
MAINTENANCE AND SHOP SAFETY INSPECTIONS

5-22. QC inspections of maintenance and shop areas are detailed with the overall goal of establishing sound and disciplined maintenance procedures and practices. A QC inspection focuses on the maintenance facility, including maintenance and shop areas (safety).

5-23. When performing the maintenance and shop safety and equipment inspection, TIs check for cleanliness, serviceability and absence of corrosion on GSE. The inspection also includes checking for unobstructed fire lanes, serviceability of the hangar, serviceability of the fire extinguishers, and installation

**Note.** Active duty organization, full-time ARNG Army Aviation Support Facilities, and full-time USAR Aviation Support Facilities will conduct these inspections monthly. Part-time ARNG (M-Day) and USAR (TPU) organizations will conduct these inspections quarterly.

5-24. Safety inspection forms are maintained and filed in the QC section according to AR 25-400-2. A copy of the inspection is given to the appropriate shop or maintenance section NCOIC for corrections of any deficiencies. Inspectors will forward copies of the inspection results to the ASO or unit safety manager to incorporate uncorrected deficiencies into the safety information collection and analysis program and hazard log for tracking. If deficiencies are found, shop or maintenance sections are re-inspected to ensure compliance.


**Note.** The ARMS program provides aviation personnel with expert technical assistance and on-site evaluations, as mandated by AR 95-1 and AR 95-23 to all units assigned to FORSCOM, TRADOC, Eighth United States Army, Intelligence and Security Command, and United States Army European Command aviation units. Units seeking ARMS information or assistance can find more information at [https://www.us.army.mil/suite/page/592726](https://www.us.army.mil/suite/page/592726). For all other Army command units in need of ARMS checklists, see the Army command ARMS inspection team designated POC.

5-26. ATP 4-43, TM 1-1500-204-23-1, TM 1-1500-204-23-7 and TM 1-1500-204-23-9 manuals outline specific safety precautions, specifically risk management guidelines.

**TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT UTILIZATION**

5-27. QC inspectors use TMDE to obtain critical measurements and monitor maintenance procedures. Safe, economical operation of Army aircraft depends on the skilled use of TMDE in a comprehensive maintenance program. Refer to TB 43-180 to identify TMDE requiring cyclic calibration or repair support by TMDE users.

**AIRCRAFT WEIGHING REQUIREMENTS**

5-28. This section provides weight and balance management requirements.

**WEIGHT-AND-BALANCE REQUIREMENTS**

5-29. Flight characteristics and structural limitations of aircraft are directly dependent upon conditions of weight and balance. Gross weight and center of gravity have a bearing on performance, stability, and control of the aircraft. ASC maintenance personnel perform aircraft weight-and-balancing procedures. AMC/AMT personnel appointed on aircraft weight-and-balance orders by the AMC/AMT commander can conduct or assist ASC maintenance personnel when weighing their assigned aircraft. To prevent accidents or hazardous conditions, personnel must adhere to policies and procedures outlined in AR 95-1, AR 95-23, DA PAM 738-751, and TM 55-1500-342-23.

**WEIGHT-AND-BALANCE RECORDS**

5-30. The assigned weight-and-balance technician maintains the aircraft weight-and-balance records. TIs coordinate with the weight-and-balance technician when maintenance on the aircraft could affect weight and balance. Refer to AR 95-1, AR 95-23, and TM 55-1500-342-23, aircraft operator manual, and aircraft TMs
for additional information and guidance. The aircraft operator manual and applicable TMs contain weight-and-balance data.

Note. The automated weight-and-balance system authorization and paper methods are the only authorized methods for computing weight and balance.

5-31. The manufacturer inserts all aircraft-identifying data on the various charts and completes all forms before aircraft delivery. DD Form 365 (Weight and Balance Personnel, Record of), DD Form 365-1 (Weight Checklist Record, Chart A-Basic), DD Form 365-2 (Weighing Record, Form B-Aircraft), DD Form 365-3 (Weight and Balance Record, Chart C-Basic), and DD Form 365-4 (Weight and Balance Clearance Form F-Transport/Tactical), charts, and other pertinent data pertaining to aircraft weight-and-balance are maintained in a permanent binder. The binder and forms list the aircraft designation and serial number. Weight-and-balance technicians annotate any changes affecting the aircraft weight and balance on these forms.

5-32. Weight-and-balance forms for each aircraft are safeguarded and maintained according to applicable references. The aircraft serial number and information to be inserted on the charts or forms apply only to the individual aircraft. Weight-and-balance data and related forms for each aircraft are maintained according to AR 95-1, AR 95-23 for UAS, and TM 55-1500-342-23. The POC information for the aeromechanics site is www.aeromech.redstone.army.mil. This site provides aircraft weight-and-balance assistance.

PUBLICATIONS PROGRAM MANAGEMENT

5-33. Aircraft publication management ensure current maintenance procedures are being performed which is critical to the safety and airworthiness of the aircraft.

PUBLICATIONS MANAGEMENT PROCEDURES

5-34. QC, shops, and maintenance personnel establish and maintain a complete, up-to-date set of technical publications for supported aircraft and equipment. These publications provide instructions on operation, maintenance, repair, modification, serviceability standards, testing, inspection, and storage of equipment. Publication personnel are appointed in the unit and responsible for ordering and maintaining unit publication accounts.

5-35. TIs perform a quarterly review of publication files (technical libraries) to ensure completeness and currency. TIs also provide guidance in preparing and submitting recommendations for changes to maintenance and administrative publications. Recommendations for changes are submitted on DA Form 2028. TIs establish and maintain a file of recommended changes according to AR 25-400-2.

PUBLICATIONS FAMILIARIZATION RECORD

5-36. A publication familiarization record serves as a record listing publications (such as ADPs, ARs, DA PAMs, FMs, SOPs, TCs, and TMs) safety related messages (such as SOFs or ASAMs) and civilian manufacturer manuals (such as John Deere manuals, Olympus NDI manuals) required by a particular shop or section to perform its mission, duties and responsibilities and day-to-day functions. The term “reference” will be used as a single term synonymous and interchangeable with “publications”, “safety related messages”, and/or “civilian manufacturer manuals”. A familiarization chart must reflect must reflect the following minimum data:

- Reference number (such as AR 750-1 or TM 1-1500-204-23-1).
- Reference title.
- Basic/initial issue date.
- Change number or rapid action revision.
- Date of last change or rapid action revision.
- Person or personnel assigned to the shop or section.
- Initials of assigned personnel (The initials of a person, placed adjacent to a reference, signifies the person validating familiarity with that reference).
Quarterly Reviews (conducted and documented by a technical inspector).

5-37. QC will track all computers with maintenance publications installed for the version of the electronic digital publication. The location of each computer will be documented. The version of manuals will be documented to include the publication number, original 11 September 2017, the latest change number, and latest change number date.

5-38. Shop, sections, and maintenance platoon NCOICs are responsible for tracking and announcing pertinent information updates requiring familiarization. It is the NCOIC’s sole responsibility to keep assigned maintainers familiar with all changes affecting aircraft maintenance TMs and publications.

5-39. Maintenance personnel validate and record their familiarization for each publication to indicate currency. Delete shops/maintenance personnel validations as new changes are received and announced.

5-40. After a new change is announced, posted, and reviewed, shops and maintenance personnel record their currency to indicate familiarity with the new change. Each maintenance section or shop maintains separate familiarity records. TIs check the records during publication review to ensure:

- All publications used by maintenance sections or shops are listed and current to include the latest changes.
- All maintenance section or shop personnel are listed.
- All personnel have validated their familiarization with the latest change or revision to the publications.

FORMS AND RECORDS MANAGEMENT

5-41. TIs manage and monitor all forms and records for accuracy and completeness according to DA PAM 738-751. They monitor aircraft historical records, weight-and-balance records, aircraft maintenance records, blank forms, and product quality deficiency reports (PQDRs). TIs, aircrew members, aviation maintainers, maintenance managers, record clerks, supervisors, and commanders (at all levels of maintenance) including DOD contract support activities, have an equal stake in maintaining forms and records.

Note. TIs ensure that a 30-day supply of blank forms is always on-hand to support maintenance operations.

AIRCRAFT HISTORICAL RECORDS

5-42. TIs maintain historical records for each aircraft assigned to their unit and ensure all essential historical records are on-file and updated according to published policies and regulations.

AIRCRAFT MAINTENANCE RECORDS

5-43. TIs check the accuracy of aircraft maintenance records each time they sign off a deficiency and as completed forms are turned into their office. Many units also establish reconciliation between the maneuver platoons and QC to assist in monitoring the accuracy of these records.

AVIATION MAINTENANCE MANAGEMENT FILE SYSTEM

5-44. The most important files maintained by QC personnel are SOF messages, ASAMs, and MIMs. These messages may ground aircraft, impose operating limitations, or provide information on aircraft maintenance techniques.

5-45. QC personnel maintain separate message files for each model of aircraft assigned or supported. They maintain one file for general messages. Messages are either informational or apply to specific models of aircraft. For more guidance on SOF messages, ASAMs, and files management, refer to AR 95-1, AR 25-400-2, and DA PAM 738-751.
5-46. TIs assist in preparing recommendations for changes to technical and administrative publications on DA Form 2028. The TI establishes and maintains a file of recommended changes according to AR 25-400-2.

**PRODUCT QUALITY DEFICIENCY REPORTS**

5-47. An Aviation Standard Form (SF) 368 (Product Quality Deficiency Report) is submitted to AMCOM, CECOM, and Tank-Automotive and Armaments Command (TACOM) to suggest corrections and improvements to aircraft, UAS subsystems, and aviation associated equipment, including mission-related equipment, and to alert AMCOM/CECOM/TACOM to problems encountered by the user due to receipt of defective equipment. Anyone finding quality deficiencies in Government-owned materiel is required according to DA PAM 738-751 to report the defects to the appropriate military service screening point for investigation and resolution.

5-48. TIs will submit an SF 368 to the appropriate electronic reporting database according to the instructions at https://www.pdrep.csd.disa.mil. If an exhibit is needed, the TI ensures all applicable forms and records accompany the exhibit (DA PAM 738-751). TIs review applicable aircraft equipment improvement and maintenance digests before submitting the PQDR.

**MANAGING RECOMMENDED CHANGES TO PUBLICATIONS**

5-49. If a maintenance malfunction occurs as the result of an improper maintenance procedure outlined in a maintenance TM, the TI notifies the PC OIC, maintenance officer, maintenance/shops NCOIC, and the maintenance personnel who performed the maintenance procedure. The TI provides a detailed description of the problem, the possible effects and, after researching the problem, guidance on how it can be corrected.

5-50. The TI provides guidance to assigned and attached unit maintenance personnel in submitting proposed recommendations to correct deficiencies outlined in the maintenance manual. The DA Form 2028 is prepared and forwarded to the agencies responsible for each manual so corrective action can be taken. The agency responsible for the TM or reference in question is listed in the suggested improvements statement in the heading of applicable manuals and publications, normally the first page.

5-51. TIs manage and track all submitted recommendations for changes to maintenance and administrative publications. Recommendations for changes are submitted on DA Form 2028. The TIs establish and maintain a file of recommended changes According to AR 25-400-2.

*Note.* DA Form 2028 is found in the back of aviation technical maintenance manuals. Recommended changes can be submitted electronically at https://amcom2028.redstone.army.mil; in addition, the status of any recommended changes can be tracked at this website.

**AVIATION TECHNICAL INSPECTION PROCEDURES**

5-52. Technical inspection of aircraft maintenance ensures standards and practices established by applicable publications are followed. It also ensures applicable technical requirements are met, maintenance performed is documented, and quality work is performed efficiently.

5-53. Before performing an inspection, QC personnel review the latest applicable maintenance manual and regulatory policies to ensure the inspection meets current requirements. To ensure crewmember safety and equipment reliability, inspection procedures must be standardized and explicitly followed.

**Status Symbols**

5-54. Status symbols are used on forms and records to reflect the seriousness of faults, failures, deficiencies, and related maintenance actions and known safety hazards. The forms and records show the condition, readiness for flight, mission capabilities, operation, service, inspection, and maintenance of the aircraft system, subsystem, or associated equipment.
Note. Refer to DA PAM 738-751 for a detailed discussion of status symbols denoting aircraft airworthiness.

Grounding Condition (X) Authorization

5-55. The TI is the commander-designated representative for aircraft maintenance quality assurance and QC management. Authorization to sign off “status symbol X, grounding condition” or “circled X” conditions is designated, in writing (by memorandum), by the owning aviation maintenance commander. This authorization provides the name, rank, and duty position of the TI and authorizes him to inspect and sign off “status symbol X, grounding condition” or “circled X” faults on specific aircraft models and components.

5-56. The TI’s initials and signature/stamp are required to release an aircraft for flight. An official memorandum listing all QC personnel with their initials, signature, and personal identification (PID) next to their name will help eliminate unauthorized use by other unit personnel.

Note. Aircraft status symbols may be entered in black ink.

5-57. A TI or maintenance supervisor who works on a “status symbol X, grounding condition” or “circled X” fault cannot perform quality assurance on his own work. The work must be inspected and signed off by another person designated in writing by the commander.

5-58. If no repair work or maintenance is involved and only an inspection is required, the TI performs the inspection and signs off with no recheck. The parent unit orders are sufficient authority to sign off a “status symbol X, grounding condition” or “circled X” faults on aircraft belonging to another unit (DA PAM 738-751).

Note. When authorization is given to sign off “status symbol X, grounding condition” or “circled X” faults on specific aircraft models or components, the memorandum must list these items and be signed by the commander. Keep a copy of the authorization on file in the QC office for six months after the representative departs the unit.

Inspection Stamps

5-59. An inspection stamp may be used to indicate a satisfactory condition. This stamp carries the same authority as a TI signature or PID and must be guarded against unauthorized use. If an inspection stamp is used, it is round and no larger than 1/2 inch in diameter (figure 5-3, page 5-11). It includes the unit designation and TI number.
5-60. The following requirements must also be met:

- Keep stamps that have not been issued under lock and key.
- Destroy illegible stamps.
- Do not assign relieved stamps for six months.
- Keep a stamp inventory or register (table 5-2) in the QC section.

### Table 5-2. Sample inventory register of inspection stamps

<table>
<thead>
<tr>
<th>Stamp #</th>
<th>Assigned To</th>
<th>Date Assigned</th>
<th>Date Returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jerry H. Brown SSG</td>
<td>12-Jan-06</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>John W. Doe SGT</td>
<td>23-Aug-04</td>
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<td>Stamp destroyed (lost)</td>
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<td>7</td>
<td>Tony L. Salazar SFC</td>
<td>4-Jun-05</td>
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* Account for and include all stamp numbers.

5-61. Technical inspections are a visual, touch-and-feel inspection made by a technically qualified person (normally a QC TI). These inspections are performed on aircraft and associated equipment according to maintenance standards outlined in the aircraft TM.

5-62. Technical inspections are also done on aviation-related equipment, maintenance and shop operations and areas, and supply facilities. The results of all technical inspections are used to—

- Assure quality maintenance is performed and in full compliance with TM.
- Determine serviceability of aircraft systems, subsystems, repair parts, and components.
- Estimate cost of damage resulting from accidents or incidents.
● Determine how many man hours and repair parts are needed to restore equipment to a serviceable condition.
● Determine the cause of the unserviceable condition of the equipment.
● Determine the economical reparable of unserviceable equipment.

PROCEDURES

5-63. Inspections procedures are critical to aircraft airworthiness.

AIRCRAFT INSPECTIONS

5-64. Safety of the aircraft and crew depends on rigorous aircraft inspection and compliance with all applicable maintenance publications and other references. TM 1-1500-328-23 contains information on the preventive maintenance inspection system, acceptance inspection, transfer inspection, and in-storage inspection.

5-65. Aircraft are inspected to ensure published specifications are followed, maintenance requirements are complied with, and quality work is completed efficiently. If a TI is not completely familiar with the area or the item being inspected, they must seek supervisory guidance.

5-66. A TI must review and become familiar with the TMs on the subject area or item being inspecting. A TI will never rely solely on their experience to conduct quality assurance on an aircraft system, subsystem, and/or equipment. TIs will always use technical references when inspecting Army aircraft and equipment.

Note. TIs, maintenance managers, maintenance personnel, and DOD contract support activities must use TMs for maintenance procedures and to ensure a safe, quality product is the end state.

PROCESSING UNIT AIRCRAFT FOR MAINTENANCE SUPPORT (AVIATION SUPPORT COMPANY ONLY)

5-67. Owning unit representatives will accompany aircraft work ordered to the ASC for maintenance. They will review aircraft records with ASC personnel, resolve questions, and perform a joint inventory with ASC personnel. These representatives will accompany ASC TIs on the initial and final inspection of the aircraft.

Note. AMC/AMT TIs will accompany ASC TIs when conducting a final inspection of AMC/AMT owned aircraft after coordination between AMC/AMT and ASC PS section personnel has taken place.

5-68. Upon completion of repairs and before acceptance of the aircraft, inspectors perform a joint inventory with ASC personnel, review aircraft records for accuracy and completeness, and inspect aircraft to ensure requested work was properly performed. If repairs are deferred/delayed due to unavailable parts, TIs ensure the repair parts needed to complete required maintenance procedures have valid document numbers.

5-69. TIs monitor maintenance procedures to ensure—
● Proper tools and equipment are used.
● Aircraft and components are maintained according to specific publications.
● Publications used are current.
● Forms and records are complete and accurate.
● Safety precautions are observed.
● Trained and competent maintainers are conducting aircraft maintenance.

5-70. TIs perform certain aircraft inspections at specified times. These inspections include initial, in-progress, and final (with possibly a 100 percent inspection) (ASC TI initiated and performed).
Initial Inspection

5-71. ASC TIs perform an initial inspection before the aircraft enters the shop for maintenance to verify aircraft or components meet specifications of published maintenance manuals. This inspection determines deficiencies, work required, economical repair of aircraft and components, and accountability of equipment to include sensitive items if installed.

Note. Minor deficiencies identified by ASC TIs are not justification for refusal to accept an aircraft.

5-72. All deficiencies are entered on DA Form 2408-13-3. These forms are returned to PC after the inspection. Only those cowling and access panels necessary to inspect the faults listed on the DA Form 2407 by the ASC unit are removed.

In-Progress Inspection

5-73. The in-progress inspection is a continuing inspection performed periodically while the aircraft or component is in the shop (especially important during phase/periodic inspections). TIs should be available to answer questions and resolve problems. Maintenance team chiefs set up stations, if possible, so the inspector is near the work being performed.

5-74. Equipment at each station should include all items needed to perform the inspection. All necessary forms, maintenance publications, tools, and test equipment should also be available. ASC TIs perform the in-progress inspection to ensure the final product is reliable; areas are inspected before they are covered with access panels or components. Maintenance procedures not performed according to applicable maintenance publications are corrected immediately upon discovery.

5-75. TIs thoroughly review logbook forms and records before performing an in-progress inspection on aircraft in phase or undergoing periodic maintenance. TIs enter deficiencies missed by the maintenance team on DA Form 2408-13-1.

Final Inspection

5-76. A final inspection is a complete inspection and functional test, if required, of all aircraft or components released after maintenance. This inspection confirms—

- Repairs meet the specifications of the maintenance manuals.
- Work requested on DA Form 2407 was completed.
- Correct tools and equipment were used.
- Entries on DA forms are complete and accurate.
- Aircraft or components conform to standards.

5-77. Major (X-grounding) deficiencies are corrected before the aircraft or component leaves the ASC. Minor (diagonal) shortcomings are corrected based on the availability of parts and man hours. All deferred/delayed maintenance will have a valid requisition or work-order number in the DA Form 2408-13-1 delay block. The decision to defer/delay maintenance rests with the commander or designated representative, as stated in DA PAM 738-751.

One Hundred Percent Inspection

5-78. ASC TIs perform a 100 percent inspection if numerous faults are found during other inspections (such as initial inspections) not annotated in the aircraft logbook. QC personnel should coordinate with the PC OIC or maintenance officer before performing a 100 percent inspection.

5-79. The TI performs the 100 percent inspection by removing all cowling and access panels and inspecting the entire aircraft, including all systems and components. During the inspection components, repair parts, and items are checked for (to include installation on the airframe)—

- Correct assembly.
Proper safety techniques (use of safety wire and cotter pins).
Wear.
Rigging.
Leaks.
Structural defects (such as cracks, punctures, loose rivets, and separation in honeycomb panels).
Security of components.

FORMS AND RECORDS INSPECTION PROCEDURES

5-80. Forms and records are the first items checked in any aircraft inspection. All form entries will follow the policies in DA PAM 738-751, TM 55-1500-342-23, and TB 43-0211. All necessary forms, publications, tools, and test equipment are available at the inspection station. Refer to DA PAM 738-751 for the required locations of various forms. Some items to look for when inspecting forms are listed below.

Note. Although hard copies of DA forms are still in use, many DA forms are automated and generated electronically. Electronically generated forms have an “E” following the form number. Refer to section V for guidance on electronically generated forms.

MANAGING TECHNICAL COMPLIANCE OF AVIATION SAFETY-RELATED MESSAGES

5-81. The TI monitors and ensures compliance with SOF messages, ASAMs, MWOs, TBs, AWRs, and interim statement of airworthiness qualifications (ISAQs). Compliance with all aviation safety-related messages is paramount to the safety of crewmembers, aircraft, and equipment.

Safety Messages

5-82. Once safety messages are complied with, TIs make required entries on applicable DA forms according to DA PAM 738-751. All aviation maintenance units submit a safety message compliance status report according to the instructions on their assigned aircraft.

5-83. For a detailed discussion of aviation safety messages and their requirements, refer to AR 750-6 and DA PAM 738-751.

Note. For a comprehensive listing of aviation SOF messages, to include MIMs, visit the AMCOM website at https://asmprd.redstone.army.mil. AMCOM maintains consolidated listings, by airframe, of aviation SOF messages. Users must have AKO credentials for access.

Modification Work Orders

5-84. MWOs become mandatory when—

- Providing increased safety to personnel or equipment.
- Significantly raising the operational and support features of equipment.

5-85. Refer to AR 750-10 for definitive priority criteria assigned to MWOs. There are three priorities assigned to MWOs: routine, urgent, or emergency.

5-86. Upon receipt of an MWO that applies to corresponding serial numbers of assigned aircraft, TIs enter MWO-required information on DA Form 2408-5 (Equipment Modification Record), (refer to DA PAM 738-751). MWOs applied to assigned aircraft will normally be accomplished by sustainment-level maintenance activities such as the contract field teams, Corpus Christi Army Depot, or contract maintenance activities performing overhaul/repair. Therefore, the sustainment-level maintenance activities will complete the MWO entry when the MWO is applied. If an MWO is not applied by the specified date on the directive, TIs will enter MWO data on DA Form 2408-13-1 (refer to DA PAM 738-751). Register at the following site, https://liw.logsa.army.mil, to gain access to modification management information system (MMIS) on LIW.
5-87. MWOs are the only publications that authorize modification or alteration of Army equipment. MWOs are issued to—

- Provide compatibility with newer equipment.
- Prevent serious damage to equipment.
- Increase operational effectiveness.
- Reduce support requirements.

5-88. Each MWO contains specific instructions concerning—

- Time limit for compliance.
- Maintenance category to which the MWO applies.
- Parts required.
- Man hours required.
- Form entries required.
- Method for performing the modification.
- Weight-and-balance data.

TECHNICAL BULLETINS

5-89. TBs, SOFs, and ISAQs direct one-time or, in special cases, a recurring inspection of an aircraft or component. DA Form 2408-5-1 (Equipment Modification Record [Component]), DA Form 2408-13-1, DA Form 2408-15 (Historical Record for Aircraft), DA Form 2408-16 (Aircraft Component Historical Record), and DA Form 2408-18 (Equipment Inspection List) are used to ensure compliance with TBs.

5-90. TIs ensure all requirements of applicable aircraft TBs are met and required entries are made on applicable DA forms. TIs are also responsible for two actions: grounding an aircraft, if required by the TB (refer to AR 95-1), and submitting reports required by AR 95-1 and AR 95-23 to report compliance with TBs.

AIRWORTHINESS RELEASE

5-91. An AWR is a technical document that provides operating instructions and limitations necessary for safe flight of an aircraft system or subsystem or associated equipment. Army airworthiness approval is—

- Based on the results of design analysis, engineering ground test, and/or flight test.
- Required prior to operation of a new aircraft system or subsystem or associated equipment or a modification to the qualified or standard configuration.

5-92. Aircraft specific AWRs can be accessed at https://www.jtdi.mil.

Note. Refer to AR 70-62 for information on AWRs and ISAQs.

QUALITY CONTROL SUPPORT FOR MAINTENANCE EQUIPMENT AND PROGRAMS

5-93. In this section, we will cover the ground support equipment and program management.

GROUND SUPPORT EQUIPMENT

5-94. This equipment includes all GSE needed to maintain aircraft and associated equipment. TIs will ensure the forms and records used to track maintenance and services for assigned GSE comply with DA PAM 750-8. GSE support personnel will seek the QC TI guidance when filling out GSE forms and records. Refer to chapter 6 for more information on the GSE program.
FOREIGN OBJECT DAMAGE PROGRAM

5-95. FOD may cause materiel damage, or it may cause a system or equipment to become inoperable, unsafe, or less efficient. To eliminate potential FOD or malfunction of an aircraft system or subsystem, TIs must take an active role in enforcing the FOD program. TIs will closely monitor ongoing maintenance procedures within the scope of their responsibilities to ensure maintenance personnel are consistently practicing sound FOD procedures.

5-96. TIs must enforce FOD directives as outlined in the unit maintenance SOP. They must work diligently with the unit assigned FOD officer/NCOIC to ensure the FOD program designed for their unit is effective, manageable, and observed by all maintainers. FOD prevention countermeasures are integrated throughout the unit SOP.

ARMY OIL ANALYSIS PROGRAM

5-97. The commander appoints an AOAP monitor who has been properly trained and certified by the supporting laboratory. The AOAP monitor manages and monitors the program in the unit. Refer to chapter 6 for more information on AOAP.

5-98. TIs will provide guidance, when called upon, to ensure maintenance personnel are adequately trained in the techniques of drawing oil samples from aircraft components. TIs will ensure all aircraft and components are entered in the program and all required records are maintained. Refer to AR 750-1, TB 43-0211, and DA PAM 738-751 for specific instructions. TIs ensure—

- Oil samples are taken according to TB 43-0211.
- DD Form 2026 (Oil Analysis Request) is complete and accurate.
- All samples are dispatched expeditiously to the laboratory.
- Special samples requested by the laboratory are taken immediately.
- Notification is given to the assigned servicing laboratory of replacement or removal of AOAP components.

SECTION IV – REFERENCES AND PUBLICATIONS

5-99. ARs and publications describe policies and procedures used in aircraft maintenance and logistics management. QC personnel ensure publications and reference libraries are current and updated with the latest changes. TIs set up and maintain the master reference library, consisting of many types of supporting references and publications, to assist aviation maintenance units in conducting maintenance “by the book.”

Note. Electronic versions of manuals can be found at http://www.apd.army.mil. Refer to aircraft TMs for an expanded list of references and publications used by an aviation maintenance unit. Refer to DA PAM 25-30 for a detailed listing of reference and publication requirements. Refer to chapter 7 for guidance in accessing the logistics integrated data base (LIDB) publications module. This module contains a comprehensive listing of publications to support assigned end items. Refer to the LIDB for a link to the electronic technical manual (ETM)’s site and for more information on managing a publications account.

ARMY REGULATIONS

5-100. ARs establish policy. An AR is a publication setting forth missions, responsibilities, and policies; delegating authority; setting objectives; and prescribing mandated procedures to ensure uniform compliance with those policies. Mandated procedures in Army regulations are required and authoritative instructions containing detail needed to ensure the uniform execution of basic policies throughout the Army. These mandated procedures also ensure uniform implementation of public law, policy guidance, and instructions from higher headquarters or other Government agencies.
DEPARTMENT OF THE ARMY PAMPHLETS

5-101. DA PAMs do not establish policy, but are permanent instructional publications. Unless mandated in an AR, procedures established in a DA PAM are for guidance only. They establish optional or helpful methods of performing mission and functions, define probable courses of action, and explain how something is affected. A DA PAM is used to publish information (such as how-to procedures) needed to carry out policies and mandated procedures prescribed in ARs.

ARMY DOCTRINE PUBLICATION

5-102. Army doctrine publication (ADP)-A DA publication that contains the fundamental principles by which the operating forces and elements of the generating force that directly supports operations guide their actions in support of national objectives. ADP numbering is the same structure as FMs.

ARMY DOCTRINE REFERENCE PUBLICATION

5-103. Army doctrine reference publication (ADRP)-A DA publication that provides a more detailed explanation of the principles contained in the related ADP. ADRP numbering is the same structure as FMs.

ARMY TECHNIQUES PUBLICATION

5-104. Army techniques publication (ATP)-A DA publication that contains techniques; that is, non-prescriptive ways to perform missions, functions, or tasks. ATP numbering is the same structure as FMs.

FIELD MANUALS

5-105. FMs outline military doctrine as it applies to combined arms operations and represents keystone publications for Army branches. The first digit of the manual identifies the functional area (3- represents operations). The next two digits identify the Army branch (04 represents aviation). The last set of digits preceded by a period represents a specific topic (.1 represents aviation brigades).

ARMY TACTICS, TECHNIQUES, AND PROCEDURES

5-106. Army tactics, techniques, and procedures (ATTPs) outline military tactics, techniques, and procedures for a single branch, functional area, or company/troop. ATTP numbering is the same structure as FMs.

TRAINING CIRCULARS

5-107. Training circulars (TCs) are publications (paper or computer-based) that provide a means to distribute unit or individual Soldier training information that does not fit standard requirements for other established types of training publications.

5-108. Doctrinal and training publications are not policy DA publications and do not require Office of The Judge Advocate General (OTJAG) and/or Office of the General Counsel (OGC) legal review.

TECHNICAL MANUALS

5-109. TMs provide training information on a variety of subjects and on specific items of equipment. TMs for specific equipment provide instructions on operation, maintenance, and overhaul. They also provide a repair parts and special tools list (RPSTL) and breakdown. The first one or two digits of these manuals identify the preparing technical service, (1 or 55 represents aviation manuals).

5-110. A dash and a four-digit number indicate the federal supply classification, including the equipment within the federal supply classification assigned to commodity groups and classes. Federal supply classification provides unique information regarding a specific type of equipment (-1510 represents fixed-wing aircraft and -1520 represents rotary-wing aircraft).
5-111. A dash and a three-digit number indicate the MDS of a particular aircraft (-251 represents AH-64D helicopters).

5-112. A dash and a two-digit number represent the category of maintenance (such as -10 represents operators and -23 describes maintenance procedures for AMC/AMT and ASC maintainers to perform).

5-113. A serial number, preceded by a dash or a slash, is added when a TM is published in more than one volume (-1, -2 or /1, /2). Each volume within a series of TMs will have its own table of contents.

TECHNICAL BULLETINS

5-114. TBs contain technical information on equipment or professional management techniques. The most common TBs encountered by QC personnel direct one-time inspection of aircraft or components.

5-115. Urgent inspection requirements are initially sent to units by teletype message (E-MAIL/JTDI). The subsequent TB then supersedes the E-MAIL/JTDI. TBs directing one-time inspection are classified by priority as urgent, limited urgent, and normal.

SAFETY-OF-FLIGHT AND AVIATION SAFETY ACTION MESSAGES

5-116. SOF messages and ASAMs provide information concerning safe operation of an entire type or specific serial numbers of Army aircraft. These messages are transmitted by E-MAIL/JTDI to all organizations concerned. The message number indicates general or specific information. General (GEN) messages apply to all aircraft while specific messages apply only to a specific series of aircraft. Examples of these messages are—

- GEN-06-02:
  - This is a general message that applies to all aircraft or maintenance facilities.
  - It was written in FY 06.
  - It was the second general message sent in FY 06.

- AH-64-06-03:
  - This is a specific message that applies to the AH-64-series aircraft.
  - It was written in FY 06.
  - It was the third AH-64 message sent in FY 06.

5-117. The three types of SOF messages are emergency, operational, and technical.

EMERGENCY

5-118. Emergency messages contain information deemed critical in nature. These messages ground affected aircraft. They usually denote hazardous aircraft conditions that, unless complied with, have the high probability of causing aircraft damage or personal injury. Emergency SOF messages are later published as TBs or MWOs.

OPERATIONAL

5-119. Operational messages apply to flight procedures, operating limits, or operational policy. These messages may ground affected aircraft for operational reasons.

TECHNICAL

5-120. Technical messages are issued by AMCOM and are later published as urgent action TBs or MWOS. When issued, these messages cause grounding of affected aircraft but allow them to fly with specific limitations.
SAFETY-OF-USE

5-121. Safety-of-use messages are high-priority notifications pertaining to any defect or hazardous condition or combination of actions, actual or potential, that can cause personal injury, death, or damage to equipment, related system, components, or repair parts. These high priority messages require an immediate action prior to the next operation.

5-122. Safety-of-use messages are developed, prepared, and electronically sent by AMCOM to all users of Army non-aircraft equipment listed in DA PAM 738-751. AR 750-10 and DA PAM 738-751 cover the procedures for issue, compliance, and management of safety-of-use messages, MWOs, and TBs.

MAINTENANCE ADVISORY MESSAGES AND MAINTENANCE INFORMATION MESSAGES

5-123. Maintenance advisory messages (MAMs) and MIMs are developed, prepared, and electrically sent by AMCOM to all users of Army aircraft. MAMs and MIMs are informational messages that apply to aviation maintenance personnel. Normally, MAMs and MIMs do not require any entries on forms and records. See DA PAM 738-751 for procedures on MAMs and MIMs.

SUPPLY BULLETINS

5-124. Supply bulletins (SBs) provide important supply information to maintenance personnel and include—

- Stock number changes.
- Direct-exchange list changes.
- Reports on new materiel.

FEDERAL AVIATION ADMINISTRATION PUBLICATIONS

5-125. The Federal Aviation Administration publishes references and publications on aviation and aircraft maintenance using different standards from those applied to Army aviation assets. When conducting maintenance on Army aviation assets, aviation maintainers will use only authorized Army-approved publications and references. Do not use Federal Aviation Administrative or any other federal agency publications for Army aircraft maintenance unless authorized in writing or as part of a logistic support plan.

CHANGED, REVISED, AND RESCINDED PUBLICATIONS

5-126. Effective aircraft maintenance requires the latest technical information to be on-hand at all times. Army publications are continually updated; QC personnel must ensure units have adequate quantities of current publications. Therefore, they need to understand how the publications distribution system operates. DA PAM 25-40 provides necessary information for the TI to include—

- How initial distribution and resupply are made.
- The required DA forms for ordering publications.
- Where publications can be obtained.
- How a publications account is set up.

POSTING CHANGES

5-127. When manually posting changes to paper copy publications, personnel will—

- Ensure accuracy and neatness of the posted change.
- Use a sharp, black pencil so posting can be erased for future changes or corrections.
- Print or write the authority for changing a basic publication on the outside margin of the page by the changed portion; this authority is usually a numbered change (such as C1). If the changed portion affects more than one page, make the same notation on all pages concerned.
- Draw a line through the first and last lines of the text when three or more lines of text are affected; then, these lines are connected from top right to bottom left, forming a Z-shaped figure.
- Post change numbers in proper sequence; an urgent change may be posted out of sequence (ahead of previous numbered changes) if authority to do so is stated on its front page.
- Ensure manuals are not superseded or rescinded.

Note. DA PAM 25-40 is required reading for all TIs. It provides established guidelines and information on posting and filing publications.

INTERIM CHANGES

5-128. When there is no time to issue a printed change, an E-MAIL/JTDI is used to amend a publication. The message is identified as an interim change and prepared in the format of a published change. The message provides the exact language of the changed material. When posting the change, personnel will follow the procedures directed by the message. The message number and date are posted in the margin of the publication opposite the changed portions, such as “DA message 0614202 Mar 06.”

5-129. A copy of the message is filed in front of the basic publication or the last printed change. If a copy is not available, a cross-reference sheet is inserted, showing where a copy of the message can be found. When the next printed change or revision of the publication is received, the superseded notice is checked. If the notice states the message is rescinded or superseded, the message or cross-reference sheet is removed and destroyed.

PUBLICATION REVISIONS

5-130. A publication revision is a complete new edition of an existing publication. It supersedes the preceding publication, together with all changes, supplements, and appendices.

PUBLICATION RESCISSIONS

5-131. A publication is rescinded (canceled), then destroyed, when its material becomes obsolete. DA PAM 25-30 contains a list of rescinded publications.

PUBLICATION DISPOSAL

5-132. Publications are discarded after they have been rescinded or superseded. Classified publications are discarded according to AR 380-5 and unclassified publications are discarded according to instructions from the local disposal officer. However, do not discard old publications until new ones are reviewed.

5-133. A determination should be made whether other aviation units need the publications; if not, the post adjutant general publications officer should be contacted for disposal instructions. Refer to DA PAM 25-40 for further guidance.

AVIATION MAINTENANCE COMPANY/TROOP TECHNICAL LIBRARIES

5-134. Technical files and libraries are required on all assigned and attached equipment. Reference technical libraries are located in an area convenient to maintenance personnel. Immediate supervisors and QC personnel provide maintainers with the most current maintenance publications and references.

MASTER AND SHOPS TECHNICAL LIBRARIES

5-135. TIs are responsible for two types of libraries: master and shop. The master library is located in the QC office and used by all personnel. It contains publications required to maintain all series of aircraft and components owned or supported by the aviation maintenance companies. The shops library contains manuals on the specific duties of the shop. Inspectors ensure these manuals are complete and up-to-date. TIs also check the master and shop libraries quarterly to ensure—
• Libraries are located conveniently to users.
• Libraries are set up alphanumerically.
• All required manuals are on-hand or on-order.
• No unnecessary hardcopy publications are on-hand.
• Changes are posted and indexes reflect the status of publications on hand.
• No superseded or rescinded manuals are used.
• Classified manuals are controlled according to the AR 380 series.

**PUBLICATIONS FILING SYSTEM**

5-136. Technical publications files are maintained according to AR 25-400-2. DA PAM 25-30 contains an index of DA publications and forms; publications are verified against the listings in the latest index to ensure currency.

**INTERSERVICE PUBLICATIONS ACCOUNTS**

**Air Force Publications**


**Navy Publications**


**SECTION V – UNIT LEVEL LOGISTICS SYSTEM-AVIATION (ENHANCED) PROCEDURES**

5-139. QC personnel are the ULLS-A (E) administrators of aircraft components and equipment’s.

**ADMINISTRATION**

5-140. The ULLS-A (E) QC menu provides access to change, add, modify, and delete personnel, aircraft, and required maintenance or inspection data in the ULLS-A (E) database. Each function is addressed in the ULLS-A (E) end users manual (EUM).

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**Note.** If the server is down, QC will process all logbook entries manually. Once connectivity is restored, all manual entries are uploaded in ULLS-A (E).

**FUNCTIONS**

5-141. Although commissioning and decommissioning of the deployed server are the responsibility of PC, QC personnel will assist in the process. The ULLS-A (E) deployed server allows the unit flexibility to push aircraft away from the primary database to support area operations. The deployed server enables TIs to have access to historical records and send information back to PC for flight hours and reporting purposes.

5-142. When the aviation maintenance unit is conducting split-based operations, the deployed server function provides a unit with the capability to deploy aircraft to support operations away from the unit primary database. The deployed server allows QC personnel access to all available QC functions, except program administrator functions.

5-143. The ULLS-A (E) automated QC program provides full data entry, editing, review, and report-generation capabilities. DA PAM 738-751 required forms and reports are provided in a paperless electronic environment.
Note. Refer to the ULLS-A (E) EUM for additional user information and procedural guidance.
Chapter 6

Programs and Equipment

This chapter provides Army aviation maintenance commanders and leaders, maintenance officers, maintenance technicians, and maintainers with a “how-to” on practices, procedures, and guidelines related to Army Aviation programs and equipment.

SECTION I – PROGRAMS

6-1. The following programs provide the organization with access to personnel who are highly trained, experienced, physically qualified, and well versed in the missions, equipment, and procedures of the unit.

AVIATION RESOURCE MANAGEMENT SURVEY PROGRAM

6-2. The ARMS program provides aviation personnel with expert technical assistance and on-site evaluations, as mandated by AR 95-1 and AR 95-23, to all aviation units assigned to Army Command (ACOM), ASCCs, and direct reporting units (DRUs). Inspectable areas of the ARMS include, but are not limited to:

- Safety.
- Command support programs.
- Maintenance and aviation support equipment operations.
- Petroleum, oils, and lubricants (POL).
- Warehouse, technical, and unit supply.
- Training and command programs.
- Aviation night vision devices.
- Flight operations.
- Aviation life support systems management (TC 3-04.72).
- Aviation medicine.
- Air traffic services.
- Standardization.
- Tactical operations.
- Shadow UAS units.
- Gray Eagle companies.

6-3. The ARMS program is a comprehensive survey of aviation units conducted every 24 to 36 months according to AR 95-1 and AR 95-23. These surveys assist aviation unit commanders in evaluating their unit ability to conduct its mission safely and effectively.

6-4. FORSCOM units or units evaluated and inspected by FORSCOM ARMS teams can obtain ARMS information and assistance at https://www.us.army.mil/suite/page/592726. An AKO login and password is required to access this web site. For all other Army command units in need of their corresponding ARMS checklists, see the Army command ARMS inspection team designated POC.

6-5. Commanders of maintenance companies and troops will ensure compliance with their Army command ARMS standards and include satisfactory evaluations as a unit MOE goal. Commanders, in cooperation with the support operations section, will conduct annual internal ARMS reviews of their units to validate SOPs and operational compliance. Tri-annual (every four months) progress updates will be provided to the support
operations section and the command team for analysis and archiving. Assistance from sister units provide a skilled outside look when the formal ARMS team evaluation is off cycle for a particular unit.

LOGISTICS ASSISTANCE PROGRAM

6-6. The USAMC logistics assistance program (LAP) provides aviation users and maintainers of USAMC-managed equipment with logistical and technical assistance. This assistance can be requested by supported units when materiel problems might adversely affect aircraft OR rates.

Note. For more information and guidance concerning the USAMC LAP, refer to AR 700-4. In addition, refer to AR 700-138 and AR 750-1 for more information on the LAP. For logistics assistance, contact LOGSA at https://liw.logsa.army.mil.

6-7. Aviation maintenance commanders/leaders and maintenance officers/technicians may, while conducting aircraft maintenance, encounter the NMCS conditions. NMCS conditions may be the direct result of logistical problems beyond their resource capability to resolve or clearly not within their responsibility. In cases beyond their resource capabilities, assistance is provided to commanders/leaders and maintenance officers/technicians in analyzing readiness, identifying problems, determining responsibility for resolutions, and, when appropriate, resolving problems.

RESPONSIBILITIES

6-8. LAP responsibilities include providing commanders and unit maintainers with the technical guidance necessary to resolve logistic problems. These responsibilities include identifying and reporting, through channels, all logistic conditions that have an adverse effect on aircraft readiness. The LAP provides a means for logistic support activity managers to observe and to identify materiel and logistic system problems in the field.

6-9. The LAP is not intended to be a permanent augmentation to the aviation maintenance commander. LARs, when available, provides assistance in resolving specific logistical problems. They can also provide limited training to assigned unit personnel when requested. When appropriate, LARs provides logistics support resolution (normally on new equipment) to aviation maintenance units.

FUNCTIONALITIES

6-10. Logistics assistance is the advice, assistance, and training provided by qualified logisticians. They may be military or civilian employees of the Army or employees of industrial or commercial companies serving the Army under contract.

6-11. The LAP provides solutions to problems of supply and equipment, installation, operations, and maintenance. The program provides a pool of knowledgeable and experienced personnel from which all aviation units may request and draw assistance.

6-12. Logistics assistance personnel will coordinate actions with the commander and keep him fully informed of their findings and recommendations. Some functions of logistics assistance personnel are to—

- Give a hands-on demonstration to show how to perform a given procedure.
- Advise technical and nontechnical personnel.
- Help users replace unserviceable equipment that cannot be repaired.
- Visit AMC/AMT and ASC activities to help improve supply, repair parts distribution, and maintenance support for using organizations.
- Collect, evaluate, and exchange technical information.
- Instruct units in records management and preparing unit supply records, stock shop, and ASL.
- Instruct units in preparing equipment for field exercises and overseas deployment.
- Provide assistance on the care and preservation of stored material.
• Work with the AMRDEC liaison engineers to facilitate and authorize non-standard field level repairs (MECs) as well as maintenance to be performed at the unit that would otherwise be performed at a sustainment facility.
• Coordinate with the major support command (MSC) item managers to expedite repair parts delivery wherever possible.
• Monitor the performance of assigned contractor personnel to ensure the work being performed is according to the statement of work.

PERSONNEL AND SERVICES

6-13. LAP personnel are highly trained, experienced, physically qualified, and well versed in the missions, equipment, and procedures of the unit. According to AR 700-4, they are assigned or attached to the combat aviation brigade (CAB) brigade logistics support team (BLST) Logistics assistance personnel are employed by, or under contract to, one of the major subordinate commands under the USAMC.

Logistics Assistance Representatives

6-14. A LAR is a highly trained and experienced DOD civilian for a specific MDS aircraft, generally assigned to support aviation maintenance units in all operational environments.

6-15. A LAR is the direct representative of a MSC such as AMCOM, TACOM, Joint Mission Command (JMC), or CECOM. The LAR can provide maintenance and safety messages from the MSC to the unit and assist with the completion of message requirements. The LAR is available to train unit personnel on new equipment or sustainment systems to include support and test equipment managed by the MSC.

6-16. The LAR can coordinate with systems engineers, as well as item managers, to authorize sustainment-level repairs and expedite the release and delivery of repair parts managed by the MSC.

Liaison Engineers

6-17. The Aviation and Missile Research, Development, and Engineering Center (AMRDEC) Liaison Engineer (LE) is the onsite airworthiness authority for all engineering and technical issue relating to rotary wing aircraft and components.

6-18. The LE exercises their onsite engineering airworthiness authority through Maintenance Engineering Calls (MEC) and Maintenance Engineering Orders (MEO) with a primary focus on delivery of responsive and effective maintenance engineering support resulting in improved aircraft readiness.

6-19. The LE maintains communications with local maintenance personnel, maintenance officers, OEM support personnel, and quality assurance personnel regarding engineering and technical issues for assigned aircraft fleet.

6-20. The LE is responsible for determining the level of capability of the unit or contractor maintenance personnel to perform these repairs in regards to necessary training, tooling and facilities.

CONTRACTOR ENGINEERING AND TECHNICAL SERVICES

6-21. Technical expertise available to the organization are contract plant services, contract field services and field service representatives.

CONTRACT PLANT SERVICES

6-22. Contract plant services are those engineering and technical services provided to DA personnel by a manufacturer. These services are employed by and provided in the manufacturer’s facilities.

CONTRACT FIELD SERVICES

6-23. Contract field services (CFS) are those engineering and technical services provided to DA personnel by technically qualified contractor representatives. These are generally one-time services such as those
provided in the hand-off of equipment, and include information, instruction, formal training and on-the-job training (OJT), provided at an Army installation or materiel fielding hand-off site.

**FIELD SERVICE REPRESENTATIVES**

6-24. Field service representatives (FSRs) are employees of a manufacturer or supplier of military equipment or components who provide full-time on-site liaison or advisory services between their company and the military users of their company’s equipment or components.

**ASSISTANCE REQUESTS**

6-25. When requesting logistic assistance, aviation units should contact their local AMC/AMT CAB BLST. Refer to AR 700-4 for Army field support brigade (AFSB) geographic areas of responsibility. Requests for assistance should include the following information:

- **Name and location of the aviation maintenance unit requiring assistance.**
- **Specific types and quantity of materiel or weapons (make and model) of the systems for which assistance is needed and a general description of the problem.**
- **Reasons why organic resources are not available.**
- **Estimated length of time assistance is required, starting date, and POC.**
- **Type of logistic assistance personnel required.**
- **Specific requirements for security clearance.**

**ARMY OIL ANALYSIS PROGRAM**

6-26. AOAP is a condition-monitoring program that improves equipment reliability and readiness by early detection of potential failures. The program applies to aircraft and ground equipment including GSE, MHE, power generation, and prime movers. Aircraft maintenance leaders must ensure the AOAP in each unit complies with all oil-sampling requirements. Units and levels of command will designate an AOAP monitor who is trained by the supporting lab or installation AOAP monitor. The AOAP monitor is a unit orders position. The QC section normally oversees day-to-day operations of the program.

6-27. AR 750-1 defines the AOAP objectives, policies, and responsibilities. Aircraft maintenance personnel must be familiar with these references as well as with the AOAP forms in DA PAM 738-751 governing oil samples. Register at the following site, [https://liw.logsa.army.mil](https://liw.logsa.army.mil), to gain access to AOAP.

**ARMY WARRANTY PROGRAM**

6-28. The Army warranty program covers all items procured for Army use purchased with an accompanying warranty. The Army warranty program includes aircraft, aircraft weapon systems, and aircraft repair parts and components.

*Note.* Refer to AR 700-139 for additional guidance on the Army warranty program.

6-29. Aviation units receiving newly fielded equipment and components should check the type of warranty the Army purchased. When newly fielded equipment under warranty experiences malfunction, the unit should request assistance from the LAP office for answers to or resolution of warranty issues or questions.

6-30. Aviation equipment and components covered by the Army warranty program require special handling during the warranty period to keep the warranty valid. Details concerning warranty provisions are published in supply letters. Warranty control officers (WARCOs) or the logistics assistance offices (LAOs) will have a copy of the warranty supply letter on items within their area of support. Warranties will increase the time required to perform maintenance.

6-31. The LAO or LARs will provide advice and assistance to the Army WARCO and aviation unit maintainers as part of the service interface established in AR 700-4. Representatives of the LAP will—
- Assist in establishing an Army electronic product support account to submit warranty action claims.
- Assist WARCOs in developing local procedures for warranty administration.
- Clarify warranty applications/exclusions and claim/report procedures upon user or WARCO request.
- Provide warranty information to users/WARCOs as a secondary source of information.
- Provide specific assistance as outlined in materiel fielding plans, technical and supply bulletins (SBs)/manuals, and related documents for warranty management.

6-32. After warranty issues are addressed and resolved, the unit shall submit a PQDR. These reports are submitted to AMCOM, CECOM, TACOM, and DLA using aviation SF 368 to suggest corrections and improvements to aircraft, UAS subsystems, and aviation associated equipment, including mission-related equipment. SF 368 exhibits shall be selected, retained, packaged, marked, and disposed of per procedures outlined in DA PAM 738-751. Alert AMCOM/CECOM/TACOM/DLA on any problems encountered by user due to receipt of defective equipment.

FOREIGN OBJECT DAMAGE PROGRAM

6-33. Foreign object damage (FOD) program for maintenance operations is a basic requirement for all Army aviation units and will improve operational efficiency, provide for a safer operating environment, and reduce maintenance down time. Personnel who operate, maintain, or service aircraft or aviation GSE are responsible for adhering to the commander’s FOD program. FOD accidents are an unacceptable impediment to Army operations. The FOD officer and NCOIC, placed on orders by the commander, ensure compliance with applicable regulations, SOPs, and manuals. Utilizing the ARMS checklist assists the FOD program leadership in validating each performance measure of the program.

*Note.* DA PAM 385-90 contains guidance on developing a FOD program and FOD prevention SOP.

AIRCRAFT CONDITION EVALUATION PROGRAM

6-34. Aircraft condition evaluation is an annual program that evaluates all Army rotary-wing aircraft. AMCOM, as the NMP, is assigned the mission according to AR 750-1 to develop overhaul programs based on data, funding, and sustainment capability. The aircraft condition evaluation program is used to evaluate and report the sustainment-level health of the airframe. The data are used to schedule aircraft for repairs and determine the location and depth of sustainment maintenance and repairs.

MAINTENANCE ASSISTANCE AND INSTRUCTION TEAM PROGRAM

6-35. The maintenance assistance and instruction team program upgrades Army materiel and units to a state of readiness consistent with assigned goals needed to carry out the Army missions. It will also ensure commanders at all levels are provided assistance in identifying and resolving maintenance, supply, and maintenance management problems within their units. The maintenance assistance and instruction team can also identify systemic problems in maintenance management and provide assistance to improve management of the maintenance workload at all levels of maintenance support.

*Note.* Refer to AR 750-1 for specific guidance on the maintenance assistance and instruction team program.
CORROSION PREVENTION AND CONTROL PROGRAM

6-36. Army TM s outlining procedures for the detection and treatment of corrosion for aircraft and associated equipment must be followed. A corrosion prevention and control (CPC) program will minimize aircraft and equipment damage, increase operational efficiency, provide for a safer operating environment, and reduce maintenance down time. Evaluation of CPC operations occur during the ARMS. Personnel who operate, maintain, or service aircraft or GSE are responsible for adhering to the commander’s published CPC program. Corrosion damage of aircraft or GSE is an unacceptable impediment to Army operations. Maintenance supervisors, TIs, aircraft crewmembers, and selected aviation maintenance unit personnel receive training in aircraft CPC programs according to table 6-1.

Table 6-1. Corrosion prevention and control references

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>AR 750-1</td>
<td>Army Materiel Maintenance Policies</td>
</tr>
<tr>
<td>AR 750-59</td>
<td>Army Corrosion Prevention and Control Program</td>
</tr>
<tr>
<td>DA PAM 738-751</td>
<td>Functional User’s Manual for TAMMS-A</td>
</tr>
<tr>
<td>TM 1-1500-204-23-1; TM 1-1500-204-23-7, and TM 1-1500-204-23-9</td>
<td>General Aircraft Maintenance Manuals</td>
</tr>
<tr>
<td>TM 1-1500-328-23</td>
<td>Aeronautical Equipment Maintenance Management Policies and Procedures</td>
</tr>
<tr>
<td>TM 1-1500-344-23-1</td>
<td>Cleaning and Corrosion Control Volume I Corrosion Program and Corrosion Theory</td>
</tr>
<tr>
<td>TM 1-1500-344-23-2</td>
<td>Cleaning and Corrosion Control Volume II Aircraft</td>
</tr>
<tr>
<td>TM 1-1500-344-23-3</td>
<td>Cleaning and Corrosion Control Volume III Avionics and Electronics</td>
</tr>
<tr>
<td>TM 1-1500-344-23-4</td>
<td>Cleaning and Corrosion Control Volume IV Consumable Materials and Equipment for Aircraft and Avionics</td>
</tr>
<tr>
<td>TM 55-1500-345-23</td>
<td>Painting and Marking of Army Aircraft</td>
</tr>
</tbody>
</table>

AR-Army regulation
DA PAM-Department of the Army pamphlet
TM-technical manual
TAMMS-A-The Army Maintenance Management System-Aviation

COMMAND SUPPLY DISCIPLINE PROGRAM

6-37. The CSDP is a compilation of regulatory requirements requiring implementation for standardizing supply activities throughout the Army (AR 710-2). The goal of this program is the proper care, use, replenishment, and safeguarding of Army property. The commander has command responsibility for this program. Likewise, platoon leader or section chief has supervisory responsibility for the program. Squad leaders, team chiefs, and staff officers-in-charge and NCOICs incur this same supervisory responsibility. Soldiers have direct responsibility if they have physical control of property or if they have signed for it on a hand receipt. Soldiers who sign a hand receipt are accountable for all components of items listed on the hand receipt unless they receive a valid shortage annex or shortage document listing components not available for issue. Without a valid shortage annex or document, an item is assumed complete. Supply sergeants, supply custodians, supply clerks, or warehouse personnel have custodial responsibility for property in storage awaiting issue or turn-in. Personal responsibility should be inherent in all members of the Army. These responsibilities are a cornerstone of sound leadership; they cannot be delegated, withdrawn, or ignored. These responsibilities are assumed with or without a written hand receipt. The CSDP allows commanders to set a climate in which supply policies are enforced. It establishes an environment in which Soldiers and leaders can manage property proactively and requisition supplies and equipment. Soldiers and leaders who are responsible for equipment must know their equipment, its whereabouts, and its status.

6-38. Commanders and leaders ensure physical resources to accomplish the unit mission remain present and serviceable. Commanders and leaders in maintenance organizations actively pursue elimination of any shortages and establish tracking of shortage reduction by quantity, type, and funding required to eliminate all unit shortages. This tracking will be reported to the battalion/squadron S-4 logistics officer to enable
predictive budget activity. Unserviceable tools and equipment must be rapidly turned in to unit supply for incorporation in the replenishment process and not retained by hand receipt holders for accountability. Special tools purchased with unit funds or acquired by rapid fielding or other means will be entered into formal tracking by unit supply personnel and incorporated into GCSS-A. Special tools must be included in unit 100 percent inventories and change of command or change of hand receipt holder inventories. Shortage reduction and special tool fill levels serve as quantifiable MOE for each maintenance unit.

**CONFINED SPACE AND PROTECTIVE CLOTHING AND EQUIPMENT**

6-39. A confined space is defined as a space large enough and configured for an individual to enter and perform work, has limited or restricted means for entry or exit, and is not designed for continuous employee occupancy.

6-40. Maintenance commanders will assign a PCE/PPE and confined space coordinator to ensure compliance with DA PAM 385-90 requirements. Army personnel are prohibited from entering a permit-required confined space without an approved permit, personal protective clothing, monitoring equipment, or use of isolation/lockout/tagout procedures as stated in DA PAM 385-10.

6-41. Units will conduct a job hazard analysis to establish all PCE requirements. The PCE results will appear on all safety data sheet (SDS documents as PPE according to OSHA standards as required in support of the hazardous communication (HAZCOM) program.

**SECTION II – EQUIPMENT**

6-42. The management and accounting for tool, special tools, and calibrated tools is covered in this section.

**TOOL BOXES**

6-43. Toolboxes store hand receipt holder tools. Portable toolboxes enable carrying and storing a variety of hand tools. Paint, etch, tape, or mark all tools for easy identification during inventories. Each marked tool coincides with the associated toolbox identity (for example, each tool in toolbox B-1 is engraved with “B-1” to associate that tool with the corresponding toolbox.) Toolboxes must contain shadowed tool positions; if toolboxes/bags cannot be shadowed then an alternate, adequate, or practical means of tool accountability will be used.

*Note.* Units shall develop an SOP outlining tool accountability procedures (lost tools, broken tools, marking of tools, required inventories, and replenishment procedures according to TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9).

**TOOL ROOM**

6-44. The aviation maintenance tool room provides temporary utilization of tools to technicians for mission accomplishment without adding low density or bulky items to individual hand receipts. This consolidation facilitates 24-hour operations in tactical environments, allowing repairers to use robust hand, power, GSE, TMDE, and special tools when needed without the additional burden of maintaining and accounting for them on a full time basis. The tool room demands constant oversight and accountability reviews, including frequent inventories to ensure compliance with FOD and CSDP procedures, as well as PCE/PPE and CPC compliance.

**Section Sergeant/Maintenance Supervisor**

6-45. The tool room section sergeant or supervisor has direct oversight and responsibility of the tool room. He or she will ensure the tool room remains in direct compliance with all procedures outlined in the tool room SOP. He or she will ensure replacement processing occurs in the tool room section, due to its multiple custodians for 24-hour operations and diverse customer base. Assigned or attached aircraft maintenance
personnel who manage, account for, or use special tools, calibrated tools, and common tools from the tool room to maintain aircraft or GSE must adhere to the commander published unit maintenance SOP with regard to tool room operations. The tool room section sergeant has supervisory responsibility for the assigned tools in the tool room and will conduct random accountability and serviceability inspection of assigned tool.

**Tool Room Custodian**

6-46. The tool room custodian is responsible for all tools contained within the tool room, maintaining 100 percent accountability of the tool room. He or she will issue and receive tools according to procedures outlined in the unit SOP. Any tool from a tool room needed to complete a maintenance procedure is signed out before it can be removed from the tool room.

6-47. The tool room custodian will maintain an updated roster of all assigned or attached unit personnel authorized to sign out tools. Tools issued from a tool room become the personal responsibility of the recipient (user). When not signed out, special/common-hand tools, tool sets, and kits are secured and controlled according to physical security standards of AR 190-51.

6-48. The tool room custodian will inspect all tools and equipment for completeness and serviceability before issue. He or she will conduct by-the-book preventive maintenance on all items assigned to the unit tool room on a continuing basis. An inventory sheet should be used to account for every tool/item that is part of a given SKOT. If a tool is issued out of a SKOT, it is accompanied by a copy of the inventory sheet. The inventory sheet is used every time the item is issued and returned to ensure continuous accountability.

6-49. The custodian performs a tool room inventory monthly using the current supply catalog and any associated Property Book Unit Supply Enhanced (PBUSE) special tools documentation. A comprehensive tool room inventory is conducted before change of custodianship. Results, to include shortcomings or unserviceable/damaged tools or equipment, are reported to the responsible aviation section sergeant/maintenance supervisor. Unserviceable or damaged tools are turned in to the responsible aviation section sergeant/maintenance supervisor for immediate introduction into the replenishment process. The supervisor will ensure replacements are ordered through the unit supply room.

**Tool Procedures and Practices**

6-50. The tool room is a controlled access area ensuring safekeeping and accountability of property. Tools needed away from garrison are signed for on a temporary hand receipt. Personnel not assigned to the unit may sign out tools after coordination with the NCOIC according to the unit SOP. The tool sign-out register is sufficient for short-term use by unassigned personnel (typically less than 48 hours). Tools signed out to other units for extended periods will be hand-receipted on a DA Form 2062 (Hand Receipt/Annex Number).

6-51. Contact teams/personnel requiring tools in support of unit/element deployments are required to hand receipt tools for their respective maintenance support mission. In addition, they are responsible for turning in those tools once redeployed or at the completion of the rotation/mission unless other arrangements have been made with the tool room NCO/custodian.

6-52. The Army aircraft maintainer uses a variety of basic hand tools, measuring tools, power tools, special tools for aircraft, and torque tools. Aircraft maintainers must ensure familiarity with tool procedures and practices to guarantee availability and enhance

**Tool Care**

6-53. The efficiency of an aircraft maintainer and the tools he or she uses are determined largely by the condition in which the tools are kept and maintained. Tools will be wiped clean and dry before being placed in a toolbox. If their use is not anticipated in the near future, they should be lubricated to prevent rust. This is especially true if tools are stored under conditions of extreme humidity or are continuously exposed to salt air. Remove all unserviceable tools from toolboxes and tool rooms and turn in for replenishment.
Tool Storage

6-54. Tools should always be kept in their appropriate storage place when not in use. A toolbox or case not only keeps the tool protected from dirt, but also ensures the tool can be found, as long as it is returned to its place after use. The toolbox should be locked and stored in a designated area and an inventory list maintained for that box.

*Note.* At the completion of a maintenance procedure, all aircraft maintainers will conduct an inventory of their toolbox when used. Complete accountability of assigned tools will reduce FOD accidents/incidents. All tools will be returned to their rightful place once maintenance is completed or at the end of the business day.

6-55. Table 6-2 provides tool room references.

<table>
<thead>
<tr>
<th>Table 6-2. Tool room references</th>
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<tbody>
<tr>
<td>AR 190-51</td>
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<tr>
<td>AR 710-2</td>
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<tr>
<td>AR 735-5</td>
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<tr>
<td>DA PAM 710-2-1</td>
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<tr>
<td>TM 1-1500-204-23-9</td>
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<tr>
<td>AR-Army regulation</td>
</tr>
<tr>
<td>DA PAM-Department of the Army pamphlet</td>
</tr>
<tr>
<td>TM-technical manual</td>
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</tbody>
</table>

SPECIAL TOOLS

6-56. Special tools are unique tools not assigned to aviation units by their MTOE or that appear in the MTOE in quantities insufficient to accomplish the volume of tasks associated with that tool. Many special tools may be depicted, described, and authorized by the RPSTL located in proscribed TMs associated with each airframe or subsystem. Other items, either in the military supply system or commercially available, serve as special tools as well. Special tools are sometimes specified by the manufacturer for low-density repairs and procedures, or requested by Soldiers and technicians from the commander of the unit to reduce man hours, ease difficulties, or improve the efficiency of any unit operation. Special tools can account for millions of dollars in unit property for aviation maintenance organizations and must be tracked tenaciously.

6-57. Special tools that need to be fabricated or made from bulk materials frequently appear in the RPSTL. Special tools are not components of a SKOT and are not authorized in a supply catalog. Consequently, they require special accounting and tracking in GCSS-A by unit supply, hand receipt holders, the property book officer, and the commander to prevent loss, pilferage, and the need to frequently repurchase or fabricate the same item. This tracking supports the CSDP.

*Note.* If aviation maintenance units lack special tools outlined in the appendix of their respective RPSTL or demanded by operational needs, they must initiate the process to procure them.

TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT

6-58. TMDE includes torque wrenches, testers, test sets, and other test equipment used to verify whether aircraft systems are functioning or malfunctioning according to applicable regulatory policies and published aircraft TMs. Depending on the design, TMDE may be portable or fixed in place.

6-59. Whether a unit contains specific items of equipment depends on its category of maintenance (AMC/AMT or ASC) and its prescribed TOE. TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9 contain detailed descriptions and operating instructions for the most common test equipment.
Note. Refer to applicable -23P aircraft RPSTL for a listing of aircraft-specific TMDE requirements. This list also grants authorization for unit maintenance personnel to procure TMDE.

6-60. AR 750-43 assigns Army-wide management of the Army TMDE calibration and repair support program to USAMC. In turn, the Army TMDE activity (through USAMC) is responsible for DA TMDE program execution and management. The National Guard Bureau is assigned management, command, and control over the ARNG maintenance companies and their assigned TMDE. It also controls calibration facilities at combined support maintenance shops. In addition, AR 750-43 prescribes policies and procedures, assigns responsibilities, and establishes goals and objectives applicable to the development, selection, acquisition, management, sustainment, and support of Army TMDE, associated test program sets, embedded diagnostics and prognostics, and interactive electronic TMs.

Note. The goal of all unit calibration programs is for a delinquency rate (failure to submit for required support) of two percent or less according to AR 750-43 and an IMRF match against the unit TMDE inventory of 98 to 102 percent.

SUPPORT

6-61. Most calibration and repair support requirements of instruments used in support of Army materiel are listed in TB 43-180. The calibration procedures listed in TB 43-180 are DOD- or United States Army Test Measurement and Diagnostic Equipment Activity-approved procedures shall be used. The approved maintenance manual is also listed in TB 43-180. Unique special tools requiring civilian or OEM calibration must be addressed in the unit SOP and TMDE continuity guide.

AREA TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT SUPPORT TEAM CAPABILITIES

6-62. TMDE designated in TB 43-180 as requiring area test, measurement, and diagnostic equipment support team (ATST) support must be transported to the location where the ATST is slated to provide calibration and repair services. When justified by sufficient workload or when the size or configuration of the TMDE precludes movement, the ATST is dispatched to the TMDE owner/user site.

6-63. When a designated ATST is unable or not capable of providing calibration or repair service, the TMDE is evacuated as directed by the calibration and repair center. The ATST is responsible for providing the necessary service and returning the repaired and calibrated TMDE to the owner/user. When service external to the ATST is necessary, except for warranty TMDE, the ATST should arrange for the service and assure the return of the TMDE to the owner/user.

AREA CALIBRATION LABORATORIES/UNITED STATES ARMY PRIMARY STANDARDS LABORATORY SUPPORT

6-64. TMDE standards requiring the support of area calibration laboratories or United States Army primary standards laboratory may be transported to the ATSTs or shipped directly to the area calibration laboratories or United States Army primary standards laboratory.

GROUND SUPPORT EQUIPMENT

6-65. GSE includes equipment and special tools required to maintain aircraft and associated systems. GSE supporting a single MDS is referred to as peculiar ground support equipment (PGSE). The ARP and CRP will maintain assigned aircraft PGSE. Trained maintainers keep GSE and PGSE serviceable.

Note. Ground Support Equipment shall be stored under cover, in buildings as required or as specified by the applicable technical manual for that specific piece of equipment.
AUTHORIZATION DOCUMENTS

6-66. Authorization documents allocating GSE to aviation units are MTOEs, TDAs, and commercial off-the-shelf fielding documents. Additionally, command directed notification establishes a valid requirement for GSE. Authorization of GSE and PGSE is frequently contained in the repair parts TM for that specific aircraft. For a complete authorization of GSE and PGSE, maintainers must review the unit MTOE and all applicable supply catalogs for sets, kits, and outfits authorized, as well as RPSTL manuals for their assigned aircraft.

REQUESTS FOR ADDITIONAL AVIATION GROUND SUPPORT EQUIPMENT

6-67. Sometimes, aviation units need GSE other than that authorized or required by MTOE or TDA. Tropic, desert, or arctic environments often create the need for additional equipment to supplement authorized equipment listed in the unit MTOE. The unit in need of additional equipment should submit a request through command channels to the program manager-aviation GSE. The request should include the following information:

- Identification of the specific requesting unit.
- Number of applicable TOE, MTOE, or TDA.
- Complete nomenclature, stock number, and quantity of needed items.
- Justification for each item, including a statement that the item can be maintained.
- If the item is nonstandard, the reason for not using a standard item.
- Statement as to whether the additional equipment should be included in the TOE, MTOE, or TDA.

6-68. The RPSTL contained in applicable TMs shows GSE needed to support assigned aircraft. If an item is listed, it can be requested, even if it is not included in the unit TOE, MTOE, or TDA.

FORMS AND PUBLICATIONS

6-69. DA PAM 750-8 lists required DA forms on which data is to be recorded and maintained. The following DA and DD forms are used in support of GSE according to DA PAM 750-8:

- DA Form 5988-E (Equipment Maintenance and Inspection Worksheet) or DA Form 2404 (Equipment Inspection and Maintenance Worksheet)-used to list equipment faults that create an NMCS equipment status.
- DA Label 80 (United States Army Calibrated Instrument)-used for equipment requiring calibration.
- DD Form 314 (Preventive Maintenance Schedule and Record).
- DD Form 1574 (Serviceable Tag-Materiel).

6-70. A reference library must be established with required publications on-hand to ensure GSE is properly operated and maintained. The reference library will contain technical publications, lubrication orders, MWOs, TBs, TMs, and supply catalogs.

Note. DA PAM 25-30 and TM 1-1500-204-23-9 lists publications required to support GSE.
Chapter 7

Automated Management Systems

This chapter provides aviation maintenance commanders, maintenance officers/technicians, and maintainers with an explanation of the Army automated management systems. Leaders and maintainers are required to anticipate, analyze, and tailor available automated systems for effective and timely support of complex weapon systems and aircraft. The measure of maintenance success in combat will continue to be the availability of aircraft that are FMC and ready-to-launch (RTL).

SECTION I – ARMY LOGISTICS INFORMATION SYSTEM

7-1. The Army logistics information system (LIS) is a functional information management system designed to provide the logistics support infrastructure required for military ground and aviation operations. The technical goal is to establish a seamless and interoperable network. The LIS network facilitates the vertical and horizontal flow of sustainment and maintenance status information to units Army-wide.

GLOBAL COMBAT SUPPORT SYSTEM-ARMY

7-2. GCSS-A contains the functionality associated with supply, maintenance, property, and tactical finance. It is an integrated system where users with access and permissions can perform their missions regardless of their position in the Army structure or location throughout the world. GCSS-A incorporates finance, supply below national level, property book, unit supply and ground maintenance functions into one system. It touches nearly every logistics initiative being worked in Army logistics, including programs such as Unique Item Identification, Condition Based Maintenance, In-transit Visibility, and Product Life Cycle Management.

7-3. GCSS-A, Increment 1, Wave 2 has replaced the Standard Army Retail Supply System (SARSS). It is in the process of replacing tactical enterprise logistics systems, and automated capabilities such as the Standard Army Maintenance System (SAMS), and PBUSE. Its core functionality is based upon Army regulations, DA pamphlets, field manuals, technical manuals, circulars, and bulletins, directives, policies, and procedures governing supply support activities, unit supply rooms, shop supply rooms, and property book offices. Until GCSS-A, Increment 1, Wave 2 is fully fielded, SAMS and PBUSE will be addressed within this publication as "SAMS/GCSS-A," and "PBUSE/GCSS-A."

7-4. Enterprise-wide forecasting, planning, and scheduling tools provide the capability to track transactional data to link customers and suppliers for more efficient supply chain management. Commanders can verify operations readiness in real time and near real time by tracing logistics information originating with the supported unit’s purchase order, through the entire supply chain until the unit receives the requested items. Materiel managers can monitor and/or process on-hand stocks, requirements determination, procurement, maintenance of stock, maintenance, disposal, retrograde, and distribution of materiel.

Note. The GCSS-A website is located at http://www.gcss.army.mil/.

ROLES AND PERMISSIONS

7-5. Security and user roles dictate what an individual can see and do while in GCSS-A. These roles are divided vertically between management and clerical and horizontally between office and warehouse. Roles determine what a user can see or do because user roles are defined by organizational element. For example, an SSA cannot process transactions for a unit storage location and a unit cannot process transactions for an
SSA storage location. Each user role is authorized to execute a specific combination of transactions and only those transactions relevant to that user’s level of responsibility. Some users may perform duties which require multiple user roles and permissions.

**TYPE UNIT CODE**

7-6. GCSS-A established business rules to influence the behavior of various levels of operations. Maintenance, property book, tactical SSA, unit supply, and installation SSAs activities are assigned a type unit code that restricts which classes of supplies can be ordered by the functional activities as well as for defining the flow of requisitions. The intent of the rules is to enforce supply discipline in an automated fashion.

**SUPPLY OPERATIONS ASSESSMENTS**

7-7. Materiel managers must continually evaluate supply support, through supply operations assessments, to determine trends, isolate deficient areas, and correct deficiencies. An operations assessment is a process that evaluates several categories of performance, including, but not limited to, customer service, inventory accuracy, space utilization, facility layout, automation equipment utilization, general housekeeping, and safety. Areas which do not fall within acceptable ranges receive intensive review and management. Commanders and materiel managers can filter and tailor any GCSS-A report to meet the specific needs for any assessment. The following is a sample listing of tailorable, near real time reports with recommended use of the report for monitoring logistics operations:

- At the brigade level, use the Equipment Status Report to aggregate supply and maintenance data to give commanders a combat power perspective for readiness.
- Battalions, using a maintenance dashboard, can reference equipment readiness data consisting of supply status, stock shop posture, fault management, and work order management to make critical materiel decisions.
- Commanders, unit supply sergeants, and property book officers can trace supply transactions through a Daily Activity Report. Using the daily activity report capability, commanders can trace whether assets increased or decreased, serial number changes, reason for change, type of movement, beginning dates, ending dates, closed transaction dates, document numbers, form number and document identification codes.
- Commanders, property book officers, unit supply sergeants and the S-4 and/or G-4 use the unit Equipment Readiness Listing to analyze equipment readiness for unit status reporting. Users can tailor this report to view equipment shortages, excess, supply status, document number and planned ship dates.
- SSA accountable officers and SPOs can use the Customer Satisfaction Report to monitor compliance with DA performance metrics and to perform various analytics for monitoring a SSA’s performance.
- SSA accountable officers and SPOs can monitor SSA daily performance using the Supply Performance Report. It displays supply statistics for one or more storage locations of supply support activities.
- SSA accountable officers and SPOs manage overage reparables using the Overage Reparable/Recoverable Management Report.

**LOGISTICS ANALYSIS PROGRAM**

7-8. In order to provide the logistical support infrastructure that is needed Army Aviation has logistics analysis programs that ensures we are sustaining the Army Aviation units in complex environments. Without the proper analysis and the use of modern technology, we cannot provide commanders with the information needed to make crucial decisions ensuring responsive sustainment.
INTEGRATED DATABASES

7-9. ILAP is the standard management tools used by the Army to collect, integrate, and display sustainment and financial data. Register at the following site, https://liw.logsa.army.mil, to gain access to ILAP and the multiple reports it generates.

LOGISTICS INFORMATION WAREHOUSE

7-10. LIW consists of data management and business intelligence capabilities resulting from the merger of national and tactical logistics information. By integrating the logistics integrated data base with the integrated logistics analysis program under one organization, the Army’s national and tactical data sources are harmonized to provide:

- One authoritative source of logistics information.
- One accurate view of the Army’s materiel posture.
- Further reductions in unique and duplicative data sources.

7-11. LIW provides a re-engineered single sign-on web access to the existing capabilities of the logistics integrated database, integrated logistics analysis program, and a host of logistics support activity/Army logistics tools. The query and reports capability provides commanders and managers a search capability for data maintained in the LIW. Data mining is accomplished by using search criteria such as national item identification number, line item number, Department of Defense activity address code (DODAAC), unit identification code, or serial/registration number.

7-12. LIW provides materiel managers, other logisticians, and commanders with an authoritative source for decision support and analysis. For example, materiel managers use LIW and other logistics support activity databases as their primary source of maintenance and readiness management data.

REPORTS

7-13. ILAP has been fielded and operates at all echelons of the active Army, Army Reserve, and ARNG. Management reports in ILAP are developed with input from the customer in a rapid development process that shows the customer a management report; solicits the customer reaction to the report; and modifies the report to begin another cycle. This process is repeated until the customer requirement is met. Reports generated by ILAP support supply, maintenance, and finance management functions. The following is not an all-encompassing list but represents a common set of routine management reports that ILAP can provide:

- Stock number analysis.
- Document number analysis.
- Document history.
- Recoverable management.
- ATF management.
- ATF review.
- Equipment status.
- Workorder and parts research.
- Man-hour summary.
- Army working capital fund credit data.
- Credit details by document number.
- Army credit table.

Note. To interpret ILAP reports, the user must know the codes inside the ILAP report. The “codes” tab provides most of the codes used in ILAP reports. The “codes” tab is also available inside each of the ILAP reports to use as a reference.
7-14. Once a given report has been retrieved by ILAP, the results of all reports must be saved to the unit local drives. Users should not save data on the ILAP servers. These reports can be printed to facilitate tracking and reconciliation of management reports.

**BATTLE COMMAND SUSTAINMENT AND SUPPORT SYSTEM**

7-15. BCS3 (formerly combat service support control system) collects and processes selected sustainment data in a seamless manner from LIS and manual systems/processes, and other related source data and hierarchical automated C2 systems (such as, Force XX1 Battle Command Brigade and Below [FBCB2] and Global Command and Control System–Army [GCCS-Army]). Based on these inputs, the BCS3 supports of the Army Battle Command System common operational picture (COP) by—

- Generating and disseminating near-real time sustainment C2 reports.
- Responding to sustainment related ad hoc queries.
- Updating the database an average of every three hours.
- Providing sustainment warfighting function information.

7-16. The system displays a three-dimensional picture using topographic details selected by the user from a menu of audible mapping features. BCS3 provides the logistics portion of the COP on the maneuver control system. It also provides the maneuver sustainment commander with enhanced briefings and data-management capabilities. The current logistical data is augmented with analytical and decision support tools that enable the commander to make well-informed decisions rapidly and effectively.

7-17. BCS3 provides commanders with current and future combat power estimates in what is called the running estimate. BCS3 fuses data from satellites, radio frequency identification (RFID) tags, interrogators, and transponders enabling BCS3 to track and display locations of vehicles and cargo as they move within an AO. BCS3 obtains data and files from the maneuver control system and incorporates operational data with sustainment data providing commanders with a comprehensive and robust view of the AO. Tactical units providing electronic feeds to FBCB2 are displayed on BCS3. The display provides an aggregated view of icons representing unit locations derived from Blue Force Tracking.

**SECTION II-UNMANNED AIRCRAFT SYSTEMS INITIATIVE PROGRAM**

7-18. The unmanned aircraft systems-initiative (UAS-I) program is a fully-integrated maintenance management system that provides UAS Commanders with near-real time, highly accurate readiness reporting. UAS-I is currently in operation with United States Army Shadow, Hunter, Gray Eagle, CCAD and the OEMs. UAS-I is capable of supporting all aspects of maintenance and readiness, including managing and tracking other assets critical to UAS operations, such as all wheeled stock and support equipment. UAS-I fully supports RAMDATA, CAFRS, LOGSA and provides specialized reports to the PM-UAS office.

7-19. UAS maintainers, operators, and personnel use the UAS-I program for all their logbook needs which have the following features and benefits:

- DIACAP certification.
- DoD IRB approved.
- Fully-functional supply.
- Integrated/enhanced information assurance and data encryption.
- Mission equipment configurable.
- Platform independent.
- Readiness reporting in accordance with the most current form as directed.
- Simplified user interface with MS Office look and feel.
- Supports commander’s dashboard data sets.
- Windows 7.

7-20. UAS-I provides maintenance personnel with various tools enabling enhanced management of UAS reporting, status, and flying hours according to AR 700-138. UAS-I processes UAS transfers, maintains operational and historical records, processes Class IX (Air) repair parts, and enhances overall maintenance
Automated Management Systems

operations. It automates bench stock by shop code (stocked and maintained manually/automatically reordered). UAS-I manages reportable components, and coordinates maintenance management processes with PC.

SECTION III – LOGISTICS SUPPORT ACTIVITY

7-21. Logistics Support Activity provides automated systems to Army Aviation managers to ensure they have the logistics intelligence to provide the logistic needs to the Warfighter. They do this with the following automated systems that are in place.

LOGISTICS INTEGRATED DATABASE

7-22. The LOGSA is a leveraging technology that provides immediate access to many logistics web-based tools including the LIDB, the parts tracker, and other capabilities. LOGSA products and services include sustainment tools in support of equipment readiness for users, maintainers, and managers of the Army aircraft systems, subsystems, and weapon systems. LOGSA tools independently and collectively contribute to the Army transformation goals in reducing the logistics support footprint.

7-23. The LIDB stores national and tactical historical information and provides real-time status of Army readiness, requisition, supply, and maintenance and asset information to customers worldwide. The information needed to equip, arm, move, and sustain Soldiers and fix and fuel their equipment and corresponding systems can be accessed from one central source using one log-on identification and password. A LOGSA system access request (SAR) form must be completed to gain access to LIDB support functions. This form can be located at https://www.logsa.army.mil/index.cfm?fuseaction=home.startSite. The logistics portal to access web sites from DOD, DLA, GSA, Army, Navy, Air Force, and Marine Corps is located at http://www.dla.mil/LandandMaritime/Business/Customer-Support/LandCustomers/Links-and-Job-Aids/.

7-24. LIDB uses modules (or file folders) to segregate the volumes of data into user-friendly packages. Primary modules are located on the main menu screen under the headings “Query Database” and “Decision Support.”

7-25. From the main menu, double click on the “Query Database” menu icon. Once the “Query Database” menu is opened, the user can access modules and maintenance and logistics support management information critical to all aviation maintenance commanders/leaders, maintenance officers/technicians, and maintainers.

PUBLICATIONS MODULE

7-26. The publications module identifies all equipment publications required to maintain each Army end item. This module provides aviation maintainers with the critical references needed to conduct by-the-book maintenance. This module also allows access to the following:

- A list of TMs, technical manuals, SBs, MWOs, and supply catalogs.
- A list of publications for the major components appearing in the equipment component of end items, basic issue items (BIIs), and Rpstl.
- Information found in DA Pam 25-30, as well as command-authenticated publications (sustainment maintenance work requirements).
- A two-section list, one listed by line item number and NSN sequence and the other by publication number.

MAINTENANCE MODULE

7-27. The LIDB maintenance module contains data on completed maintenance actions reported from field and sustainment units and activities from the total Army.

7-28. The LIDB maintenance module includes a history of each maintenance action as it progressed through the maintenance process. This history allows maintenance managers to determine time spent in a particular status such as awaiting parts, in shop, awaiting pickup, or in initial inspection. This maintenance history is useful in determining what affects downtime in the maintenance system. It also provides a listing of all parts
used during a maintenance action. The LIDB maintenance module can generate reports on an entire item for a particular owning/support unit identification code (UIC) or Army command or to a specific serially numbered end item.

**RETAIL DEMANDS MODULE**

7-29. The retail demands module contains all demands from units throughout the Army. Customers have access to data depicting repair parts’ consumption rates and demands and costs for specific end items/repair parts. This information can be tailored for an individual unit-assigned DODAAC).

7-30. The module provides historical retail demand data generated from requesting units throughout the Army. The database is the Army central repository for all individual requests of issue generated at the organizational level.

7-31. The field systems that feed LIDB are the technical, SARSS, Army Materiel Command Installation Supply System, and SAMS. Customers can query by end item code, DODAAC, NIIN, installation, geographic area, and Army command/division.

**ITEM INFORMATION MODULE**

7-32. The item information module is the official Army catalog of Army-managed and Army-used items. These data provide information about all classes of inventory items critical to requisitioning, maintenance, and disposal of aircraft repair parts and components.

*Note.* Information about an aircraft repair part or component interchangeability/substitutability can also be accessed from this module.

7-33. The line item number report, NIIN report, reference number report, and Army master data file (AMDF) report can be retrieved from the item information module. The AMDF reports include the item data, NIIN detail, interchangeability and substitutable data, component data, equivalent item data, order-of-use data, freight data, packaging data, medical user data, special Army data, and automatic return item list data.

**SUPPORT ITEM REQUIREMENTS DATA**

7-34. The support item requirements module provides data for parts used on end items, compares end-item part applications, and develops repair part requirements for support of end items in peacetime and contingency. Related program information on supply-related products and services follows. These products and services include repair parts to end item application, peculiar item and reverse support list allowance computation, and recommended ATF/Stock shop.

7-35. The support item requirements module offers “the spare/repair parts to end item application,” in addition to some new capabilities in an online environment. Current data are provided because the LIDB is continuously updated as new information is received.

7-36. Another helpful feature for aviation maintainers conducting lateral and vertical searches of aircraft repair parts is a report that compares two end items and identifies parts peculiar to each and parts found on both. This information is useful for identifying common or individual repair part applications.

7-37. The module also allows the user to compare an end item to a list of end items (for example, the TOE). This comparison is known as a reverse support list allowance card. The user can also compare an end item to a list of end items and the ATF to identify candidates for deletion or stock-level reduction that result from the loss of a supported end item. This comparison is known as a tailored reverse support list allowance card. These reports can be printed or saved in word-processing, spreadsheet, or database formats for local use.

**PIPELINE MODULE**

7-38. The “pipeline” is the area within the LIDB where the user can find information regarding customer and requisition wait time, velocity management, and retrograde in-transit visibility (ITV). The pipeline is a
centralized database providing visibility of supply and transportation actions for requisitions placed by aviation units that are unfillable by the supporting ASB SSA and, ultimately, passed to the wholesale system to be filled.

7-39. As materiel moves through the pipeline worldwide, automated supply and transportation systems feed the current status on the requested materiel’s location to the pipeline. The pipeline provides a quick reference to requisition status, shipping information, and receipt of materiel requisitioned by the requesting unit.

7-40. A pipeline inquiry is available via Web LIDB and web logistics. It may also be accessed through other DLA web links. The pipeline serves as the Army’s single database for supply and transportation actions according to military standard requisitioning and issue procedures, AR 725-50, and applicable DOD transportation regulations.

ELECTRONIC TECHNICAL MANUALS

7-41. LOGSA maintains the Army technical publications repository. Sustainment of the electronic technical manual (ETM) disks is cyclical, occurring either quarterly or semiannually as necessary. ETMs on disk are on the LOGSA webpage at https://liw.logsa.army.mil. Disks must be ordered like any other publication; as a result, the unit publication account should be updated to automatically receive the latest release. When ETMs are used with the ETM-interface software, ordering repair parts through technical and SAMS is a quicker and more accurate parts request.

SUPPLY-RELATED PRODUCTS AND SERVICES

7-42. Providing automated systems for aviation maintenance and logistic managers in order to see products and services that are available that in turn helps the warfighter support the requirement for expeditionary agility and responsiveness.

FEDERAL LOGISTICS DATA

7-43. Federal logistics (FEDLOG) is an interactive product available on disk or the world-wide-web. It contains logistical information for the Army, Navy, Air Force, and Marines and the Federal Logistics Information System. FEDLOG is the primary source of AMDF information for Army customers worldwide.

Note. Refer to chapter 8 for additional information on FEDLOG.

ARMY PRE-POSITIONED STOCK

7-44. LOGSA provides visibility of war-reserve authorization and asset data via the Army pre-positioned stocks module in LIDB. This visibility includes the pre-positioned brigade sets, sustainment material, and operational project stocks across all five Army pre-positioned stockpiles to include CONUS, Europe, Southwest Asia, Korea, and afloat. LOGSA also maintains the Army war-reserve stockage list in this module.

ROUTING IDENTIFIER CODE

7-45. LOGSA is the single responsible organization within DA that assigns, changes, and issues routing identifier codes. The routing identifier code helps the Soldier get the requested item needed for his unit quickly and efficiently by routing the transaction to the corresponding SOS. The routing identifier code routes the request to all inter-service and intra-service agencies interested in the supply transaction on that item.

7-46. The routing identifier code contains the proper history of the requisition and can be accessed by all interested agencies. This code indicates a document’s creator and recipient, whether it be a requisition follow-up or other transaction. Primarily, the routing identifier code tells units who will supply the equipment needed to execute their missions (for example, aircraft repair part requisition routing identifier code B17-AMCOM).
CONTINGENCY STOCKAGE CUSTOMER SUPPORT REQUIREMENTS LIST

7-47. LOGSA is the Army focal point for contingency stockage customer support requirement products to be used to support ASLs and Stock shop. These are lists of combat repair parts for use at unit and DS levels.

7-48. The listings can be used as a planning tool to determine Class IX (Air) requirements in a combat or contingency environment. The listing includes the recommended support item NSN, quantity, cost, weight, cube, and SOS. The support item requirements module, added to LOGSA LIDB, allows users to develop their own product in an online environment. If users do not have access to the LIDB, LOGSA will prepare the desired reports for them. The reports are the organizational stock shop and DS ASL.

7-49. LOGSA is the source for recommended peacetime ASL/stock shop/bench stock lists. It computes parts recommendations to support all equipment except Class VIII (medical) used in a peacetime (garrison) environment. The support item requirements module, added to LOGSA LIDB, allows the user to develop ASL/stock shop/bench stock candidate lists in an online environment.

7-50. These reports assist field units with planning maintenance support and estimating ASL/stock shop operating costs. To obtain a recommended ASL, stock shop, use the LIDB support item requirements module or, if LIDB access is not available, contact LOGSA via email at amxsmlb@logsa.army.mil. Include the following information in the email:

- UIC.
- Level of maintenance performed (for example, unit, DS, or general support [GS]).
- Days of supply required in 15-day increments.
- End item NIINs and on-hand quantities.
- Unit POC.
- Telephone number, mailing address, and email address.

WEB LOGISTICS PARTS TRACKER

7-51. Parts tracker provides status of a requisition as it navigates the supply process. This status provides visibility of the requisition as it moves through the military or commercial transportation systems. Register at the following site, https://liw.logsa.army.mil, to gain access to Parts Tracker on LIW. Access to radio frequency tag information pinpoints the location of parts traveling through the defense transportation system.

7-52. The parts tracker also provides exact location information from commercial shippers by entering a document number. The parts tracker module demonstrates how, by integrating with other modules of the LIDB, it provides the Army with a single tool that performs analysis across maintenance, readiness, and supply business processes.

7-53. The parts tracker relates readiness, maintenance, and supply issues to specific spare/repair parts and locates those parts within the Army or joint supply chain or in transit within the sustainment pipeline. The parts tracker will aid in successful Army transformation by serving as a single analysis tool for Soldiers and logisticians at the joint, strategic, national, or tactical levels.

7-54. The web logistics (WebLOG) parts tracker resides within the WebLOG materiel track module to track spare/repair parts and major end items in the Army supply and transportation pipeline. WebLOG parts tracker can assist aviation maintenance units by tracking unit-generated aircraft repair parts requisitions by—

- NIINs.
- DODAAC and NIINs (maximum of five NIINs).
- Radio frequency tags.
- Document numbers (maximum of five).
- Transportation control numbers.
- Commercial transportation carrier tracking numbers.
7-55. In order for the Defense Logistics Agency to provide supply support and technical and logistics assistance to the warfighter, they need automated systems that provide the maintenance managers with asset visibility and web visual logistics information processing. These systems assist the brigade at echelons above brigade level with the combat logistics support agency since DLA is responsible for 84 percent of the military’s parts and 100 percent of the consumable items that military forces need.

ASSET VISIBILITY

7-56. AV data comes from many source systems throughout the military. Most sources are updated on a daily basis using a ‘behind-the-scenes’ process called extract, translate, load (referred to as ETL for short). The assets tracked in AV are broken down into these functional areas:

- Bulk fuel: Information on the on-hand stock levels of the various types of bulk fuel (such as, jet fuel and diesel fuel) to include DLA/Defense Energy Support Center (wholesale) locations and service (retail) locations. This also includes bulk fuel onboard Army and Marine Corps prepositioned ships.
- Wholesale/retail inventory: Information on wholesale and retail assets. This functional area is associated with the asset category of in-storage and includes all classes of supply.
- Blood inventory: Information on blood and blood-related products in DOD medical facilities.
- Ammunition: Information on wholesale and retail inventory status levels for Army, Air Force, Navy, and Marine Corps ammunitions.
- Prepositioned stock/war reserves: Information on Navy and Marine Corps maritime prepositioned ships, Army prepositioned stocks, and Air Force war reserve material amassed in peacetime to sustain wartime operations.
- Reference data: Cross-referencing information to enable users to get more information on pre-defined query data for materiel and facilities.
- Requisition status–information on the status of requisitions.
- Transportation: Information on assets in-transit via land, sea, or air moving within the defense transportation system and tracked via the global transportation network through RFID tags.
- Unit equipment: Equipment accounted for and maintained by organizational units within the various military services, which is based upon an authorized allowance. This type of equipment consists of Class VII principal end items and Class II clothing and equipment.

7-57. AV provides views of assets based upon their status and physical location. These views are not mutually-exclusive, for example, an afloat prepositioned item may be considered in-storage and in-theater:

- In-storage: In-storage assets are those assets stored (on the shelf) at retail consumer sites, retail intermediate storage sites, disposal activities, or in wholesale inventories, to include ashore and afloat prepositioned assets. In-storage assets encompass all classes of supply.
- In-process: In-process assets are those assets on order from the SOS. These types of assets are at some stage of the procurement process; however, because of potential near-term delivery, they are of great interest to war planners and fighters.
- In-transit: In-transit focuses on the movement of assets (materiel and personnel) from origin to destination. DOD identifies the contents of a shipment and monitors movement throughout the asset pipeline. In addition, DOD can reconstitute and re-direct shipments. In-transit personnel queries provide visibility into the status and location of personnel traveling on military aircraft.
- In-theater: In-theater focuses upon those assets immediately associated with unit activities. These items may be in-process, in-storage, and/or in-transit and be within one or more theaters.

WEB VISUAL LOGISTICS INFORMATION PROCESSING SYSTEM

7-58. Web visual logistics information processing system is a web-based, access controlled query system usable from any internet-attached computer. It accesses the logistics on-line tracking system, a defense
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automatic addressing system center relational data base system, which portrays the life cycle of a sustainment (request for issue) action.

Note. To gain access to the defense automatic addressing system center automated logistics systems, aviation maintenance unit personnel must have a request log-on identification and password, which can be obtained at https://www.transactionservices.dla.mil/daashome/webvlips.asp.

7-59. ASC customers can use the web visual logistics information processing system to track requisitions for aircraft repair parts or components from their release into the DOD pipeline, until the materiel is posted to the accountable records at the ASB SSA. The web visual logistics information processing system also can track reports of excess and movement of those excesses to the destination sustainment facility or disposal.

7-60. The web visual logistics information processing system integrates information on SOS, DOD project code, transaction status code, unit of issue code, signal code, hold code, advice code, and condition code, among others, to assist the user in tracking a request for issue through its life cycle.

7-61. The web visual logistics information processing system—

- Allows the defense automatic addressing system center customer to track requisitions with a simple user interface.
- Provides a quick response time to subscriber inquiries.
- Processes inquiries by document number, unit activity, project code, transportation control number, or NSN.
- Allows the defense automatic addressing system center customer to process queries regarding life cycle of specific request-for-issue transactions.
- Receives information regarding materiel management actions such as requisitions, supply/shipment status, and customer confirmations.

SECTION V – SINGLE STOCK FUND

7-62. Single stock fund extends down to the divisional and non-divisional ASL level. USAMC, as the national manager, capitalized stocks previously maintained in installation retail stock fund and operations and maintenance accounts. The main single stock fund (SSF) characteristics are a single point of sale, a single credit process, and a NM management process.

SINGLE POINT OF SALE

7-63. The single point of sale is the point at which a consumer-funded requisition is satisfied by a nationally-controlled Army working capital fund-supply maintenance Army account. The current retail stock fund and wholesale stock fund points of sale were merged to create a single point of sale. Aviation maintenance unit requisitions for aircraft repair parts and components are obligated upon submission to the Army working capital fund (AWCF), GCSS-A.

7-64. The single point of sale may be in one of two places. If the item is stocked locally, the supporting Army working capital fund Standard Army Retail Supply System-Level I (SARSS-1) account fills the request and issues it to the aviation maintenance unit. If the item is not stocked locally, the request is passed to a higher SOS, and then the wholesale SOS fills the request and issues the item.

SINGLE CREDIT PROCESS

7-65. Credit from the Army working capital fund-supply maintenance Army to the consumer-funded activity is based on the Army credit policy. Serviceable and unserviceable credit values are computed and corresponding “credit value indicator codes” are assigned annually. Computation of serviceable and unserviceable credit values are performed with the annual price update. Credit is granted at the point of materiel turn-in (serviceable and unserviceable) from the consumer-funded activity to the supporting Army
working capital fund-supply maintenance Army activity. These credit rates are stabilized, annualized in the year of execution, and predictable.

NATIONAL MAINTENANCE PROGRAM

7-66. The national maintenance program (NMP) supports the Army’s strategy to move to a centrally coordinated and controlled, repair-based logistics system. Distribution-based maintenance operations are identified as: operator and/or crew maintenance, field maintenance, and sustainment maintenance (formerly known as national maintenance). The CG, AMC, as the NMM for the Army, is responsible for sustainment maintenance operations. Sustainment maintenance consists of tactical, installation and depot activities and is characterized by repair to a single standard, that is, the national standard, and return to stock. The primary focus is sustainment readiness.

7-67. A NMP repair standard is the standard recognized as the single Army sustainment standard for a reparable NSN. It is defined as the highest published standard and as such may be a DMWR, a NMWR, an AMCOM engineering directive, a TM, a commercial manual, or a scope of work. It is the single standard recognized by the item manager as the sustainment repair standard."

7-68. Sustainment maintenance is the second operation of the Army Maintenance System. Sustainment maintenance is characterized by the performance of maintenance tasks, ‘off system’ in a secure environment using trained personnel, tools, and TMDE. Sustainment maintenance is typically repair and return to stock and depot maintenance operations.

7-69. Field maintenance is the first operation of the Army Maintenance System. Field maintenance is characterized by the performance of maintenance tasks ‘on system’ in a tactical environment using trained personnel, tools, and TMDE. Field maintenance is typically operator and/or crew maintenance and repair and return to user maintenance operations.

SECTION VI – CONDITION-BASED MAINTENANCE PLUS

7-70. The common logistics-operating environment is a process to achieve a technology-enabled force equipped with self-diagnosing equipment platforms that interact with a network sustainment infrastructure supporting condition-based maintenance plus (CBM+). Common logistics operating environment provides real-time, integrated health management and platform/Soldier status data to optimize equipment readiness and improve battlefield distribution.

7-71. CBM+ is the application and integration of appropriate processes, technologies, and knowledge-based capabilities to improve the target availability, reliability, and operation and support costs of DoD systems and components across their lifecycle. At its core, CBM+ is maintenance performed based on evidence of need, integrating RCM analysis with those enabling processes, technologies, and capabilities that enhance the readiness and maintenance effectiveness of DoD systems and components. CBM+ uses a systems engineering approach to collect data, enable analysis, and support the decision making processes for system acquisition, modernization, sustainment, and operations.

7-72. CBM+ functional may capabilities include but not limited to:
- Rotor smoothing.
- Vibration management.
- Engine monitoring.
- System and component monitoring.
- Structural monitoring.
- Usage monitoring/TBO adjustment.
- Electronics monitoring.
- Maintenance troubleshooting.
- Electronic logbook interface.
- Exceedance recording.
- Accident safety investigations data.
DATA MANAGEMENT AND TREND ANALYSIS

7-73. Commanders are responsible for establishing the CBM process through unit SOP’s and ensuring they are in compliance with approved CBM publications and references. Data from the digital source collector, including vibration-monitoring data, is considered airworthiness data and should be placed under operational control of the quality control (QC) office. The commander should identify a primary and alternate CBM data custodian, and place them on unit orders. The custodian is responsible for —

- Establishing a unit CBM+ SOP or annex that ensures compliance of all applicable CBM AWRs.
- Ensuring the digital migration of CBM data to the CBM data warehouse per applicable AWR requirements.
- Including airframe specific CBM manuals and handbooks as part of the TM familiarization chart.
- Coordinating with the PC office, quality control personnel, and maintenance test pilots in reference to CBM+ efforts.

7-74. Company maintenance test pilots (MTPs) are responsible for ensuring data collection is performed at established intervals and according to CBM publications and references. They are also responsible for data review, and diagnostic/prognostic implementation.

7-75. PC is also responsible for data review and trend analysis. Early discovery of an impending fault is integral to obtaining the greatest benefit from CBM+ and the safe operation of the fleet. By identifying a component prior to failure or before reaching an exceedance threshold, maintenance personnel can apply the P4T3 methodology to preventive maintenance actions or for component replacement during a scheduled maintenance event. PC will also ensure that CBM data is transferred in compliance with approved CBM publications and references. The PC office should maintain a working relationship with the program manager (PM) and CBM Working Group as a resource in the maintenance decision process.

EMBEDDED DIAGNOSTICS

7-76. Embedded diagnostics determines and reports the cause of a failure by detection of failure symptoms through the use of sensors, central processing unit, and a user interface integrated (or embedded) into the design of the system (AR 700-127) (see AR 750-43 for additional information).

Note. Diagnostics: after the failure.

EMBEDDED PROGNOSTICS

7-77. Embedded prognostics detects and reports component degradation prior to failure through the use of sensors, central processing unit, and a user interface integrated (or embedded) into the design of the system (AR 700-127) (see AR 750-43 for additional information).

Note. Prognostics: prior to failure.

DATA COLLECTION

7-78. To the Soldier, CBM+ is intended to enhance the planning and execution of aircraft maintenance by providing additional tools and data to assist with:

- Troubleshooting aircraft faults and exceedances.
- Proactive maintenance planning by converting unscheduled to scheduled maintenance.
- Reduction of unscheduled maintenance.
- Reduction of scheduled maintenance task and maintenance man-hour requirements.
- Detect incipient faults within a component.
- Provides full time vibration monitoring and management reducing wear and fatigue of the airframe and components.
7-79. At the tactical level, CBM+ provides tools, test equipment, embedded on-board sensors, embedded diagnostics, and embedded prognostics for monitoring aircraft condition. CBM+ also presents recommended proactive maintenance actions based on actual component wear.

7-80. At the strategic level, CBM+ data collected from embedded sensors, such as health and usage monitoring systems, translates into predictive trends and metrics that anticipate system failure based on the actual operating environment. This predictive approach allows for proactive acquisition and delivery of requisite spare parts to perform maintenance before imminent system failure and adjustment of scheduled maintenance tasks based on actual equipment condition. This predictive capability is significantly broadened when health and usage monitoring data is submitted to the appropriate aircraft program management office and the unit is in communication with the CBM+ Working Groups.

7-81. At the Enterprise level, CBM+ is a data-centric, platform operating environment, residing within the JTDI structure with the intent of future incorporation into GCSS-A and the Enterprise Aviation Module (EAVN). Aviation maintainers from the flight line through the logistics and analyst in AMCOM logistics center to the CBM Working Groups within the Program Management Offices will have visibility of component failures and availability across the common logistics-operating. Using algorithms jointly developed by the Aviation Engineering Directorate, industry leaders, academia, and the OEMs, CBM+ information systems will help Army aviation evaluate the way it designs, builds, and supports future systems with new and dynamic maintenance programs.

7-82. CBM+ enabling technologies include but are not limited to—

- Real-time data migration within the common logistics-operating environment.
- Closed-loop information systems that receive and transmit maintenance actions/instructions from the data warehouse down to the platform level and incorporate all automated systems.
- A common tactical LIS, such as the ULLS-A (E) and GCSS-A, that gather and integrate information obtained from the platform maintenance environment.
- Enterprise data warehouse, capable of recording condition, usage, maintenance, parts tracking, environmental conditions, and intelligent prognostics; this data warehouse must provide detailed data to Aviation Engineering Directorate and OEM engineers while also providing summary programmatic information to program and materiel managers.
- Portable maintenance aids such as automated historical records, cockpit voice recorders, and flight data recorders (CVR/FDR).
- Health and usage monitoring systems that monitor, transmit, and record operating parameters.
- Components with designed self-diagnosing maintenance status.
- Lightweight multipurpose modular test kits and built-in automatic test equipment.
- Survivability enhancements (active and passive systems) and redundant systems.
- Embedded command, control, and communications (EC3) for transmitting/data bursting
- Embedded diagnostics and embedded prognostics data from the platform through the common logistics operating environment infrastructure to maintainers, decision-makers, and logisticians.
- Total Asset Visibility of the sustainment pipeline.
- Parts marking technologies such as item unique identification (IUID).
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Chapter 8
Aviation Field Level Supply Operations

Technical supply management involves identifying, procuring, and maintaining the minimum assets required to meet operational requirements. AR 710-2, DA PAM 710-2-1, DA PAM 710-2-2, and DA PAM 738-751 address aviation sustainment procedures and policies.

SECTION I – DUTIES AND RESPONSIBILITIES

8-1. Army aviation maintenance is a primary focus of the aviation commander as it drives the availability of operational aircraft that can be used in support of the ground maneuver commander’s operational requirements. An efficient, properly resourced maintenance program will provide the maximum number of aircraft available on a consistent basis for mission support.

PRODUCTION CONTROL OFFICER

8-2. Aviation maintenance company supply personnel are assigned to the PC section by MTOE. The PC officer manages aviation parts; but this management may be delegated to another maintenance officer with oversight provided by the PC officer, if directed by the commander. Supply responsibilities include requisitioning, work ordering for repair, and turn-in procedures for parts evacuation.

TECHNICAL AND SHOP SUPPLY OFFICER

8-3. In the ASB, the ASC technical supply officer is a chief warrant officer (151A) by MTOE. The officer is responsible for the section’s internal management and daily operations of aviation Class IX (Air) repair parts. This includes requesting, processing, issuing, stocking, and turning in aircraft repair parts and components. The officer will coordinate high-priority UND A and B parts requests with the unit PC OIC. If authorized by the commander, the technical and shop supply officer will certify and authorize all high-priority requisitions and review the Commander’s Exception Report. The technical supply officer balances the unit aviation budget and prepares a periodic report for the S-4 and maintenance unit commander to review according to AR 710-2, DA PAM 710-2-1, and DA PAM 710-2-2.

TECHNICAL SUPPLY NONCOMMISSIONED OFFICER-IN-CHARGE

8-4. The technical supply NCOIC is directly responsible for the training and operational management of the technical supply section to include the request, issue, stockage, and turn-in of all Class IX (Air) repair parts, special tools, and components. Additionally the NCOIC will coordinate high-priority (UND A and B) requests with the technical supply officer. The technical supply NCOIC directs the work and supervises all technical supply actions assigned to the logistics clerks.

8-5. Technical supply personnel require a working knowledge and understanding of supply publications, FEDLOG, and NSN breakdown. Refer to DA PAM 710-2-2 for more information on cataloging and NSN breakdown.

PARTS SPECIALIST

8-6. Automated supply specialists assigned to technical supply sections process all high-priority (UND A and B) and routine priority (UND C) aircraft requisitions. They request, issue, stock, and turn-in all Class IX
(Air) repair parts, special tools, and components. Technical supply clerks maintain logs and files for manually prepared forms.

SECTION II – PRINCIPLES

8-7. Technical supply manages and distributes multiple classes of supply.

CLASSES OF SUPPLY

8-8. AR 710-2 identifies and defines the classes of supply. The most commonly used by aviation maintenance are Classes II, III, V, and IX (Air):

- **Class I**-Subsistence, including health and welfare items.
- **Class II**-Clothing, individual equipment, tentage, tool sets and tool kits, hand tools, and administrative and housekeeping supplies and equipment (to include maps). Class II items include items of equipment, other than major items, prescribed in authorization/allowance tables and items of supply (not including repair parts).
- **Class III**-POL, petroleum and solid fuels, to include bulk and packaged fuels, lubricating oils and lubricants, petroleum specialty products; solid fuels, coal, and related products.
- **Class IV**-Construction materials, to include installed equipment and all fortification/barrier materials.
- **Class V**-Ammunition of all types (to include chemical, radiological, and special weapons), bombs, explosives, mines, fuses, detonators, pyrotechnics, missiles, rockets, propellants, and other associated items.
- **Class VI**-Personal-demand items (nonmilitary sales items).
- **Class VII**-Major end items are equipment that is ready for its intended use: (principal items); for example, helicopters, launchers, tanks, mobile machine shops, and vehicles.
- **Class VIII**-Medical material, to include medical-peculiar repair parts.
- **Class IX**-Repair parts and components (to include kits, assemblies and subassemblies, and reparable and nonrepairable) needed to provide maintenance support of all equipment to include aviation-specific repair parts categorized as Class IX (Air).
- **Class X**-Material to support nonmilitary programs, such as agricultural and economic development, not included in Classes I through IX.

CATEGORIES OF SUPPLY

8-9. Supplies are requested and issued using three categories of supply; scheduled, demanded, and reoccurring demand.

SCHEDULED

8-10. Scheduled supplies may be reasonably predicted and usually do not require a requisition for replenishment. Requirements are based primarily on troop strength, equipment density, mission demands, forecasts, daily usage, or any combination. Scheduled supplies normally are shipped to users based on preplanned distribution schemes.

8-11. Classes I, III (bulk), V, and VI are typically scheduled supplies. Classes I and VI are based on troop strength. Class III (bulk) is based on long-range forecasts, equipment densities, and historic usage factors. Class V is based on densities of weapons and the unit assigned mission. Class IX (Air) is based on aircraft flight hour demands to ascertain predictable repair parts and kits required that support the established scheduled supplies.

DEMANDED

8-12. A requisition must be submitted for demanded supplies. Classes II, III (packaged), IV, V, and IX (Air) are considered demanded supplies. Aviation repair parts fall into this category and must be requisitioned
through organizational LIS. Unit LIS automatically records a demand with every processed request. Unit equipment work ordered to higher maintenance support, such as radios and LRUs, requires a manual demand entry into the unit LIS.

REOCCURRING DEMAND

8-13. Reoccurring demand supplies may be scheduled or demanded. The commander controls these supplies by marking them as regulated because of scarcity, high cost, or mission needs. Any item or group of items may be designated as reoccurring but the commander usually identifies select items from Classes II, III (bulk), IV, V, and VII as reoccurring. If an item is reoccurring, the commander must approve its release before it is issued. Items designated as demand supported are identified in operation plans and orders.

TYPES OF SUPPLIES

8-14. For accountability purposes, all Army property (except real property) is classified as expendable, nonexpendable, or durable. An accounting requirement code (ARC) is assigned to each item of supply to identify its specific classification and the degree of accounting and control that must be applied at the user level. Refer to AR 735-5 for regulatory policies and procedural guidance.

METHODS OF DISTRIBUTION

8-15. Tactical-level supply operations focus on readiness; enabling tactical commanders to fight battles and engagements. Major emphasis is placed on arming and fueling the force, and supporting Soldiers and their systems. Tactical commanders must integrate supply support with their concept of operations during the tactical planning phase. Mobile, responsive capabilities are essential for accomplishing the supply mission. The three methods of supply distribution are supply point distribution, unit distribution, and throughput distribution that are conducted in an operational environment.

SECTION III – GUIDELINES

8-16. Requisition management must comply with command supply discipline program.

REQUISITION MANAGEMENT

8-17. The Class IX (Air) repair parts appendix/annex to the AMC/AMT and the ASC unit SOP, written and updated by technical supply, outlines procedures and requirements within the unit. Technical supply outlines LIS automated procedures for all assigned/attached unit Soldiers. Appendix A identifies the basic content of an internal and external SOP.

8-18. The SOP will reflect the automated system the command uses. The procedures specified in the SOP must conform to all applicable guidance in governing regulations, directives, and policies. The SOP should be a day-to-day management tool used by all unit personnel. AR 710-2, DA PAM 710-2-1, and DA PAM 710-2-2 are essential references for maintenance officers or technicians when writing an SOP.

REFERENCE PUBLICATIONS AND DOCUMENTS

8-19. These publications and documents must be available in the unit’s technical and shops supply section:

- AR 710-2.
- AR 725-50.
- AR 750-1.
- AR 750-10.
- DA PAM 710-2-1.
- DA PAM 710-2-2.
- MWOS.
- Supply bulletins.
**FEDERAL LOGISTICS INFORMATION**

8-20. The FEDLOG database provides aircraft maintainers and aviation logisticians with the ability to identify items in the inventory and order the correct aircraft part/component.

8-21. FEDLOG is for official use only products. Cataloging for all services has been consolidated under the Defense Logistics Information Service. FEDLOG information is contained on disk. Aircraft maintainers and logisticians can query FEDLOG, using the DVDs, to obtain management data, part and reference number data, freight data, supplier data, characteristics data, and representative drawing data. FEDLOG is also available on a digital video disk and the internet. Aviation unit personnel contact the unit publications officer or NCOIC to request a subscription to FEDLOG. Disks must be rendered unreadable before disposal or recycling.

Note: FED LOG is available directly through the Internet as an Application on the LOGSA LIW main page. Users do not need hard copy DVD to access FED LOG through the LIW main page

8-22. With data obtained from FEDLOG, technical supply personnel can—

- Process and edit customer requests.
- Ensure NSN and part number accuracy of repair parts received.
- Update stock records.
- Ensure accuracy of inventories.
- Process receipt of aircraft repair parts/components.
- Facilitate Class IX (Air) budget reconciliations by verifying dollar-cost value of newly processed aircraft repair requests as well as verifying dollar credits received for unserviceable turn-ins.

8-23. Subscription information or questions regarding FEDLOG should be direct to USAMC, Logistics Support Activity, ATTN: AMXLS-MLA Building 5307, Redstone Arsenal, AL 35797-7466 or email fedlog@logsa.redstone.army.mil.

**SECTION IV – PROCEDURES**

8-24. This section and AR 710-2 provides procedures to manage aviation supplies.

**DEVELOPING STOCKAGE LISTS**

8-25. The LIDB assists users in determining the Class IX (repair parts) stockage requirements that support their organic equipment. LIDB users can compute peacetime and contingency stockage lists when needed. After logging in and moving to the support item requirements module, a user selects the peacetime model or contingency model from the report criteria tab. The peacetime model allows the user to select limited parameters (location, level, and number of days of the operation). The contingency model permits the user to select and vary other parameters (such as resupply or no resupply, availability goals to be met by the model, average customer wait time, percentage of equipment in use each day, equipment survivability in combat, optimization preference, and scenario horizon). Changes to these variables let the user complete “what if” drills to match different potential operating conditions. After developing the product, the user saves the results in text files to include the stockage list, end item applications of each support item, and summary information about the product.

8-26. In the LIDB, the user can determine the support items for an end item or all end items associated with a specific support item. The user also can extract on-hand equipment densities from the LIDB asset module for use in many of the support item requirements processes. Finally, the user can compare the support items on two or more end items and determine the support items considered common or unique to those end items.
An ASL can be added to the mix for identification of possible repair part turn-ins determined to be excess. LIDB access can be obtained at https://weblidb.logsa.army.mil/arf/index.jsp. Needed products can be obtained quickly by contacting amxlsmlb@logsa.redstone.army.mil.

STOCKAGE LIST MANAGEMENT

8-27. AR 710-2 provides management guidance for bench stock, and stock shop stockage items. Aviation maintenance units establish internal SOPs to manage their own bench stock and stock shop.

8-28. Based on accumulation of demand history, GCSS-A generates a demand analysis list for each customer. This list shows proposed additions, changes, and deletions to a unit stock shop.

8-29. Stock shop add-and-retain criteria are controlled by manager parameters. Each proposed addition, deletion, and stockage-level change requires subsequent action by the customer and the ASB SSA. The customer annotates the list to show desired action on proposed changes and sends the annotated list to the SSA. An updated Stock Shop is provided to each customer.

FORMS AND RECORDS

8-30. DA PAM 710-2-1 provides guidance on the use of forms. DA Form 2064 (Document Register for Supply Actions) must be maintained manually if the unit document register is not automated or the LIS server is down.

8-31. The LIS supply management module tracks demands for unit-generated requests. Technical supply personnel on a recurring basis review demands recorded and tracked by LIS. Stock-shop lines failing to meet the established demand criteria as outlined in regulatory policies are evaluated by the maintenance officer or technician for deletion. Refer to the LIS EUM for user information and procedural guidance.

BENCH STOCK ITEMS

8-32. Bench stock items are authorized for all aviation maintenance units. Aviation maintenance officers/technicians, based on experience, should recommend additions, deletions, or stockage-level adjustments to ensure maintenance procedures are not halted due to a shortage of bench stock items.

Management Procedures

8-33. The customer work request priority may be used to request the quantity required to complete the job when stock is at zero balance. Bench stock items are not demand supported. The authorized stockage level is 30 days for all units not collocated with a higher-level SSA; if collocated with an SSA, the authorized stockage level is 15 days. SSA bench stock procedures are outlined in DA PAM 710-2-2.

Note. Refer to appendix H for compliance guidance on management, request procedures, and computation and stockage requirements of all bench stock items assigned to aviation maintenance units.

8-34. According to AR 710-2, bench stocks are authorized at all aviation maintenance units. Bench stocks are composed of low-cost, high-use consumable Classes II, III (packaged), IV, and IX (Air-not including components) items used by maintenance personnel at an unpredictable rate. Examples of these items are common hardware, resistors, transistors, wire, tubing, hose, thread, welding rods, sandpaper, sheet metal, rivets, seals, oils, grease, and repair kits. The commander or designated representative will conduct a semiannual review of the bench stock. No specified demand criteria exist that units must meet to add line items to the bench stock list.

Management in Support of Split-Based Operations

8-35. At the AMC/AMT, bench stock management can be centralized, collocated with other aircraft repair parts, and internally managed by supply personnel. The supply section is responsible for coordinating and overseeing accountability procedures, to include regularly scheduled inventories, as outlined in AR 710-2.
Aviation operational unit bench stock items can be stored in flyaway containers, or similar containers, to facilitate deployment in support of split-based operations and internal daily use.

8-36. At the ASC, bench stock management and accountability is the responsibility of the individual platoon, section, or shop authorized to carry and store bench stock and the company/troop consolidated technical supply. Trained technical supply clerks will comply with all accountability and inventory requirements for their assigned bench stock in their platoon, section, or shops.

8-37. ASC units also consolidate a select number of assigned technical supply clerks and bench stock from each section or shop at the company/troop level. The company/troop technical supply OIC, consolidated clerks, and bench stock operation of this section report directly to the PC officer, assistant PC OIC, and NCOIC. An ASC consolidated bench stock section will standardize the unit bench stock management procedures. The consolidation of personnel and bench stock provides—
- A centralized, single point of issue.
- A combination of the same item held in multiple sections/shops allowing a lower total quantity.
- The most efficient use of personnel to provide split-based and continuous operations.

**SHOP STOCK ITEMS**

8-38. Shop stocks are demand-supported repair parts and consumables stocked within a maintenance activity (ASB with a support-level maintenance mission authorized by an MTOE, TDA, or joint table of allowances). SSA shop stock procedures are outlined in DA PAM 710-2-2.

8-39. Shop stock repair parts are used internally to accomplish maintenance requests or programmed repair. Criteria for the number of demands required and the items authorized for stockage are outlined in AR 710-2.

**AUTHORIZED STOCKAGE LIST**

8-40. The ASL is a list of all items authorized to be stocked at a specific level of supply to meet the needs of the aviation customers they support. The supporting SSA ASL becomes the SOS from which aviation units can replenish their stockage of parts and components to authorized levels.

8-41. ASL items are maintained by the ASB SSA to support and complement aviation maintenance unit stock shop. The ASL is the SSA authority to stock the item and is controlled and flexible. It shows items proven, by experience, to be sufficiently active at an SSA to warrant stockage. The ASL also contains other items with a projected need.

**REPARABLE MANAGEMENT**

8-42. According to DA PAM 710-2-2, repairable management includes repairable assets having a maintenance reparability code of D, F, H, or L.

**STOCKAGE CRITERIA**

8-43. These assets are job ordered by the SSA to a maintenance unit or activity, repaired or washed out, and returned to the SSA for stock or disposition. Reparables are part of the SSA ASL. SSAs receive, store, and issue these assets from a specific RX activity. The stock records officer at the SSA and maintenance shop officer at the ASC jointly select DS repair items based on demand history and maintenance data. Reparables may be selected for stockage if these items are—
- Authorized for removal or replacement at the support maintenance level or lower according to technical publications.
- Authorized for repair at the field level and the maintenance unit is authorized the personnel and tools to do the repair.

**REPARABLE EXCHANGE**

8-44. ASB (distribution company) and SSAs maintain a selected list of aircraft RX parts. When alerted by the PC OIC or maintenance officer/technician, technical supply personnel will scrub internal repair parts lists
to see if the aircraft parts needed are aircraft RX parts. If needed repair parts are RX items, technical supply personnel will initiate the required forms to request serviceable RX aircraft repair parts or components. Request for turn-in forms must also be initiated to accompany unserviceable repair parts. DA Form 2765-1, (Request for Issue or Turn-In) is prepared according to DA PAM 710-2-1 and hand-carried, along with the unserviceable component, to the ASB (distribution company) RX section for exchange with a serviceable item. Ensure demands for components are logged into the LIS of record by the technical supply clerk.

INSTALLATION SUPPLY SUPPORT ACTIVITY

8-45. The installation SSA will not maintain stockage levels, except for reparables repaired by the installation for DS SSAs or installation activities identified as DS system customers. Requisitions for those classes of supply under the DS system will flow through the installation SSA for editing, funding, and screening of excesses before being sent to the distribution management center (DMC).

8-46. Each SSA will have an authorized stockage list (ASL) which is unique to their organization and based on the needs of its supported units. An authorized stockage list review and analysis board will be conducted annually, but may occur more frequently based on theater directives. Avoid the temptation to stock excess supplies since maintaining large quantities of non-demand stocks can impede mobility when departing theater and decrease readiness. SSA procedures are outlined in DA PAM 710-2-2.

SECTION V – AIRCRAFT REPAIR PARTS MANAGEMENT

8-47. Commanders and maintenance leaders must be fiscally responsible. Maintenance leaders should conduct a daily review of maintenance activities to ensure effective and efficient practices are utilized that aid in keeping costs to a minimum and possibly lead to cost reductions. A reduction in maintenance costs means an increase in available resources to support force structure, training, and other high-priority needs. One method of minimizing costs is ensuring the use of all available diagnostic equipment to troubleshoot and repair a system versus multiple component replacement as a troubleshooting method.

STORAGE OF AIRCRAFT REPAIR PARTS OR COMPONENTS

8-48. Storage of aircraft repair parts or components are a continuation of receiving and preliminary to issuing. Accuracy of records and operations are critical to ensuring stored repair parts are quickly located and made ready for issue. The storage activity provides physical receipt, storage, maintenance-in-storage, and safeguarding of items and records. Supplies received and signed for from an SSA are processed and document registers reconciled.

8-49. After NMCS aircraft repair parts (high-priority requisitions UND A) are received, processed, and document registers reconciled, these repair parts will not be stored. Unit technical supply personnel will contact owning units for immediate pick up of all high-priority requested parts. Aircraft repair parts received and processed but not released to owning units are stored according to guidance outlined in this section.

8-50. Stock shop line items are stored, secured, and protected according to the control inventory item code which is contained on FEDLOG. Care of aircraft repair parts or components in storage are managed and inspected according to AR 740–3. Bench stock and stock shop line items are stored in an area convenient to maintenance personnel, shops, and work sites. Units must emphasize proper storage of aircraft repair parts during field operations. Unprotected repair parts, components, and assemblies can quickly deteriorate if exposed to the elements.

8-51. An inspection schedule must be established for items in storage. Unpackaged and unpreserved items must be inspected for rust, corrosion, and broken packs. Particular emphasis must be placed on items with an established shelf life (such as rubber gaskets, neoprene seals, and batteries) to ensure expired-date packages are not issued. Storage practices should comply with safety and environmental laws and regulations. Technical supply supervisors must have a rotational plan, outlined in their SOP, for personnel to follow when issuing stocks with an established shelf life.
REQUISITION OF AIRCRAFT REPAIR PARTS

8-52. Supply personnel will process all aircraft repair parts or component requests. They fill aircraft parts requisitions using internal Class IX (Air) assets consisting of bench stock and stock shop line items. If the item is not stocked or is at zero balance, the requisition is passed to the assigned SSA.

8-53. Supply personnel must review parts catalog to include bench stock and stock shop, for availability before processing a request to a higher SOS. This review must include verification that the primary NSN being requested has no substitutes.

8-54. Supply personnel will refer to the interchangeability and substitutability file of FEDLOG for interchangeable or substitutable aircraft repair parts. This review can help prevent needless aircraft downtime by identifying on-hand interchangeable or substitute repair parts within the installation or command.

AIRCRAFT REPAIR PARTS REQUISITION APPROVING AUTHORITY

8-55. Commanders are responsible for the accurate assignment of PDs. The commander will review or delegate this authority using a memorandum order or DA Form 1687. The PC OIC or maintenance officer/technician, operating under a delegation of authority from the commander, will certify high-priority parts requests according to DA PAM 710-2-1.

8-56. Maintenance officers/technicians will refer to applicable TMs to verify the source, maintenance, and recoverability codes before authorizing high-priority aircraft repair part or component requests. The maintenance officer/technician will certify the request upon aircraft repair part verification. After request certification and approval, the technical supply personnel will process the repair parts request.

8-57. Authorization to perform a higher level of maintenance is approved through an LOA. An LOA authorizes maintenance action and the ordering of repair parts. Supply personnel will not order repair parts for a higher-level maintenance action until the LOA request is approved.

ISSUE OF AIRCRAFT REPAIR PARTS

8-58. New aviation maintenance commanders will send a copy of assumption of command orders or appointing memorandum to each SSA and technical supply section at the ASC providing supplies. These documents authorize the commander or accountable officer to request supplies. The commander to designate additional responsible personnel to sign for and receive aircraft repair parts uses DA Form 1687.

8-59. SSAs and technical supply sections at ASCs will have assumption of command orders and DA Form 1687 on hand from supported aviation unit commanders before aircraft repair parts are released to aviation unit personnel. Logistics personnel will immediately notify requesting units when high-priority UND “A” and “B” repair parts are ready for pickup.

SUPPLY STATUSES

8-60. When an aircraft repair part request is not filled by an SSA, a supply status is issued to the requesting unit. Supply statuses provide information to technical supply, support operations, and maintenance personnel and leaders for analysis to improve or expedite the requisition and replenishment process. The statuses of supply are shipment and exception. A shipment status displays an estimated or actual shipping date. An exception status displays a supply decision made by the supplier, such as a substitution, back-order, or request rejected. DA PAM 710-2-1 provides a complete listing of supply status codes. Supply statuses are provided by an SSA on automated forms or electronic media.

DOCUMENT NUMBER RECONCILIATIONS AND VALIDATIONS

8-61. According to AR 710-2, reconciliations are performed monthly and validations quarterly. The purpose of reconciliation is to keep due-in and due-out files synchronized, while validation ensures requests and requisitions are for legitimate requirements. Reconciliation/validation of open document registers is a process that begins when the first SOS provides its customers with a listing of due-outs requiring validation. The process continues by reconciling the supporting SSA records with the customer’s validated requirements.
SSA activities will provide supported units with an external SOP outlining the reconciliation and validation process. Customer validation and reconciliation procedures are evaluated during ARMS inspections and command inspection programs.

8-62. Technical and unit supply personnel will reconcile and validate open document numbers by:

- Checking TMs or applicable references to validate the authorization for aircraft repair parts or components.
- Checking if requested repair parts or components may have been obtained from another source.
- Determining if there have been any changes to stock shop line items to justify an open document number listed in the assigned document register.

8-63. When items are identified as no longer required or excessive quantities are identified, requests for full or partial cancellation of the requirement are submitted to the SSA. The failure to validate a requisition for two consecutive cycles may result in the cancellation of the requisitions by the SSA, further delaying critical maintenance actions. For further information regarding the requisition process see AR 710-2.

MANAGEMENT TOOLS

8-64. Proper use and control of the automated supply system will enhance supply customer support. Commanders at all levels, at a minimum, review the following on a regular basis:

- Average customer wait time; the average time between submissions of a customer request receipt of materiel.
- Percentage of stock shop and ASL lines at zero balance.
- Budget expenditure, remaining funds, and flying-hour program dollars relationships.
- Accuracy of readiness reports.
- Accuracy of reconciliation procedures.
- Inventory accuracy.
- Requirement for repair parts needed against NMCS or anticipated-NMCS requirements or needed for normal replacement; document registers should also be checked to see if required items are on-order.
- Number of items above the authorized retention level (excess); excess items increase cost and reduce available storage space.

8-65. Unit document register entries should be compared to the latest customer due-out reconciliation list to ensure all requests are valid. Document register entries identified as not valid should be researched. If the part is still needed, the technical supply clerk should reorder it.

SECTION VI – LOGISTICS INFORMATION SYSTEMS

8-66. LIS is an inventory management tool allowing visibility of assets through all phases of supply and maintenance by Army and contractor personnel. Leaders should be aware that LIS is continuously evolving due to hardware and software updates. To provide units with better AV, validation, accountability, and lifecycle management, the DOD introduced and standardized a means of direct part marking of all unique identifier items within the DOD supply system.

8-67. If the server is down, technical supply must be able to locate assets in its site inventory, manually submit orders, and back date orders into the LIS when available. By maintaining copies of specific reports and performing manual processes, the technical supply section is able to assist units in maintaining their operational pace/tempo until connectivity is restored.

8-68. The supply role is overall aviation maintenance repair parts and select tools acquisition, turn-in and oversight, including management of all bench stock, stock shop, kits, and deployment packages. Supply also reviews specified reports associated with aviation maintenance actions for accuracy (document control register, commander exception report, and financial transaction listing).
8-69. The technical/shop supply officer and NCOIC require command-appointed authority in writing to authorize high-priority designator (02 to 06) parts requests. Technical/shops supply personnel are assigned directly to the PC section to improve overall accountability and operability.
Chapter 9

Airframe and Component Repair Platoons

Maintenance and repair platoon leaders must manage their team, shop, and section operations daily to obtain optimum productivity from personnel and achieve unit MOE goals.

SECTION I – DUTIES AND RESPONSIBILITIES

9-1. The airframe and component repair leadership are the principal maintenance manager-coordinators within their platoon, coordinating maintenance and sustainment actions.

PLATOON LEADER

9-2. Aviation branch lieutenants serve as aircraft maintenance and CRP leaders in AMCs and AMTs. Due to complements of over 100 Soldiers and large equipment hand receipts, Aviation branch captains serve as platoon leaders in the ASC. The platoon leader is responsible for internal management of all maintenance functions and activities assigned to his or her platoon. The platoon leader ensures maintenance personnel are trained on the most current assigned maintenance equipment and prepared to operate in any operational environment.

9-3. The platoon leader also coordinates all internal actions regarding assigned aircraft, subsystems, and component maintenance work orders. They are responsible for administrative and personnel actions affecting assigned personnel. Additionally, the platoon leader is responsible for the management of assigned sections/shops, to include all maintenance procedures performed by aircraft and component repair personnel.

9-4. The platoon leader coordinates priority of work in support of the MOE goals in concert with PC guidance. Work-order priority assignments are determined by PC personnel that coordinate any changes of these priorities with the platoon leader.

AVIATION MAINTENANCE TECHNICIANS

9-5. Aviation maintenance technicians serve as key aviation maintenance advisors to commanders and platoon leaders assigned to the ASC and AMC/AMT. The officer is a graduate of the Warrant Officer Basic Course, which encompasses aviation maintenance, armament, and systems repair certification. At the ASC and AMC/AMT, the maintenance technician performs roles within the armament or systems repair section as the maintenance office directly responsible for the internal management operations of all shops/sections assigned within the ARP/CRPs.

9-6. The section maintenance technician coordinates work-order assignments based on priority of work assigned by their platoon leader in support of PC guidance. They manage all shop, armament, and repair section maintenance procedures involving aircraft equipment systems, subsystems, associated components, and weapons platforms.

9-7. At the ASC, the maintenance technician manages shop, armament, and repair section maintenance procedures listed previously. In addition, the maintenance technician manages modification and overhaul of aircraft LRUs and components when directed by ASAMs, TBs, MWOs, and higher headquarters.

9-8. The maintenance technician distributes work and tracks all high-priority work requests to completion, including quality assurances of finished maintenance actions within the CRP. The maintenance technician coordinates for MOCs and MTFs and supports recovery/evacuation of aircraft when required. The officer
notifies the platoon leader when a work stoppage has occurred on a high-priority work request due to a lack of parts.

PLATOON SERGEANT

9-9. The platoon sergeant is responsible to the platoon leader and in coordination with the maintenance officer/technician, provides guidance, mentorship and training to assigned repair personnel on troubleshooting procedures for all aircraft systems, subsystems, associated weapons systems, and component repair.

9-10. The platoon sergeant is responsible for the status of equipment on-hand and any problems that arise affecting the overall maintenance and repair operation of the sections. They ensure all maintenance actions and procedures are performed according to applicable aircraft TMs.

9-11. The platoon sergeant ensures that platoon and shop personnel are familiar with the latest aircraft and component TMs and changes affecting maintenance and repair procedures. They coordinates all maintenance support and actions in the absence of the platoon leader or maintenance officer/technician. The platoon sergeant assists and advises the platoon leader and maintenance officer ensuring personnel are trained on the most current assigned maintenance equipment and prepared to operate in any operational environment.

SECTION SERGEANT

9-12. The section sergeant supervises and assigns work within the section. They ensure required publications are on-hand and all applicable changes are promptly posted to support the repair functions of his assigned section. The sergeant coordinates all maintenance actions with the maintenance officer/technician or platoon sergeant to maintain optimum workflow of all assigned maintenance requests.

9-13. The section sergeant is familiar with the capabilities of his or her assigned section personnel, subordinates, and equipment. They ensure subordinates are trained beyond experience and capable of functioning within the unit. Additionally, they manage the workload according to availability of resources and equipment.

9-14. The section sergeant informs the platoon leader, maintenance officer/technician, and platoon sergeant of any significant delay (maintenance, equipment, aircraft repair parts, or personnel) hindering the completion of any maintenance work requests.

9-15. The section sergeant monitors all NMCS work order requests to ensure assigned work orders have valid document numbers and supply statuses. The sergeant is responsible for administrative management procedures, to include filing of all aircraft required forms and records according to AR 25-400-2. They provide senior maintenance leaders with work-order statuses and updates.

REPAIRER

9-16. Repairers are responsible for following all applicable TMs including notes, cautions, and warnings listed when performing component repairs and maintenance procedures on assigned maintenance work orders. They maintain 100 percent accountability and serviceability of all assigned tools and equipment. Personnel are familiar with all applicable aircraft maintenance manuals and corresponding changes as they are posted.

SECTION II – PROCEDURES

9-17. Maintenance personnel will use only current, applicable aircraft and systems maintenance manuals to conduct inspections and troubleshooting procedures on aircraft systems or subsystems. Using current maintenance TMs ensures maintenance procedures meet current requirements. Troubleshooting of affected aircraft systems and subsystems must take place before any further maintenance action or aircraft component repair begins. Thorough and accurate troubleshooting of affected aircraft systems and subsystems narrows the scope and magnitude of maintenance and repairs, saving man hours and unnecessary component replacement.
9-18. Maintenance personnel conducting approved and authorized repairs of aircraft components will strictly adhere to established repair methodologies. These methodologies are outlined in applicable aircraft maintenance TMIs.

9-19. Maintenance personnel also will use only authorized tools when conducting aircraft maintenance. Maintenance supervisors will inventory toolboxes at least monthly in the active component. Maintenance personnel assigned toolboxes will inventory their toolbox after each maintenance task to help control FOD.

9-20. The PC and QC OIC must seek authorization from the next higher level of maintenance support when a component repair falls out of the accepted guidelines outlined in aircraft TMIs. The AMRDEC LE grants MECs approving maintenance procedures or component repairs not outlined in aircraft TMIs to the repairer. AMRDEC LEs can grant a MEC to perform limited, specific sustainment maintenance action.

9-21. While AMRDEC LE has the authority to approve nonstandard maintenance procedures, component repairs, or authorize deviations from standard aircraft TMIs, the potential for errors can occur. As a result, maintenance personnel should proceed with caution when performing nonstandard, AMRDEC LE-approved maintenance procedures or component repairs. During the repair procedure, the entity that granted or facilitated the approval should be present to supervise and inspect the repair.

9-22. Platoon leaders should frequently receive work order status reports to ensure timely progress and identification of serious delays requiring additional resources. The platoon leader ensures the platoon meets required timelines and command MOE associated with work-order backlog reduction to sustain combat power across the brigade and ACS.

*Note. Work never begins on a component or item to be repaired unless it is accompanied by all required forms and records or otherwise directed by the PC OIC/NCOIC.*

**SECTION III – REPAIR POLICIES**

9-23. The following repair policies provide guidance to managing shop operations.

**MAINTENANCE FORMS AND RECORDS POLICIES**

9-24. Entering accurate and descriptive data on all forms and records ensures that personnel receive a safe and airworthy aircraft. Personnel at all levels of maintenance, including DOD contract support, have an equal stake in maintaining accurate aircraft maintenance forms and records. QC and TIs ensure that aircraft maintenance forms and records comply with applicable publications and regulations.

**COORDINATING MAINTENANCE ACTIONS AND REPAIRS**

9-25. Supported maneuver units request maintenance support for their assigned aircraft through the AMC/AMT PC office. Supported units indicate the need for scheduled and unscheduled maintenance support according to the AMC/AMT maintenance SOP, as well as directed during PC meetings.

When an aircraft fault exceeds the company/troop maintenance capability, a work order request is initiated in LIS or on a DA Form 2407.

**AIRCRAFT COMPONENT REMOVAL POLICIES**

9-26. If an aircraft component is unserviceable, the PC office coordinates all maintenance actions. Maintenance actions include coordination for QC assistance and oversight when maintenance personnel remove an unserviceable aircraft component. In addition to generating associated maintenance work requests to remove unserviceable aircraft components, the PC office coordinates sustainment actions with the technical supply officer to procure a serviceable replacement component.

9-27. Unserviceable components, once removed from an airframe, are thoroughly cleaned, preserved, inspected by a TI, tagged, and packaged. DD Form 1577-2 (Unserviceable [Reparable] Tag-Materiel) is filled
out and attached to the unserviceable component. The unserviceable component and DD Form 1577-2 undergo a technical inspection by a qualified TI before the unserviceable component is work ordered to AMC/ASC or turned into supply. See Appendix G for further information on care of supplies in storage (COSIS).

TEST, MEASUREMENT, AND DIAGNOSTIC EQUIPMENT REPRESENTATIVE

9-28. Leaders will ensure personnel use only prescribed, serviceable, and functional TMDE as outlined in aircraft TMs. When a maintenance procedure requires the use of calibrated items, the calibrated item must be current within the calibration window, not expired and with the applicable label affixed.

9-29. The ARP and CRP platoon leader will appoint a platoon calibration program representative. The representative monitors the platoon TMDE and works directly with the unit TMDE coordinator to ensure all calibrations operations are performed to standard. The representative coordinates with all platoon sections to ensure timely submission of items requiring calibration before items are overdue and rendered unusable. They complete and maintain the platoon master listing to include a comprehensive review for accuracy and serviceability status. Additionally, they also requests platoon level approval to submit items requiring priority calibration.

NONDESTRUCTIVE INSPECTION

9-30. NDI is a method used by the powertrain shop to complement a QC inspection. Aircraft components may have suspected flaws that must be confirmed or denied. A defect may be visible, but the severity or extent of the defect is unknown. For example, scratches can look like cracks and hairline cracks can look like scratches. The TI must evaluate the defect to determine whether NDI methods are necessary to further evaluate the extent and severity of a defect.

9-31. NDI testing methods are used to determine the composition, integrity, dimensions, or properties of a component or structure without damaging the item. Some NDI methods include liquid penetrant, magnetic particle, electromagnetic, ultrasonic, and penetrating radiation methods. AR 750-1, TM 1-1500-204-23-7, and TM 1-1500-335-23 cover NDI details and procedures.

SPECIAL TOOLS

9-32. The ARP and CRP utilize special tools to accomplish scheduled and unscheduled maintenance. Leaders will develop a list of required special tools by type, source, class, price, quantity on-hand, quantity short and funding required as defined in chapter 3 to support every aircraft, system, or component supported by the platoon. Leaders will energize the acquisition process through the commander, supply room, and technical supply to achieve a 100 percent fill of the platoon special tool kit. All special tools will be tracked in GCSS-A or the applicable Logistics Information System (LIS), and inventoried at least annually and during change of hand-receipt holder inventories. Leaders will ensure maintenance and serviceability of all special tools in support of the unit MOE. Refer to chapter 6 for detailed information on special tools.

MAINTENANCE REFERENCE AND PUBLICATION LIBRARIES

9-33. Although the master reference and publications library is located in the QC section, every section, shop, and platoon responsible for conducting aircraft maintenance repairs and procedures is authorized a reference and publications library. Every section, shop, and platoon NCOIC is responsible for researching and verifying technical publications requirements for his assigned maintenance and component repair areas. NCOICs are responsible for ensuring their reference and publications libraries are current and updated with the latest published changes. Timely updates of assigned reference and publications libraries are essential to proper maintenance practices. NCOICs must also train their assigned maintenance personnel in posting reference/publications changes. A fielded change not promptly posted makes those corresponding publications unsafe for use as a reference material.
**Note.** If a maintenance repair or procedure in an aircraft TM is suspected of an error, submit a DA Form 2028. The section, shops, and platoon NCOIC is responsible for coordinating all DA Form 2028 submission requirements with QC personnel.

9-34. Assigned maintenance personnel are responsible for familiarizing themselves with the appropriate TMs to include the latest changes, before conducting maintenance procedures. Section, shops, and platoon NCOICs monitor assigned maintenance personnel compliance with aircraft TM familiarization using an updated and current familiarization record. By-the-book maintenance not only includes having the corresponding aircraft TMs open but also using them to conduct maintenance procedures.

**Note.** Refer to AR 25-30 for posting reference and publications requirements.

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### SECTION IV – SCHEDULED MAINTENANCE OPERATIONS

9-35. Recurring requirements for maintenance allow prediction and early planning. Since these recurring requirements are fixed by regulation, leaders can shape their organizations to efficiently perform these operations and reduce delays. Enhance scheduled maintenance operations by—

- Ensuring special tools are serviceable and on-hand in sufficient quantities.
- Isolating team personnel from duty rosters for the duration of the scheduled event.
- Coordinating with technical supply to ensure sufficient Class IX (Air) is on-hand.
- Reviewing the inspection procedure prior to aircraft induction and adjusting sequencing to improve efficiency if applicable (units may submit adjustments for consideration on DA Form 2028).
- Setting measureable progress goals and ensuring on-time completion of daily tasks.
- Tracking phases by percent inspection complete/percent maintenance or tasks completed such as 65 percent inspection/25 percent maintenance.

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### SECTION V – UNIT LEVEL LOGISTICS SYSTEM-AVIATION (ENHANCED) PROCEDURES

9-36. The ULLS-A (E) back shops program provides a comprehensive web-based submitting and tracking system for work orders. This system allows PC to accept and reject work orders, track work orders, check progress and statuses of work orders for maneuver units, and submit work orders to support units. Back shops accept the work orders from PC and, if necessary, submit an inter-shop work order to the appropriate shop.

**Note.** Refer to the ULLS-A (E) EUM for additional user information and procedural guidance.

9-37. The back shops select role screen is displayed with a drop-down menu to allow selection of—

- PC administrator (unit PC)-back shops (PCA-BS).
- PC user (supported unit user)-back shops (PCU-BS).
- Shop chief-back shops (SC-BS).
- Shop technician-back shops (ST-BS).
- Technical inspector-back shops (TI-BS).

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### PRODUCTION CONTROL ADMINISTRATOR-BACK SHOPS

9-38. Accessing the PCA-BS allows the PC administrator to—

- Create, view, and check the status of DA Form 2407 (work order).
- View the comments added by the unit submitting the work order.
- Submit the work order from the units to the back shops for repair.
Authorize personnel generate an inter-shop work order.

9-39. Once the work order is sent to the appropriate shop, the PC administrator can view the DA Form 2407 to ensure work is done and status of the ongoing maintenance is according to the TMs. To accept the work order, the PCA-BS clicks on the “accept” button.

9-40. Once the work order is accepted internally by the back shops and a subsequent status is assigned, authorized personnel, to include PC, can view the latest status assigned to the work order by clicking on the “status history” button. If the same work order is in need of additional internal support from another shop or section, an internal work order is generated requesting support by clicking the “create” button. Once the internal work order is generated, authorized personnel view the internal work order by clicking on the “inner shops” button.

PRODUCTION CONTROL USER-BACK SHOPS

9-41. The PC user is the supported unit PC representative. The PC user can only view work orders and corresponding statuses of work orders submitted to the support unit. The PCU-BS has a screen so the user can highlight the work order sent to the ASC unit.

SHOPS CHIEF-BACK SHOPS

9-42. The SC-BS ensures all back shops are operating correctly and safely. They work with PC to ensure work orders are processed and tracked to completion. The SC-BS also ensures shops are working according to all prescribed TMs and other publications.

9-43. Once a work order is accepted from the PCA-BS and goes to a specific shop, the SC-BS clicks on DA Form 2407 to view the work order and see which shop it has gone to by clicking on the “inner shops” button.

SHOPS TECHNICIAN-BACK SHOPS

9-44. The ST-BS is the shops technician doing the work. Once the ST-BS receives the work order from the PCA-BS, they will review it to ensure all appropriate blocks are completed.

9-45. The ST-BS will scroll to the bottom of the work order and click in Section IV, Task Requirements Data; the screen will display task requirements of DA Form 2407. The ST-BS will scroll to the top of the screen and select “add task.” The “add task” fields have the following data input points:

- Quantity to be repaired.
- Work center.
- Failure code.
- Man hours projected.
- Man hours spent.
- Task description.
- Action code.
- Task number.
- PID assignment.

TECHNICAL INSPECTOR-BACK SHOPS

9-46. The TI-BS ensures maintenance is performed correctly and according to prescribed TMs. To select the TI-BS, the user clicks on the role bar on the left side of the screen, scrolls down to the bottom, and selects TI-BS. After selection, a screen appears displaying work orders awaiting inspection.

9-47. When the TI-BS is notified, the inspector inspects the maintenance performed and completes the appropriate blocks of DA Form 2407.
Appendix A
Standard Operating Procedures

This appendix proposes topics and procedures to assist leaders in drafting an SOP that provides Soldiers with continuity and standardized procedures within their unit. When producing the aviation maintenance SOP, the leadership conveys to the Soldier the guidelines and procedures to be executed in the absence of direct leadership. The commander reviews the SOP for content, context, and clarity of purpose. The commander approves the SOP by signing the document, at which time the SOP becomes a binding document.

GENERAL

A-1. Topics contained within an SOP are discussed in the following paragraphs.
   ● Heading.
   ● Applicability.
   ● Purpose.
   ● Scope.
   ● Objectives.
   ● Revisions.
   ● Responsibilities.
   ● Operations.
   ● Procedures.
   ● General information.
   ● References.

HEADING

A-2. The heading of the SOP varies depending on the type of internal SOP. If the SOP is part of an administrative SOP at the battalion/squadron level, then the heading will reflect the SOP as an appendix to the administrative SOP.

A-3. If the document is part of the AMC/AMT SOP, then the heading will list the name of the organization, the station, and the date. It will also include the number (if used) and type (internal or external) of SOP.

APPLICABILITY

A-4. This section identifies the unit personnel (assigned or attached).

PURPOSE

A-5. This section states the overarching concept or reason the SOP is written—such as, to provide a standardized guide for maintenance support procedures, responsibilities, operational policies, and maintenance actions in support of aircraft maintenance and related ground support system repair.
SCOPE
A-6. This section states the scope this SOP applies; garrison, field, and/or deployed to a theater of operations. If specific instructions apply while deployed, commanders and leaders convey additional instructions or policies.

Note. An example of specific instructions or guidance is “The following policies are established to augment this SOP while on deployed status. The provisions of this SOP are complied with unless written deviation is authorized by the AMC/AMT commander. If this SOP is in direct conflict with a DOD or DA regulation or directive, the higher authoritative reference takes precedence.”

OBJECTIVES
A-7. This section states the objectives of the AMC/AMT; such as, to provide maintenance support to assigned units, related repair parts supply, and aircraft recovery support when requested; and perform maintenance on aircraft systems or subsystems, aircraft armament, and avionics equipment.

REVISIONS
A-8. SOP relevancy is directly linked to currency. A statement such as this must be in the SOP; “This SOP must be reviewed and, if necessary, revised whenever a new or revised DA publication is fielded.” In addition, explain or identify—

- Who can submit changes and how often?
- The classification of how urgent a stated change is and how soon must it be applied to the SOP.
- Who determines the criticality of the recommended change?
- Who receives and reviews recommended SOP changes?

RESPONSIBILITIES
A-9. This section identifies the responsibilities of the commander, leaders, and maintainers. Some responsibilities are to monitor—

- Supervisor application of maintenance and safety programs.
- Stock shop management.
- Daily flying hours and OR condition of each assigned or attached aircraft.

OPERATIONS
A-10. This section identifies the concept of operations. Additionally, this section specifically quantifies and explains, if applicable, deviations to established standard procedures. Topics include—

- What function or service is provided by each platoon, shop, or section?
- How are maintenance activities and actions conducted?
- The days and times specific operations or procedures are conducted.
- The standard procedures maintainers follow when seeking assistance.

PROCEDURES
A-11. This section provides specific steps; such as, when writing the AOAP or TMDE appendix to the SOP, the following is required:

- Samples are taken within 15 minutes after shut down (hot).
- Cold samples are explained in the circumstances block on DD Form 2026.
- Special samples are marked “SPECIAL” in red.
- DD Form 2026 is turned into QC.
Oil sample bottles are marked with the aircraft serial number and component name.

Oil samples are turned in the same day as taken.

GENERAL INFORMATION

A-12. This section is optional. If used, the following blanket statement can be entered: “Close coordination from the crew chiefs, MPs, platoon sergeants, and supporting sections in the AMC/AMT is essential to the success of a well-organized maintenance program.” This SOP is divided into separate appendices that cover specific areas of aircraft maintenance.

A-13. All maintenance personnel are required to read and be familiar with the unit SOP. All maintenance activity is conducted according to guidance contained within this SOP.

REFERENCES

A-14. This section contains all applicable references and publications. DA PAM 25-30, which can be found on the Army Publishing Directorate website contains a detailed listing of reference and publication requirements.
Appendix B

Safety

This appendix explains the considerations and methods in recognizing and correcting potentially dangerous safety and operational hazards. Personnel must understand the inherent hazards of working in and around aircraft and know and apply the safety principles discussed in this appendix.

GENERAL

B-1. Aviation operations involve inherently higher risk (higher probability of accidents and more severe consequences) than most ground operations. Historically, when deployed to force application theaters, Army aviation has suffered more losses to accidents than to enemy action. Aviation accidents in force application environments are typically the same type experienced in peacetime. A sound and effective safety program for maintenance operations is a basic requirement for all Army aviation maintenance units. Aviation maintenance commanders are responsible for protecting and preserving Army personnel and equipment against accidental loss.

Note. AR 385-10 contains guidance on developing a sound and comprehensive maintenance unit safety program.

ACCIDENT CAUSES

B-2. Aviation maintenance commanders, maintenance officers/technicians and NCOICs (in combination with assigned ASOs) must evaluate maintenance operations to identify potential root causes for accidents. Particular attention must be paid to the five elements (person, task, training, material, and environment) of the system, program, or functional area during the evaluation process to ensure management induced errors receive appropriate corrections. Identifying hazards or potential causes of maintenance-related incidents will not completely eliminate accidents; however, they will mitigate ongoing maintenance operations while minimizing the potential of mission degradation, injury or loss of personnel, or damage or destruction of equipment as a consequence of aviation operations.

B-3. An aviation accident is seldom caused by a single factor. Accidents are more likely to result from a series of events and a combination of factors such as human error, materiel failure, or environment. This fact must be recognized in developing an aviation accident prevention program. The following areas are not all-inclusive but are examples of those areas requiring constant command attention to prevent aviation accidents:

- Human factors.
- Training, education, and promotion.
- Equipment design, adequacy, and supply.
- Normal and emergency procedures.
- Maintenance.
- Facilities and services.
- Environment.
- Operational pace/tempo.
- Personnel tempo.

B-4. USACRC has found that human error accounts for about 80 percent of total mishaps. Maintenance-related mishaps do account for a percentage of total mishaps in terms of both human-error related causal
factors as well as materiel-related causes. As expected, more complex aircraft have higher maintenance mishap rates; however, accidents caused solely by materiel failure are considerably rarer than human-error accidents. The interface between man and machine during maintenance operations increases the potential for accidents.

B-5. At unit level, commanders and maintenance supervisors must ensure their personnel know of maintenance errors generated in their own units. They can be made aware of those in other units by examples found in the Knowledge publication, the preventative maintenance monthly magazine (PS magazine), and other publications. All maintenance activities and personnel must strictly adhere to published maintenance procedures and apply RM at all levels of operations.

SAFETY REGULATIONS

B-6. DODI 6055.01 provides the underpinnings for safety across the DOD. AR 385-10 regulates overall safety in the Army. This regulation integrates Occupational Safety and Health Act requirements into the Army safety program. DA PAM 385-90 regulates the Army aviation accident prevention program. DA PAM 385-40 covers Army accident investigation and reporting. ATP 5-19 provides the doctrine and guidance for applying risk management to all Army operations.

B-7. The following personnel have major responsibilities in the unit aviation accident prevention program: the commander, the maintenance officer/technician, the unit safety officer, aviators, the flight surgeon, the unit safety NCO, and individual Soldiers/civilians. A complete knowledge of aviation personnel, materiel, and maintenance operations is necessary to establish and maintain an effective aviation accident prevention plan. The plan must be tailored to the mission and requirements of the command. Activities affecting aviation operations must be considered.

SAFETY RESPONSIBILITIES

B-8. Accidents and injuries can hamper the unit ability to complete its required mission. The unit commander must ensure all personnel know proper operation and safety-related procedures for all aircraft, vehicles, equipment, tools, and machinery. Soldiers/civilians/maintainers are responsible for protecting equipment and the lives of fellow workers; therefore, they must actively participate in safety programs and training.

B-9. The primary safety responsibility for maintenance work performed on the aircraft or on its components rests with the individual performing the work. Peers and the leadership providing oversight are equally responsible for providing an additional measure of protection. The importance of doing the right thing, policing each other, and providing direct supervision regarding safety cannot be overstated.

UNIT COMMANDER

B-10. Commanders are responsible for compliance with DOD, DA, OSHA, National Fire Protection Association, and Environmental Protection Agency requirements. Commanders will establish other requirements, as necessary, for protection of personnel and equipment under their control.

B-11. The commander establishes a written commander safety philosophy. The commander also develops current safety goals, objectives, and priorities, and includes them in quarterly training guidance (annually for the reserve component). The commander understands and applies the RM process to the entire spectrum of unit operations, activities, and personnel from a holistic standpoint.

B-12. The commander ensures unit staff, subordinate leaders, individual Soldiers, and civilians are trained on the RM process as a life skill that is applied equally to both on-duty and off-duty activities. The commander integrates identified risk controls into maintenance SOPs (a stand-alone written commander accident prevention plan is no longer required) and ensures written SOPs exist for all functional shop and maintenance areas and all operations within the command.

B-13. Aviation unit commanders are responsible for ensuring activities of their units are conducted according to established safety rules, regulations, and publications. These regulations include the aforementioned DOD
instructions, ARs, and DA pamphlets as well as FMs, TBs, TMs, and other required local installation directives and policies.

B-14. Aviation unit commanders are also responsible for determining the cause of accidents and for ensuring measures are taken to prevent their recurrence. They must also be aware of and enforce safety policies and requirements established by higher headquarters.

B-15. Unit commanders are responsible for requesting permission from higher headquarters to deviate from an established safety rule or regulation. This request, including full particulars and detailed plans and specifications, is submitted to the higher headquarters commander for approval; however, unit commanders cannot rely on the safety programs of higher headquarters to ensure the safety of their people. They must also establish their own safety programs and become personally involved in implementing and enforcing them.

**AVIATION MAINTENANCE OFFICER AND TECHNICIAN**

B-16. The aviation maintenance officer and technician ensure an effective maintenance program is developed and maintained. The aviation maintenance officer/technician will—

- Continuously monitor QC through coordination with QC personnel, ensuring QC personnel maintain and manage all applicable forms, references, and publications.
- Ensure adequate training and cross training of maintenance personnel; ensure a formal continuing education program is available to provide maintenance personnel with current information on techniques, procedures, and modifications.
- Ensure proper and timely aircraft inspections.
- Ensure adequate program supervision to guarantee maintenance personnel are aware of, and comply with, all technical directives affecting aircraft operations.
- Ensure discrepancies (write-ups) are correctly identified as to status and they are properly cleared.
- Monitor and manage the equipment improvement recommendation program and the AOAP.
- Provide maintenance personnel with lessons-to-be-learned from accident summaries that cite maintenance as the accident cause factor.
- Ensure MPs (Army and contractor) meet the requirements of AR 95-1 and TM 1-1500-328-23 to perform MTFs, and ensure MTFs are performed according to appropriate directives.
- Ensure subordinate leaders and maintainers understand and apply the RM process to all maintenance operations.
- Use the RM process to mitigate or eliminate hazards associated with the personnel and activities that might affect the safe performance of maintenance operations.

**UNIT NONCOMMISSIONED OFFICERS-IN-CHARGE AND SUPERVISORS**

B-17. Effective supervision is the key to accident prevention. In their daily contact with Soldiers, NCOICs are in a position to personally observe working conditions and potential hazards affecting maintenance procedures. NCOICs must apply all established accident prevention measures in the performance of their duties especially when supervising daily maintenance operations.

B-18. They should conduct meetings with their subordinates at regular intervals to brief them on safety procedures, to obtain feedback/suggestions on ways of improving safety practices, and/or to announce any new safety procedures. Such meetings should be held in the work (shop or hangar) area. The agenda should include the following:

- The overall job and the results expected.
- The how, why, and when of the job and any ideas from the group on ways to improve methods and procedures.
- The part each Soldier will play; supervisors must ensure personnel understand the significance of individual roles.
- Existing and anticipated hazards and the action needed to resolve these problems.
- The need for prompt, accurate reporting of injuries, accidents, or near accidents, and the importance of first aid when required.
Appendix B

- The need to search constantly for, detect, and correct unsafe practices and conditions to prevent accidents and injuries.
- The need for maintainers to understand and apply the RM process to maintenance operations.

AVIATION SAFETY OFFICER AND NONCOMMISSIONED OFFICER

B-19. The unit ASO and NCO assist, advise, and make recommendations to the unit commander regarding aviation accident-prevention matters. The ASO observes aircraft support activities (such as POL, maintenance, operations, and enlisted crewmembers’ training) to detect and report unsafe practices or procedures. The ASO and NCO participate in unit safety surveys and inspections.

B-20. The ASO and NCO provides RM training to leaders and maintainers, ensuring unit personnel understand and apply the RM process to operations conducted within the organization. In addition, individuals are encouraged to apply RM to off-duty activities as a life skill.

SHOP SAFETY

B-21. Maintenance repair section and shop safety is an on-going process. Safety is to be observed not only when conducting maintenance and repair procedures but also in every phase of aviation operations. An aviation maintenance section or shop performing below the established standard (safety hazards, unserviceable tools and equipment, out-of-calibration TMDE, or outdated references/publications) cannot perform quality maintenance. Safety is compromised when maintainers, at any level, deviate from the established maintenance standard or fail to conduct by-the-book maintenance procedures.

B-22. Safety procedures must be adhered to by all maintenance personnel during aircraft maintenance procedures. Maintenance leaders, officers/technicians, and NCOICs are responsible for providing close supervision and correcting unsafe acts.

B-23. Fall protection is defined as maintaining “three points of contact” (one hand and two feet or two hands and one foot) on the hand holds, foot accesses/recesses, and walking/working surfaces designed into/provided on the aircraft when working on aircraft (other than home garrison maintenance pads, parking aprons, and wash racks). Fall restraint device usage is at the discretion of the maintenance supervisor or, in the absence of maintenance supervision, the PC OIC/NCOIC.

B-24. NCOICs are responsible for keeping their assigned sections/shops safe, operational, and within the established standard as outlined in the aviation maintenance commander internal SOP. In addition, it is the TI responsibility to keep assigned sections/shops within the established standard when conducting inspections of the maintenance sections, shops, and work areas, to include the hangar. These inspections are conducted monthly or more frequently when maintenance procedures are conducted.

B-25. Any shortcoming, deficiency, or safety hazard identified during a safety inspection is recorded on DA Form 2404 or unit hazard tracking log with copies given to the NCOIC and the maintenance officer/technician. The original copy of DA Form 2404 is kept by the QC section and filed according to AR 25-400-2. Safety shortcomings, deficiencies, or hazards considered a danger to personnel or equipment are immediately brought to the attention of the NCOIC and maintenance officer/technician for corrective action. Inspectors will forward copies of all inspection results to the ASO or unit safety manager.

B-26. Routine or noncritical shortcomings, deficiencies, or hazards found during a maintenance section and shops safety inspection must receive corrective action and achieve compliance within 10 days. A completed DA Form 2404, indicating corrections resulting in compliance or recording deficiencies for future mitigation, is given to the QC section for filing with the original copy. The QC section will give recommendations and guidance to assist in correcting faults. The QC section will re-inspect to ensure shortcomings and identified deficiencies are corrected.

INDIVIDUAL SOLDIER/MAINTAINER

B-27. All personnel must be aware of the safety rules established for their individual and collective protection. Each person is responsible for reading and adhering to unit SOPs, instructions, operating procedures, checklists, and other safety-related data. They must observe and apply notes, cautions and
warnings found on applicable aircraft maintenance TMs. Personnel must then apply cautions and safeguards in their everyday work areas.

B-28. Soldiers/civilians are responsible for bringing to their supervisor attention safety voids, hazards, and unsafe or incomplete maintenance procedures. Each person must follow through until the problem is corrected, then cooperate in developing and practicing safe working habits. The unit commander should make certain this spirit of cooperation prevails throughout the unit.

B-29. Soldiers/civilians are responsible for understanding and applying the RM process to all duties and maintenance activities that could result in performance degradation, injury or illness, damage or destruction of equipment or to those off-duty activities or issues affecting their ability to report for duty and perform in a safe and effective manner.

B-30. Fall protection is defined as maintaining “three points of contact” (one hand and two feet or two hands and one foot) on the hand holds, foot accesses/recesses, and walking/working surfaces designed into/provided on the aircraft when working on aircraft (other than home garrison maintenance pads, parking aprons, and wash racks). Fall-restraint device usage is at the discretion of the maintenance supervisor or, in the absence of maintenance supervision, the PC OIC/NCOIC.

**OPERATIONAL PROCEDURES**

B-31. Aviation maintenance commanders/leaders, aviation maintenance officers/technicians, and NCOICs will ensure physical standards for facilities and equipment meet or exceed safety and health standards established in pertinent host government, federal, state, and local statutes and regulations and in ARs.

B-32. Ensure the RM process is incorporated in directives, unit maintenance SOPs, special orders, training plans, and operational plans to minimize accident risk and SOPs are developed for all operations entailing risk of death, serious injury, occupational illness, property loss, or mission degradation.

B-33. Establish specific plans to assure continuity of safety and operational hazard program services during tactical operations or mobilization. These plans will address mission definition, organizational concepts, and staffing and operational procedures required to assure maximum safety function support to the force application mission. All aviation units will develop such plans.

**OPERATIONAL HAZARDS**

B-34. An operational hazard is any condition, action, or set of circumstances that compromises the safety of Army aircraft, associated personnel, airfields, or equipment. Operational hazards should be corrected at the lowest level possible. These hazards include inadequacies, deficiencies, or unsafe practices pertaining to aircraft operations, aircraft maintenance or inspections, or flight and maintenance training and education.

**Operational Hazard Report**

B-35. Operational hazard reports (OHRs) are available on the Army electronic library and the USAPA website. Place blank copies of the report forms in areas where they are readily available to all aviation-related personnel.

**Submitting Operational Hazard Reports**

B-36. Any person (military or civilian) may submit an OHR. The signature and address of the individual submitting the forms are desirable but not mandatory unless the individual wishes to have a copy of the completed report returned. An OHR is not required when an aircraft accident report is prepared according to DA PAM 385-40 or when a deficiency report is submitted according to DA PAM 738-751.

**Routing the Operational Hazard Report**

B-37. The OHR is submitted to an ASO or Army flight operations office. A report sent to an operations office is promptly forwarded to the organization ASO.
HAZARD COMMUNICATION

B-38. Aviation unit commanders will develop and implement a unit HAZCOM program to ensure compliance with 29 CFR 1910.1200 and Department of Defense Instruction (DODI) 6050.05 directives. Commanders will ensure an accurate inventory is maintained of all hazardous chemicals used by unit maintenance personnel. Additionally, units will comply with OSHA 29 CFR 1910.1200, appendix E, when identifying hazards present in the environment or facility that unit personnel may contact. All personnel must know the location of the MSDS for each hazard present, not just contained in POL or HAZMAT program storage.

B-39. The HAZCOM officer ensures SDSs are readily available for and used by personnel handling or contacting hazardous chemicals. They ensure personnel handling hazardous chemicals receive training as specified by DOD and federal statute. They also ensure hazardous chemicals receive proper labels, storage, use, and disposal.

SHOP SAFETY

B-40. A substandard shop cannot put out high standard, quality work. To ensure shops/sections maintain a high safety standard, TIs will conduct an informal inspection of the various shops/sections periodically. Any deficiencies or shortcomings, identified as below-standard maintenance practices or safety hazards, are brought to the attention of the shop maintenance technician/supervisor immediately. A file of all safety inspections is kept in the QC section, and a file copy is kept in the subject area inspected. Inspectors will forward copies of all inspection results to the ASO or unit safety manager for inclusion in the unit hazard analysis and tracking program.

MAINTENANCE FACILITIES

B-41. The NCOIC supervisor responsible for facility safety will emphasize accident-prevention measures and shop equipment safety. To minimize shop-related accidents, the facility NCOIC will satisfactorily address the following questions:

- Does the facility NCOIC or supervisor emphasize accident prevention measures and check for marking and width of personnel safety aisles, safety and warning posters, and smoking and nonsmoking areas? (Refer to this publication, TM 1-1500-204-23-1, and DA PAM 385-1.)
- Is all stationary and portable shop electrical equipment properly grounded? (Refer to TM 1-1500-204-23-1 and national electrical codes.)
- Is there a program in effect to encourage reporting of problem areas such as hazards, near accidents, and unsafe practices? (Refer to AR 95-1, AR 95-23, AR 385-10, DA PAM 385-40, and DA PAM 385-90.)
- Are equipment and vehicle operators thoroughly familiar with the equipment operation, handling, care, and preventive maintenance? (For example, do operators have permits? [Refer to AR 600-55]. Is the maintenance manual near equipment? [Refer to this publication]. Is the equipment or vehicle maintained according to organizational and operator manuals?)
- When parts or items are removed from aircraft, are they marked and stored in plain sight? (Refer to this publication.)
- Are proper safety procedures practiced to prevent FOD when maintenance is performed on turbine engines?
- Are run-up and exhaust areas policed? Are containers available for trash and loose objects? Are loose hardware and other foreign objects removed? (Refer to TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
- Are grounding cables provided for aircraft in hangars? Are they used? Has an initial electrical resistance test been performed and recorded on grounding points? (Refer to national fire codes, (Refer to TM 1-1500-204-23-1, TM 1-1500-204-23-7, TM 1-1500-204-23-9, and ATP 4-43).
- Are grounding safety wires visible? Are they bright yellow?
- Is adequate lighting provided for maintenance facilities and hangars?
Safety

- Are parts removed from aircraft immediately written up on appropriate forms? (Refer to DA PAM 738-751.)
- Are required numbers and types of fire extinguishers available? Are aircraft and ground fire extinguishers checked as required? Are personnel trained to use fire-fighting equipment? (Refer to this publication, TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
- Are trained specialists available to maintain special equipment, such as ejection seat and armament, when installed in unit aircraft? (Refer to this publication and AR 95-1.)
- Are facilities clean and floors grease-free? (Refer to this publication.)
- Do personnel using power tools (for example, drills, grinders, lathes, and torches) wear safety goggles and noise-attenuating devices as required? Do repairers remove jewelry while performing maintenance? (Refer to TM 1-1500-204-23-1, TM 1-1500-204-23-7, TM 1-1500-204-23-9, ARs 40-5, and 385-10.)
- Are hoisting instructions for lifting aircraft components or aircraft followed? Are cranes, hoists, cables, slings, and forklift trucks inspected, weight-tested, and stenciled with the load rating? (Refer to TB 43-0142.)
- Are cranes, hoists, cables, slings, and forklift trucks stenciled with the date of the next required load test? (Refer to TB 43-0142 and this publication.)
- Are aircraft on jacks labeled, and is access to them restricted? Are aircraft jacks marked with the maximum lifting capacity? (Refer to this publication, TM 1-1500-204-23-1, TM 1-1500-204-23-7, TM 1-1500-204-23-9, and OSHA Standard 1910.244.)
- Do personnel in the instrument shop know the procedures for cleaning up mercury spills?
- Are oily rags stored in closed metal containers? Are containers properly labeled? (Refer to this manual, TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
- Are hydraulic, fuel, and oil lines protected from dirt while disconnected? (Refer to TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
- Are all ammunition and pyrotechnics removed from aircraft before maintenance and before putting aircraft in hangars? (Refer to TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
- Are engine, hydraulic, propeller and rotor, technical supply, and other work areas clean and well arranged? (Refer to this publication, TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
- Are oxygen gaseous storage areas properly marked? Are oxygen gaseous cylinders stored in a separate building (area) from aircraft servicing and maintenance areas? Are empty and full cylinders stored separately? (Refer to TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
- Are sample bottles available to check fuel contamination in aircraft fuel tanks during preflight? (Refer to ATP 4-43.)
- Are proper containers used and stored? Are containers clean and adequate? Are samples properly discarded? Is a fire point nearby? Are complete daily inspections conducted? (Use PMD/preventive maintenance services cards and DA Form 2408-13 [Aircraft Status Information Record] and DA Form 2408-13-1.)
- Are tops of booths, shelves, and other surfaces in the paint shop clean to prevent lint accumulation? Are dope or paint deposits removed from the floor? Are there fire blankets at strategic points and the required number (and correct type) of fire extinguishers provided throughout the paint shop? Is electrical equipment in the paint shop explosion-proof? Are smoking restrictions enforced? (Refer to TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
- Are unsealed hydraulic fluid containers considered contaminated and destroyed? (Refer to T TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
- Are the assigned aircraft marked and painted to include warnings? (Refer to TM 55-1500-345-23.)
- Are necessary accident prevention signs posted in the shop area? (Refer to TM 1-1500-204-23-1, TM 1-1500-204-23-7, and TM 1-1500-204-23-9.)
• Are aircraft parked in hangars? Are aircraft batteries disconnected? Are static ground cables attached? Are drip pans placed beneath aircraft?
• Does gasoline-powered equipment (such as tugs and AGPU) parked in hangars overnight have full fuel tanks?

HAND TOOLS AND EQUIPMENT

B-42. The NCOIC supervisor, responsible for hand tools and equipment safety, will emphasize accident prevention measures and hand-tool and equipment safety. To minimize hand tools and equipment accidents, the NCOIC will satisfactorily address the following questions:
• Are racks, shelves, or toolboxes provided for tools not in use?
• Are precautions taken to prevent tools from dropping or falling from ladders, scaffolds, platforms, or other elevations?
• Are tools frequently inspected by responsible personnel? Are defective tools turned in for repair or salvage?
• Are tools with sharp cutting edges carried in protective covers?
• Are power tools equipped with guards? Are electrical contacts enclosed? Is wiring well insulated and grounded?
• Are exposed sharp edges smoothed down when work is completed?
• Are ladders used, rather than improvised ladders, such as packing cases or barrels?
• Are parts and items removed from the aircraft stowed out of the way or marked so they are visible day or night?
• Are tools stored so sharp edges do not protrude?
• Are electrical tools used inside the aircraft?
• Are nuts and bolts torqued as specified in the appropriate TM?
• Are items stored in the tool crib cleaned and lubricated to prevent rust? Are they within the calibration due date if calibration is required? (Refer to TB 43-180.)
• Are grease guns labeled with contents?

WELDING EQUIPMENT

B-43. The shop NCOIC supervisor responsible for welding equipment safety will emphasize accident-prevention measures and welding equipment safety. To minimize welding equipment accidents, the shop NCOIC will satisfactorily address the following questions:
• During welding or cutting operations, is caution observed to prevent sparks from starting fires? Is a fire extinguisher available?
• Are safety goggles provided for operators using oxyacetylene equipment?
• During electric welding operations, is the operator wearing a face shield or helmet with shaded filter glass, protective sleeves, gloves, and apron? Are welding operations screened off when other personnel are nearby?

GENERAL HOUSEKEEPING

B-44. The NCOIC supervisor responsible for general housekeeping of the work area will emphasize accident-prevention measures and housekeeping. To minimize housekeeping-related accidents, the NCOIC will satisfactorily address the following questions:
• Are covered, fire-resistant rubbish cans used in work areas?
• Are self-closing covered metal waste cans conveniently located to dispose of oil rags and waste?
• Are volatile flammable liquids used for washing or cleaning parts? Are they stored in open containers? Are working quantities of such liquids confined to approved containers?
• Is dripping or spilling of oil prevented? Are drip pans or other suitable means provided to collect excess oil?
- Are conspicuously marked fire extinguishers of the appropriate type provided in armament, maintenance, and training areas?
- Are all fire extinguishers properly charged, periodically tested, and ready for instant use?
- Are all unit personnel trained to use fire extinguishers?
Appendix C

Unit Deployment and Redeployment

This appendix addresses deployment of ground vehicles, equipment, and aircraft. The capability to quickly and safely deploy aviation maintenance units and assets from CONUS to other CONUS locations, or from forward-deployment sites to another theater of operations, is critical for aviation sustainment. A maintenance unit successful deployment or redeployment is derived from thorough planning, extensive training, and a scrutinized validation of their movement plans (ATP 3-35).

DEPLOYMENT RESPONSIBILITIES

C-1. A unit movement officer (UMO) and alternate are appointed, in writing, for each aviation maintenance unit. The alternate UMO is normally an NCO. The UMO is trained at a school or within the unit. UMOs will—

- Develop, prepare, and maintain unit movement and deployment plans and documentation including unit movement data used to generate the organizational equipment list.
- Create and process the unit deployment list.
- Supervise the preparation and execution of unit load plans, including vehicle load plans.
- Train unit load teams.
- Ensure unit personnel authorized to certify HAZMATs are available.
- Prepare and maintain documentation needed for unit movements.
- Assist in preparation of unit passenger and cargo manifests; inspect manifests for accuracy.
- Coordinate with higher headquarters and supporting units for unit movements.
- Plan convoy movements.
- Request commercial and military transportation.
- Coordinate with the arrival/departure airfield control group and contingency response element at the aerial port of embarkation and aerial port of debarkation.
- Obtain 463L pallets, containers, and blocking, bracing, packing, crating, and tie-down materials.
- Ensure all cargo is properly labeled with military shipping labels and radio frequency tags when directed.
- Ensure packing lists are prepared for containers.
- Maintain a UMO movement and deployment binder.

HAZARDOUS CARGO CERTIFYING OFFICIAL

C-2. Each aviation unit requires at least one DOD-approved, school-trained hazardous cargo certifying official. The commander designates the hazardous cargo-certifying official in writing. The designation must include the scope of the hazardous cargo certifying official authority. The hazardous cargo certifying official—

- Certifies documents for commercial and military truck, rail, sea, and air shipment.
- Ensures properly prepared, packaged, and marked shipments.
- Inspects the item, then certifies and signs the HAZMAT documentation.
C-3. The hazardous cargo certifying official training must be within the past 24 months and/or completed refresher training every two years to continue to certify shipments of HAZMAT for transportation.

LOAD TEAMS

C-4. Units are required to have an appropriate number of personnel trained in vehicle, aircraft, ship/vessel, and railcar loading/unloading techniques. Training can be arranged through the installation unit movement coordinator or division transportation officer. Load teams—

- Prepare vehicle, air, container, and rail load plans.
- Prepare vehicles for shipment (purging, protecting fragile components, weighing, and marking for air and rail movement).
- Perform aircraft and railcar tie-down procedures.
- Load and unload unit vehicles.
- Load cargo into aircraft.
- Palletize cargo on 463L pallets.

C-5. Load team composition is tailored to the type and quantity of equipment and time available for loading. The following guidelines are provided for planning purposes:

- For rail movement, a well-trained team of five operators, using prefabricated tie-down devices, can complete loading and lashing of equipment on a chain-equipped flatcar; units are normally provided 72 hours for loading once the cars are spotted.
- For air movement, a six-person team can provide efficient loading and tie-down of equipment. Depending on the aircraft type, more than one team may be required. The team should consist of multiple qualified members on military AGSE, SATS, SCAMP and Forklift (10K and below) operations.

MOVEMENT PLANNING

C-6. To meet contingency support requirements, aviation maintenance units must develop deployment movement plans and SOPs. An effective movement plan contains sufficient detail to prepare units to execute strategic deployments. The unit movement SOP is a generic document outlining functions that should occur automatically upon notification of a unit movement. In addition to movement plans and SOPs, units often maintain movement binders and battle books, which contain movement information and instructions. Movement plans can be mobilization movement plans/deployment movement plans.

UNIT MOVEMENT STANDING OPERATING PROCEDURE

C-7. SOPs address the following functions:

- Unit property disposition.
- Supply draw (unit basic load).
- Equipment maintenance.
- Vehicle and container loading.
- Security.
- Marshaling procedures.
- Purchasing authorities.
- Unit briefings.
- Other applicable deployment activities.

C-8. For deployment preparation and execution, units may use a readiness SOP or supplement their higher headquarters readiness SOP/deployment SOP. The readiness SOP normally addresses the overall deployment concept, force packages, training requirements, the alert notification system, logistics support, personnel and equipment readiness, out-load support, Soldier readiness program, and C2 at critical points (ATP 3-91). This document is essential for the orderly execution of rapid force deployments in response to crises.
MOVEMENT AND DEPLOYMENT BINDER

C-9. The UMO should maintain a movement and deployment binder for reference and continuity (ATP 3-35). The recommended contents for a deployment binder (Defense Transportation Regulation [DTR] 4500.9-R) include the following:

- Administrative section:
  - Index.
  - Unit movement SOP, including notes from previous operations.
  - Appointment orders and training certificates for UMO, load teams, and HAZMAT certifiers.
  - List of pertinent references.
  - POC, telephone numbers, and email addresses for key personnel to ensure deconfliction and smooth movement of personnel, supplies, and equipment.
  - Recall rosters and instructions.

- Operational section:
  - Index.
  - Air movement planning work sheet.
  - Weight and dimensions data on unit aircraft, vehicles, and equipment.
  - Manifest forms with copies.
  - Planning data on transport aircraft, ships, rail cars, and trucks.
  - Current automated unit equipment list.
  - Copies of load cards and container packing lists.
  - Prepared copies of transportation requests, convoy movement requests and special handling permits.
  - Blocking, bracing, packing, crating, and tie-down requirements.
  - Maps of convoy routes.
  - Plans and locations for drawing Army pre-positioned stocks.
  - Any other data required for movement of the unit.

DEPLOYMENT

C-10. Aviation unit deployment encompasses all activities from origin or home station through destination, including predeployment events, as well as intra-continental United States, inter-theater and intra-theater movement legs.

PREDEPLOYMENT ACTIVITIES

C-11. Predeployment activities prepare individuals, units, and materiel at home station or point of origin for deployment. During predeployment activities, the commander establishes movement priority that may be divided into groups, such as advance party and main body. Movement of unit personnel depends on the situation and is based on a thorough mission, enemy, terrain and weather, troops and support available, time available, and civil considerations assessment.

C-12. If personnel are required to travel with equipment, coordination should be made as early as possible with the shipping agency.

MOVEMENT TO PORT OF EMBARKATION

C-13. After receiving movement orders, along with any additional guidance, deploying units validate and configure for movement to the port of embarkation (POE).

C-14. The port call message identifies the date the unit must have equipment at the POE to meet the available to load dates. The deploying unit higher headquarters or the installation prepares a movement schedule or order containing unit movement times and modes for movement to the POE.
C-15. The movement mode from POE to port of debarkation determines how unit equipment is prepared for
deployment. In an overseas deployment, transport of unit equipment by sea occurs two to three weeks before
the unit main body personnel depart for the AO by air.

C-16. Some equipment and cargo require reconfiguration upon arrival at staging/marshaling areas en route
to the aerial port of embarkation/sea port of embarkation; such as, a unit convoying from home station to the
aerial port of embarkation has organic vehicles moving on highways requiring correct configuration for safe
highway movement. Equipment reaching the aerial port of embarkation staging/marshaling area then requires
reconfiguration and preparation to meet airlift requirements.

C-17. Based on the unit proximity to the POE, availability of transport, and type of unit equipment; the unit
moves to the POE by convoy, rail, commercial truck or bus, or a combination. Army rotary-wing aircraft
typically self-deploy to the POE. Personnel move to the POE by organic vehicles or military/commercial
buses. The two most used modes for moving equipment to the POE are highway and rail.

REDEPLOYMENT

C-18. Redeployment transfers forces and materiel to support joint force commander operational
requirements, or returns personnel, equipment, and materiel to the home and/or demobilization stations for
reintegrating and/or out-processing.

PROCEDURES

C-19. Installations have assigned redeployment responsibilities for supporting Army forces stationed in the
United States. For foreign-based forces, the foreign home installation and the area support group (ASG) have
redeployment responsibilities. Upon initiation of redeployment operations, installations begin preparatory
actions to receive units at the port of debarkation and move them to their home/demobilization station.

C-20. Movement guidance to redeploying units addresses—

- Preparing subordinate unit movement plans.
- Updating unit movement documentation.
- Identifying and coordinating channels for any additional transportation support needed to move
  unit personnel and equipment to POEs.
- Preparing and submitting redeployment/deployment equipment list.

ROUTING

C-21. The redeployment plan designates redeploying unit routing to POEs. After completion of military
operations, redeploying forces move to designated assembly areas. Based on the redeployment scenario,
redeploying units could then move from the assembly area directly to the POE marshaling areas for loading.

C-22. The routing of units to their final destination depends on—

- Strategic lift asset availability.
- Theater transportation facilities and their throughput capacities.
- Distance/geography between unit location and POE.
- Potential for hostile action.
- Force size.
- Time available.
- Follow-on destination and mission.

C-23. Upon receiving a warning order, the unit starts the redeployment process. Units evaluate the assigned
mission, current unit status, and requirements to accomplish the redeployment mission. If the unit is
redeploying to another theater, it must also plan for employment in that theater. Depending on their mission
and redeployment scenario, redeploying units may perform the following functions as a part of the movement
to POE phase:

- Move to assembly areas. The unit normally conducts a movement to the tactical assembly area
  and continues to receive sustainment through normal support channels.
Reorganize. Unit reconstitution for redeployment involves those actions required to assemble and organize the unit and to cross-level personnel, supplies, and equipment as necessary; units are consolidated under their UICs.

Process personnel and equipment for redeployment. This process includes actions that can be completed at the assembly area, assuming availability of support assets and supplies.

C-24. Commanders/leaders should complete the following key items as early as possible in the redeployment process:

- Identify Soldiers and civilians who will deploy as individuals to supporting personnel managers.
- Conduct medical screening.
- Perform equipment checks and services according to TM.
- Conduct an equipment inventory (Class VII, organizational clothing and individual equipment, and BIIs).
- Refine the DEL, and verify unit line number data.
- Requisition required parts.
- Schedule or defer/delay required maintenance.
- Identify Soldiers to redeploy with equipment as required by shipping agency.
- Identify teams for transport down load form air and sea transport if required.

C-25. The unit completes all documentation (hazardous shipping declarations, papers, labels, placards, secondary cargo load plans/cards, packing lists, and military shipping labels) before loading. The DEL is completed with actual weights, dimensions, and final destination before producing labels and applying them to equipment and containers.

REFERENCES

C-26. Table C-1 lists unit movement references.

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<td><strong>AFIM 24-204(I)/TM 38-250</strong></td>
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ADP- Army Doctrine Publication
AFIM- Air Force Interservice Manual
AR - Army regulation
ARNG – Army National Guard
ATP – Army Tactics Publication
DTR - defense transportation regulation
JP - joint publication
TM - technical manual
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This appendix identifies environmental issues and compliance requirements that commanders and leaders must be familiar with and adhere to in order to be successful on the battlefield. Environmental damage, in most cases, is an unavoidable consequence of force application. Commanders and their staff must identify, during the planning process, ways and means to mitigate environmental damage wherever possible. These actions ensure deployed forces conform to the environmental protection requirements of the theater commander without impairing force application effectiveness.

**ENVIRONMENTAL COMPLIANCE AS A REGULATORY REQUIREMENT**

D-1. The Army and its units will comply with all environmental laws and regulations applying to installations or theaters of operation. AR 200-1 and ATP 3-34.5 provide an overview of the key environmental laws, regulations, and treaties that apply to unit-level operations. These come from a variety of sources to include federal, state, local host-nation, executive order, DOD policies and directives, and international agreements.

**ENVIRONMENTAL RESPONSIBILITIES**

D-2. Commanders, leaders, aviation maintenance officers/technicians, NCOICs, and maintainers must understand their individual duties and responsibilities for environmental protection and become environmental stewards. To practice stewardship, personnel must understand the basic environmental management responsibilities that apply to their work area or assigned duties.

**COMMANDERS**

D-3. The commander role in environmental stewardship centers on instilling an environmental ethic in his Soldiers and civilian contractors (if assigned) under his control. Commanders train their subordinate leaders on stewardship, counsel them on doing what is right, lead by example, and enforce compliance with laws and regulations. ATP 3-34.5 identifies sources of environmental assistance available to commanders.

D-4. Commanders meet with key installation environmental personnel to obtain assistance or information regarding environmental protection issues. Commanders may delegate this authority to their staff, but they are ultimately responsible for environmental protection.

D-5. The primary POC is located at the installation environmental office. This office is normally part of the Directorate of Public Works at most Army installations.

**MAINTENANCE OFFICER/TECHNICIAN**

D-6. The maintenance officer/technician plans, coordinates, and supervises maintenance and repair activities. In many instances, these activities use significant quantities of HAZMAT and generate hazardous waste (HW). The maintenance officer/technician ensures safe use, storage, and disposal of these materials, including the operation of temporary storage areas for products such as used oils, contaminated fuels, paint residues, spill cleanup residues, and solvents. Disposal of HAZMAT and HW is accomplished according to the unit maintenance SOP and with the guidance of the installation environmental office.
Appendix D

D-7. The maintenance officer/technician ensures all personnel comply with HAZCOM requirements. The maintenance officer/technician ensures a valid and current unit environmental plan SOP is available and unit personnel are familiar with its contents. ATP 3-34.5 contains a sample unit environmental plan SOP.

MAINTENANCE PERSONNEL

D-8. Aviation maintenance personnel have the inherent professional and personal responsibility to understand and support their unit environmental program by—

- Complying with environmental requirements in unit and installation SOPs.
- Maintaining environmental awareness throughout daily activities and maintenance procedures.
- Providing recommendations to the chain of command on techniques to ensure compliance with environmental regulatory requirements.
- Identifying the environmental risks associated with individual and team tasks.
- Supporting recycling programs.
- Reporting HAZMAT and HW spills immediately.
- Making sound environmental decisions based on guidance from the chain of command and training.

ESTABLISHING A UNIT-LEVEL PROGRAM

D-9. The unit commander, with assistance from the HW coordinator, environmental compliance officer (ECO), and environmental compliance NCO, establishes an effective aviation maintenance unit environmental program by—

- Designating, in writing, a properly trained and qualified HW coordinator, ECO, and environmental compliance NCO.
- Identifying the requirements for environmental training, qualifications, and certification of unit personnel.
- Ensuring all unit personnel received or are scheduled to receive environmental awareness training.
- Meeting with battalion/squadron S-3, S-4, and installation personnel who deal with environmental issues.
- Scheduling environmental compliance assessment system inspections that identify unit and common environmental problem areas and how to avoid them.
- Ensuring the unit environmental SOP adequately addresses environmental issues and procedures.
- Coordinating environmental requirements with appropriate installation and chain of command personnel.

D-10. The ECO and environmental compliance NCO is the unit POCs and responsible for environmental education, SOP updates, preparation of environmental risk assessments, and incident reporting. The ECO coordinates with environmental personnel and ensures unit compliance with environmental laws and regulations.

ARMY ENVIRONMENTAL COMPLIANCE ASSESSMENT SYSTEM

D-11. Compliance with environmental regulations is a command responsibility. All aviation maintenance units must be familiar with the regulations and publications governing environmental protection. Units also comply with the environmental compliance achievement program protocol and are periodically inspected. Units obtain the environmental compliance achievement program protocols from the environmental division of the installation Directorate of Public Works.

D-12. Units report alleged violations of local, state, or federal environmental laws or regulations to the commander, unit safety officer, environmental division, environmental law attorney, or the Office of the Staff Judge Advocate. Personnel report any notice of tax, penalty, fee, fine, sanction, or other compliance order arising from local, state, or federal environmental requirements or enforcement activities to the commander, environmental division, environmental law attorney, or at the Office of the Staff Judge Advocate.
HAZARDOUS MATERIALS

D-13. The Army objective is to minimize health hazards and environmental damage caused by the use and misuse of HAZMAT. A HAZMAT is one that, because of its quantity, concentration, physical, chemical, or infectious characteristics, may do the following:

- Cause or significantly contribute to an increase in mortality or an increase in serious irreversible or incapacitating reversible illness.
- Pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

HAZARDOUS WASTE

D-14. The presence of HW is a cause for concern among installation personnel and nearby residential populations. Yet, hazardous substances are an unavoidable part of Army maintenance functions and activities and ultimately result in some waste generation. The proper handling and disposal of HW minimizes danger and ensures the safety of people and the environment.

HAZARDOUS COMMUNICATION

D-15. An effective HAZCOM program will assist leaders in determining which hazardous chemicals are present in their units, how to protect their Soldiers from the hazards that those chemicals present, and how to properly store and use those chemicals. The unit and installation safety officer is the POC for most HAZCOM matters, the MSDS program, and the HAZCOM training program.

GOOD HOUSEKEEPING

D-16. Good housekeeping is another basic management practice and involves a number of activities in areas such as maintenance, operations, and training. For instance, preventing spills is a good housekeeping practice for both safety and environmental reasons. Keeping noise to a minimum is good OPSEC and reduces noise pollution. Recycling diminishes solid waste and helps eliminate unauthorized disposal of some types of HW.

UNIT MAINTENANCE

D-17. Unit maintenance activities may significantly affect the environment so most Army environmental programs directly affect maintenance operations. Two specific areas of concern are spill prevention and response, and HAZMAT storage and handling. Maintenance being conducted OCONUS should be in compliance with all host nation laws as well as compliance with Army environmental programs.

SPILL PREVENTION AND RESPONSE

D-18. Army policy, as well as federal law, requires units to prevent spills of oil and hazardous substances and to provide prompt response to contain and clean up such spills. These laws, regulations, and policies prohibit any discharge of oil or hazardous substance from installations, vehicles, aircraft, and watercraft into the environment without a discharge permit.

D-19. Installation requirements shape spill prevention and response plans for units within their jurisdiction and command. During deployments, the deployment order directs spill prevention and response procedures. During contingency operations or in a force application environment, spill prevention and response procedures are defined by the host-nation or theater guidance and unit SOP.

HAZARDOUS MATERIAL STORAGE AND HANDLING

D-20. Maintenance personnel work with a variety of HAZMAT and HW. Depending on the class of supply, the supply section or technical supply section controls requisitions and receipts for HAZMAT and prepares documentation for turn-in of HW. Maintenance personnel generate HW by lubricating, servicing, and repairing aviation and ground equipment. Maintenance personnel must—
• Requisition only the minimum amount of HAZMAT needed; when possible, substitute nonhazardous materials.
• Practice inventory control of all HAZMAT and HW (monitor HAZMAT shelf life and HW accumulation dates).
• Store HAZMAT and HW in approved containers and locations.
• Maintain an SDS for each HAZMAT used.

SUPPLY

D-21. Unit supply and technical supply personnel account for all materials during HAZMAT and HW requisition, transportation, storage, and disposal. Unit commanders and leaders ensure supply personnel observe stringent HAZMAT supply economy measures. Units order only the minimum amount of HAZMAT needed. When possible, supply personnel order biodegradable, environmentally safe materials.

D-22. When storing products, supply personnel ensure first-in, first-out stock rotation to minimize the turn-in of out-of-date material. They also follow installation storage guidelines for marking materials, maintaining SDSs, and turning in excess materials. Finally, unit leaders ensure supply personnel turn-in or dispose of HAZMAT and HW according to local regulations. Compliance includes coordinating with the local environmental office and DRMO.

PLANNING

D-23. Environmental awareness will be incorporated into the unit training program with minimal additional planning. Most topics can be obtained by contacting the environmental division, unit or installation safety office, natural resources branch, Staff Judge Advocate, and/or range control.

D-24. Table D-1 is a general point-of-contact matrix to assist personnel with environmental concerns. When overseas, refer to the United States agencies providing liaison with the equivalent of the points of contact. If there is no host-nation equivalent, all training and maintenance are conducted under United States policies and requirements. Units coordinate with these organizations to provide a briefing before deployments.

Table D-1. Environmental point of contact matrix

<table>
<thead>
<tr>
<th>Topic</th>
<th>Point of Contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air pollution</td>
<td>Environmental Division</td>
</tr>
<tr>
<td>Archaeological and historic sites</td>
<td>Environmental Division and Natural Resources Branch</td>
</tr>
<tr>
<td>Clean and safe water</td>
<td>Environmental Division</td>
</tr>
<tr>
<td>Legal considerations</td>
<td>Environmental Law Attorney, Office of the Staff Judge Advocate</td>
</tr>
<tr>
<td>Hazardous material and waste</td>
<td>Directorate of Logistics, Defense Reutilization and Marketing Office, Environmental Division, and the fire department</td>
</tr>
<tr>
<td>Noise pollution</td>
<td>Environmental Division, Range Control (Directorate of Plans, Training, and Mobilization)</td>
</tr>
<tr>
<td>Range clearances and restrictions</td>
<td>Range Control (Directorate of Plans, Training, and Mobilization)</td>
</tr>
<tr>
<td>Standing operating procedures</td>
<td>Environmental Division</td>
</tr>
<tr>
<td>Spill reporting</td>
<td>Environmental Division</td>
</tr>
<tr>
<td>Threatened/endangered species</td>
<td>Natural Resources Branch</td>
</tr>
<tr>
<td>Water pollution</td>
<td>Environmental Division</td>
</tr>
<tr>
<td>Wetland protection</td>
<td>Natural Resources Branch, Range Control</td>
</tr>
</tbody>
</table>

UNIT-LEVEL ENVIRONMENTAL PROGRAMS

D-25. Unit personnel must be familiar with the various environmental programs found at the unit level. ATP 3-34.5 provides information on these unit or installation programs:

• HAZMAT management.
• HW management.
• HAZCOM.
• Pollution prevention and HW minimization.
● Recycling.
● Spill prevention and response plan.

ARMY NATIONAL GUARD AND RESERVE COMPONENT CONSIDERATIONS

D-26. When collocated with active Army units or when activated, ARNG or USAR adheres to the same stringent handling, storage, and disposal criteria. When ARNG or USAR are not on active-duty status or collocated with active-duty units or their supporting HQs, their requirements may differ. ARNG units routinely operate under environmental regulations and laws of a particular state. ARNG units coordinate through their state area command for environmental guidance when deploying to installations in other states.

D-27. USAR units with subordinate units residing in different states will comply with substantially different environmental laws. The supporting HQ develops policies that account for differences in state and local laws and regulations. Units separated from their supporting installation must ensure SOPs and contingency plans adequately address local laws and regulations.

D-28. Given the distances between ARNG and USAR units and their supporting HQ, HAZMAT or HW turn-in may require alternative methods such as line haul or contractor removal. The cost of HAZMAT and HW turn-in may warrant pollution prevention initiatives to reduce, reuse, or recycle HAZMAT and HW on-site. Solvent distillation, for example, may provide significant cost savings over conventional disposal.

D-29. Disaster-relief missions present units with challenging environmental protection requirements. Units must not add their own HAZMAT and HW to the existing environmental problem. ECOs in ARNG units coordinate with their state area command HQ for HAZMAT and HW support. Unit ECOs also coordinate regularly with disaster relief HQ to determine threats from HAZMAT or HW exposure, such as polychlorinated biphenyls from transformers, POL, or decaying bodies. Unit leaders ensure Soldiers have appropriate PCE/PPE when exposed to HAZMAT or HW in the disaster area.

AWARENESS AND COMPLIANCE

D-30. AR 200-1 explains the Army environmental programs and references the additional documents that should be reviewed. Another good reference for environmental issues is Graphic Training Aid (GTA) 05-08-002 booklet that can be downloaded and printed. Graphic training aids can be downloaded from the United States Army Training Support Center at https://atiam.train.army.mil, look for graphic training aids under the commandant approved training section and select from the type list.
Appendix E

Aviation Maintenance in Extreme and Demanding Environments

This appendix provides a discussion of the impact on aviation maintenance operations within the various environments. Each environment brings unique challenges that must be anticipated and planned for by the commander and staff. Some maintenance procedures work consistently regardless of the environment; however, the majority of maintenance activities are directly affected by the environment.

GENERAL

E-1. Operations may be conducted in desert (FM 90-3), jungle (FM 90-5), mountain, or cold weather environments use ATP 3-90.97. Preparing to conduct aviation maintenance; commanders, at a minimum, consider the following factors:

- Modifications to normal repair part stockage levels; such as, increased numbers of filters, bearings, and seals.
- Mobility restrictions; such, mountainous terrain, dense foliage, ice, and sandy terrain.
- Effects on personnel and equipment performance; such as, altitude and extreme heat or cold.
- Communications restrictions.
- Special shelter requirements.
- Specialized equipment and clothing requirements.
- The need for additional maintenance personnel when conducting maintenance in extreme heat or cold environments.
- Personnel work and rest cycles.
- Modifications to normal scheduled and preventive maintenance.
- Additional support equipment training requirements.

E-2. Preventive maintenance action may change or increase in extreme and demanding environments. Maintenance leaders and personnel must monitor the daily environmental effects on aircraft and equipment to determine and apply the most effective methods of maintenance. Enclosed maintenance facilities provides the best conditions for efficient and productive maintenance to occur. If a permanent facility is unavailable, then a lightweight maintenance enclosure (LME), erected around that portion of the aircraft requiring maintenance is a recommended alternative. LMEs are typically part of a unit TOE and cataloged in sufficient number to be readily available to maintenance personnel. Equipment maintenance conducted in an exposed, unprotected environments has the potential to allow items receiving maintenance to become contaminated and place personnel at a higher risk for injuries.

E-3. Supply stockage quantities must anticipate and reflect increased requirements for those parts that deteriorate or experience increased wear.

DESERT ENVIRONMENT

E-4. Maintenance personnel have additional risks involved within a desert environment, specifically around aircraft that undergo maintenance, arming, and fueling at the FARP. These risks include:

- Static electricity from an operating rotor system can shock personnel or cause ammunition and fuel to ignite.
Appendix E

- Proper grounding is more difficult in dry, sandy soil requiring longer grounding rods and water to be poured on the grounding points.
- Brown out conditions can drastically reduce or eliminate situational awareness and impair the crew’s view of ground obstacles and personnel.
- Heat off the aircraft fuselage in a desert environment can cause burns to personnel. Supervisors should ensure gloves are available and used.

E-5. High temperatures and low humidity are major causes of equipment failure. Wind action lifts and spreads sand and dust, affecting moving parts. Aircraft, sensors, and weapons are also affected. Rubber components, such as gaskets and seals, become brittle, and oil leaks are more frequent. For more detail on operations in desert environments, refer to FM 90-3.

ENVIRONMENTAL CONSIDERATIONS

E-6. The following characteristics are commonly found in a desert environment and will likely contribute to equipment degradation and/or failure:

- Heat.
- Sand, dirt, and dust.
- Wind.
- Extreme temperature variations.
- Static electricity.

Heat

E-7. Helicopter performance is degraded as heat and humidity increase. Aircraft canopies can be damaged/deformed under direct heat and should be covered when not in use. Heat soaking of sensitive electronic components (“black boxes”) produces increased failure rates and places higher demands on aircraft cooling systems. Sufficient time should be allocated during maintenance events to allow the aircraft cooling systems to cool all electronic components and subsystems prior to them being energized.

Sand, Dirt, and Dust

E-8. Sand, dirt, and dust cause failures in electrical switches, digital entry keyboards, radio tuning knobs, and circuit breakers. Sand erosion causes steady wear on rotor heads, leading edges of rotor blades, Teflon® bearings, and all turbine engine blades. Blowing sand gradually degrades optical instruments and windscreens by pitting and scratching. Sand, dirt, and dust accumulation on oil cooler/heat exchange and ECS evaporators surfaces creates loss of cooling efficiency. Electronic components should only be accessed in environmentally controlled areas when feasible, to minimize sand and dust intrusion.

E-9. Sand mixed with oil forms an abrasive paste. Lube fittings and bearing seals require frequent monitoring and inspections. If they are damaged or missing, sand will enter the housing and cause bearing failure.

Wind

E-10. High winds can be destructive to large and relatively light/aerodynamic materiel; such as, aircraft, tentage, and antenna systems. To minimize the possibility of wind damage, provide some form or method of protection from high wind or be firmly secured to the ground; such as parking aircraft into the wind and ground staking or use natural or manmade barriers to block the wind.

Extreme Temperature Variations

E-11. In deserts with relatively high-dew points and/or high humidity, overnight condensation can occur wherever surfaces (such as metal exposed to air) are cooler than the air temperature. Condensation can affect such items as optics and fuel lines. Clean optics and weapons frequently. Weapons systems, even if not lubricated, accumulate sand and dirt caused by condensation.
Static Electricity

E-12. Static electricity occurs due to friction against the aircraft as it moves through the air. This friction strips electrons from the atmosphere and causes them to build up on the skin of the aircraft. Static electricity tends to accumulate near sharp edges; such as, the trailing edges of wings/rotor blades and tail/stabilizer surfaces.

E-13. Static electricity considerations and precautions include:
   - Properly ground all equipment.
   - Tape all sharp edges (tips) of antennas.
   - Wear an anti-static wristband, and if available install an anti-static mat under the work bench, when working on electronic equipment away from the aircraft.

PROTECTING AIRCRAFT AND EQUIPMENT

E-14. Protective covers designed to cover the aircraft or specific items/points on the aircraft should be used at all times. Install available windscreens, blade covers, nose covers, and engine inlet covers when aircraft are not in use. Securely fasten protective covers to prevent flapping and minimize movement that may damage the item covered. Ensure all foreign material is removed from component surfaces prior to covering especially those items easily susceptible to scratching; such as windscreens and optical lens.

E-15. Hangar aircraft whenever possible or, at a minimum, cover as much of the aircraft as possible to avoid damage caused by blowing sand, dust, and dirt and heat.

E-16. During aircraft operations, optics can be provided a measure of protection by placing the device in the stow position when not in use.

E-17. Cover and protect computers, diagnostic devices, and system components removed from an aircraft when not in use.

INCREASED MAINTENANCE PROCEDURES

E-18. Rotor blade wear and turbine engine compressor blade degradation is normal in all aircraft but is greatly increased in a sandy environment causing a corresponding increase in maintenance requirements and parts replacement. Two factors that may reduce the degradation of equipment are airfield conditions and flying techniques. Component degradation can be slightly reduced by minimizing the time spent hovering over a sandy, unimproved surface or staging and operating from airfields with an improved surface.

E-19. Rotor blade erosion is controlled by field maintenance teams through paint application, manufacturing modifications, and erosion tape. Field level methods require frequent inspections and reapplications, and are short-term solutions that are time-consuming. Manufacturing modifications are more permanent however, still require preventative maintenance.

E-20. Aircraft rely on an inlet particle separator system to reduce engine wear, but this system is less efficient at idle speed. Additionally, while operating at low altitude and low airspeed, particle separator systems may be unable to remove particulates in sufficient quantity.

E-21. Increase engine flush intervals to remove ingested particulates, clean internal seals, and prolong engine component life.

AIRCRAFT SURVIVABILITY EQUIPMENT

E-22. All sensors should be cleaned frequently and covered when the aircraft is not in use.

REVERSE CYCLE

E-23. Maintenance personnel consume more water and require frequent monitoring during the heat of the day. Productivity decreases as environmental extremes increase. Reverse-cycle (night-time) maintenance is a solution to adverse day-time environmental conditions.
E-24. Commanders should consider risks vs benefits to conducting night MTF operations. In hot, high altitude, and mountainous environments, night track and balance can significantly reduce vibrations caused by thermal turbulence over rough terrain and reduce track time requirements.

JUNGLE ENVIRONMENT

E-25. The jungle environment is common in tropical areas of the world. Hot and humid best describes a jungle environment. Jungle climate varies with location; near the equator seasons are characterized with rain occurring throughout the year, whereas seasons become distinctly dryer farther from the equator. For more detail on operations in jungle environments refer to FM 90-5.

E-26. In a jungle environment, some considerations and precautions include:
   - Lenses and dials quickly fog over with internal moisture.
   - Electrical connections corrode quickly, and battery life is shorter than normal.
   - Weapons tend to rust quickly and must be cleaned and oiled frequently.
   - Avionics are particularly sensitive to moisture, condensation, and corrosion.

CORROSION PREVENTION

E-27. Initiate an aggressive and comprehensive corrosion-prevention program. Parts and systems are susceptible to corrosion and this susceptibility is magnified in hot and humid environments. A comprehensive corrosion preventive program should be part of the unit SOP and applied daily to maintenance activities. The unit SOP provides preventive measures and guidance to minimize the destructive effects of corrosion on unit aircraft and equipment. Coordination with the corrosion PM can be useful in developing a comprehensive corrosion plan designed specifically for the operational location.

FIELD SITES

E-28. Some form of engineer support is required to prepare a field site as a suitable location to conduct aircraft maintenance. In areas where heavy and/or frequent rains occur, areas suitable for aircraft maintenance may be so limited as to require the collocation with other units. Collocating units has the added benefit of sharing security requirements and the detriment of concentrating personnel and equipment.

MOUNTAINOUS ENVIRONMENT

E-29. Operations in mountainous environments present many challenges to maintenance leaders and personnel that require specialized equipment, specialized training, and acclimatization. Rugged terrain and abrupt changes in elevations limit the reliability of roads and suitable areas for maintenance operations. High altitudes and weather affect the performance of personnel and equipment. Personnel must be trained and acclimate to higher altitudes, and equipment may need adjustment to operate efficiently at higher elevations. For more detail on operations in mountainous environments, refer to ATP 3-90.97.

E-30. In a mountainous environment, some considerations and precautions include:
   - Aircraft may be the most efficient means to move repair parts, contact teams, and evacuate unserviceable items.
   - ASC units must be located as close as practical to the AMC/AMT units they support.
   - Maintenance turn-around time increases due to high altitude effects on maintenance personnel.
   - Stockpiling and caching supplies decrease resupply risks due to transportation limitations.
   - Rugged terrain requires increased engineer effort to prepare area for maintenance activity and improve security measures.
   - Locally obtained animals and indigenous personnel may be required to move supplies from roads and trails to unit positions (ATP 3-18.13).
COLD-WEATHER ENVIRONMENT

E-31. Cold Weather operations require a considerable amount of specialized equipment; such as, tracked vehicles, sleds, heated shelters, heated facilities, and aircraft modifications. Every item of equipment is affected by extreme cold and snow in the winter and by mud and water in the summer. Extreme conditions increase wear and tear on equipment and increase the quantity and variety of parts required for maintenance. For more detail on operations in cold-weather/northern environments, refer to ATTP 3-90.97.

E-32. Helicopter operation, particularly with their inherent vibrations, in temperatures below -35 degrees Fahrenheit results in a marked increase in metal fatigue. All metals become increasingly brittle as the temperature decreases. Aircraft fatigue is evidenced by an increased number of skin cracks and popped rivets in stress areas. Careful attention must be devoted to these areas in all stages of maintenance operations. Areas to inspect on a more frequent basis for stress cracks, as a direct result of the environment include but are not limited to the following: engine decks, tail-boom hard points, and gearbox mounting points.

E-33. Operation of aircraft at temperatures below -50 degrees Fahrenheit should not be attempted except in emergencies; unless the aircraft has the appropriate winterization kit and auxiliary systems that have proven reliable at lower temperatures. Lubrication products must be examined to determine if they are sufficient for operations in extreme cold environments.

E-34. Unit leaders must ensure personnel and equipment can withstand the challenges of cold weather. Soldiers and their leaders must understand the effects of cold weather and adapt operations and maintenance to overcome environmental conditions. Operations in snow, ice, and extremely cold conditions require special training, personnel acclimation, and special operational techniques.

E-35. Trafficability is an issue during spring break up and in summer when the ground thaws and ice in streams and lakes melt. Track-laying vehicles of the low-ground-pressure type may provide the only means of cross-country mobility. Mud, muskeg, swamp, marsh, and open water hamper ground movement in spring and summer.

E-36. In a cold-weather environment, some considerations and precautions include:

- All tasks require more time and effort due to cold-weather effects on equipment and personnel requirements to wear cold-weather clothing and gloves. At temperatures below -20 degrees Fahrenheit, maintenance tasks may take five times as long to complete.
- Maintenance units usually require additional personnel to offset the increased time necessary to complete maintenance tasks.
- Extreme cold-weather conditions may limit the use of aircraft.
- Maintainers must allow equipment to thaw out and warm up before making repairs.
- A portable combustion type of heater, incorporating a blower and flexible hoses for application of heat to localized areas, may be used for preheating aircraft components and systems before starting.
- Heaters may be used to heat specific portions of the aircraft so maintenance personnel can work without gloves.
- When temperatures remain below freezing, aircraft batteries not in use should be removed and stored in a warm place.
- Required installation of cold-weather auxiliary equipment; such as, winter cowls, oil dilution systems, personnel heaters, and covers add time to normal maintenance operations.

MAINTENANCE ACTIVITY

E-37. Personnel efficiency is reduced by bulky clothing worn in extremely cold environments. Operators/maintainers must wear mittens or gloves at all times due to the dangers associated with handling metal objects with bare hands. Losing the sense of touch further reduces the Soldier efficiency. An even routine operation, such as handling latches or opening engine compartments, becomes a focused and time-consuming task when performed with protected hands. Complete winterization, diligent maintenance, and well-trained maintenance teams are crucial in reducing the adverse effects of cold weather and performing maintenance in a timely manner.
E-38. In cold weather environments, maintenance personnel have additional risks involved while operating on or around aircraft at the FARP. These risks include:

- Potential aircraft damage and personal injury can occur when clearing snow and ice from main rotor blades. An AGPU may be used to melt snow from the aircraft using bleed air.
- Caution should be taken while moving aviation ground support equipment (AGSE).
- White out conditions can cause a loss of situational awareness and impair the crew’s view of ground obstacles and personnel.
- Static electricity in cold, dry conditions, increases the risk of accidents involving fuel and ammunition.

**MAINTENANCE FACILITIES**

E-38. The availability of proper maintenance facilities can be critical to the maintenance mission. Without some type of permanent or temporary shelter, even routine maintenance can become extremely difficult, if not impossible to perform.

E-39. Heated buildings or shelters are a necessity for conducting aircraft maintenance in a cold weather environment. Proper and satisfactory aircraft PMCS requires personnel to work in moderate temperatures within an enclosed structure. Maintenance of many components requires careful and precise servicing and inspections, which is not possible while wearing cold-weather clothing.

E-40. When buildings are not available, LMEs are a temporary and expedient method to use for maintenance. If possible, LMEs should have wood flooring and be heated. Maintenance leaders and supervisors closely monitor personnel working in these conditions, responding immediately to the first indication(s) of any cold-related symptoms or injuries.

E-41. During certain times of the year, hours of daylight in a northern environment are short. Lighting equipment must be available and in sufficient quantity to furnish adequate illumination for maintenance services. Lights with ample cable extensions, attachment plugs, connectors, and spare bulbs are a necessity.

**NIGHT OPERATIONS**

E-42. Aircraft maintenance performed at night on aircraft flown that day has the potential to ensure those aircraft are available the next day. Maintenance leaders must establish an efficient maintenance schedule that cycles aircraft through inspection, repair, and placement back on the flight line while avoiding a stacking or lining-up of aircraft awaiting maintenance. An SOP that is understood and practiced by all personnel and a sound fighter management program provides for the consistent and continued success of the unit maintenance program.

E-43. During night-time maintenance, some considerations and precautions include:

- Night-time work performance is not equal with daytime because of mental fatigue associated with disruptions in the body internal clock, known as shift lag. Shift lag is a disruption of the circadian cycle affecting personnel that have a changed work/sleep schedule.
- Work performance is restricted when working in subdued (red or green) lighting, compared to white light.
- Risk versus benefit analysis to determine if MOCs and MTFs should wait for daylight.
- The potential for “missing something” increases as light levels diminish and the fatigue level of night workers increases.

**TRANSITION BETWEEN SHIFTS**

E-44. The chances of an incomplete or inadequate maintenance task occurring increases during shift changes. Supervisors must avoid the tendency to complete a specific task quickly in order to reach a point that permits a smoother shift change transition. A detailed coordination between shift supervisors will avoid the potential for incomplete or inadequate maintenance.
PHYSIOLOGICAL FACTORS

E-45. Vision is obviously reduced at night; however, other human factors affect night maintenance. Supervisors and maintenance personnel should receive instruction on physiological factors affecting night operations. The commander can institute a program that provides training in conjunction with personnel shifting to a night-time work cycle as part of an adjustment period.

E-46. Physiological factors that must be considered in night aircraft maintenance include:

- Eyes require about 40 minutes to fully adapt to darkness.
- Adjustment to a new work schedule requires about one day for each hour of shift change.
- Forward shift rotations (days to evenings to nights) allow faster adjustment than backward rotations (nights to evenings to days).
- The body clock is set by exposure to the daylight, most night workers never fully adjust.
- Fatigue affects personnel night vision, muscular actions, and mental abilities.
- Personnel experience a loss of depth perception and color distinction at night.
- Smoking three cigarettes in rapid succession or 20 to 30 cigarettes a day reduces night vision by approximately 20 percent.
- Diet affects night vision; individuals should eat only nutritious foods, avoiding “junk foods.”

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR OPERATIONS

E-47. Aircraft maintenance personnel have the potential to be exposed to or work on aircraft exposed to CBRN agents. The use of chemical or biological agents against United States maintenance facilities and units by threat forces has the tactical advantages of isolating important battlefield systems and demoralizing personnel.

LEADER RESPONSIBILITY

E-48. Maintenance leaders and personnel must consider ways to resume operations at the earliest opportunity. CBRN defense, avoidance, protection, and decontamination of unit personnel, equipment, supplies, and operating areas is a time-consuming task requiring careful, realistic planning (ATP 3-11.32 Multi-service Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Aspects of Command and Control).

E-49. Units should establish SOPs for contaminated aircraft and equipment maintenance procedures as follows:

- Inspection and contaminated maintenance collection point procedures.
- Procedures for performing immediate and operational decontamination or requesting detailed equipment decontamination from a CBRN defense company.
- Procedures for repair without electronic test equipment (if equipment is destroyed by blast or electromagnetic pulse).
- Responsibilities and procedures for establishing and operating a contaminated-equipment holding area.

E-50. Maintenance on contaminated equipment considerations and precautions include:

- Petroleum products tend to trap chemical contaminants.
- An aircraft that is safe for an operator to use without mission-oriented protective posture-level 4 MOPP-4 protection may be unsafe for maintenance personnel to repair.
- CBRN contaminants may collect in bolt threads, hydraulic fluids, and closed assemblies. Maintenance personnel could open a component and be exposed to lethal concentrations of hazardous vapors or particles. Injuries or casualties could occur unless all repairs and preventive maintenance on previously contaminated aircraft and components are done in MOPP-4.
• Oil, grease, and dirt seriously degrade the protective qualities of the chemical protective suit; maintenance personnel must keep themselves as clean as possible. Extra protective suits should be on-hand to replace dirty ones.
• Wet-weather gear helps keep protective suits clean but increases heat buildup and will eventually be penetrated. The combination of protective gear and wet-weather gear provides good protection from a combination of toxic chemicals, grease, and oil contamination; fuel handler aprons and field-expedient rubber sleeves can provide some added protection with less heat buildup.

CONTAMINATION CONTROL

E-51. Contamination must not be spread. Contaminated equipment is not taken into a clean area. Maintenance personnel repair contaminated equipment only in an area specified for contaminated aircraft and/or equipment. Repaired, contaminated equipment is marked and returned to contaminated units only.

E-52. Equipment immediately decontaminated can still be hazardous to handle. A previously contaminated unit conducting periodic contamination checks is able to use the equipment safely because of the precautions being taken.

E-53. After tools and equipment are used on contaminated aircraft or equipment, they are marked and treated as contaminated from that point. Segregate contaminated tools and equipment from uncontaminated tools and equipment. Protection from contaminated equipment is mandatory. Contaminated tools and equipment must be stored at a separate location downwind of clean areas. Every effort must be made to minimize and control the spread of contamination.

E-54. Contaminated aircraft and equipment should not be evacuated for repairs. If AMC/AMT or ASC maintenance is required, a maintenance team in MOPP-4 is sent forward to effect repairs in the contaminated aircraft area and must test the equipment for contamination. If contamination exists, the maintenance team must decide whether repairs can be made in MOPP-4. If they cannot, the equipment must be decontaminated. Safeguards must be taken to protect personnel inside and outside contaminated areas. Detection equipment should be operated while contaminated equipment is being repaired. The testing must be a continuous process.

E-55. Mark contaminated aircraft and equipment. Aircraft and equipment that are contaminated or that have been decontaminated to low-risk levels for operators and crews could still present a serious hazard to mechanics.

E-56. Contaminated aircraft must be identified with standard triangular contamination signs on all four sides and at the flight controls. Write the type and date of contamination on the signs, which should be easily visible from the outside of the aircraft. For nonpersistent agents, signs may not be removed until decontamination has been verified by a detailed inspection. Contamination signs on aircraft and equipment contaminated with persistent agents will not be removed even after decontamination.

E-57. Any surfaces the maintenance team must touch to repair or recover the aircraft must be given an operator spray down with an approved decontamination apparatus. This spray down will not reduce the level of MOPP needed but offers some additional protection and limits spread. Maintenance teams must carry extra onboard decontaminants for this purpose. The objective is to limit transferring liquid contamination from the equipment being repaired to the maintenance or recovery team or its equipment.

E-58. Support from a contaminated area is limited to the amount of time Soldiers can operate in MOPP-4. This time restriction severely limits the maintenance support within a contaminated area. It may be possible to extend the time the unit can continue to support from the contaminated location by scheduling periodic withdrawal of personnel to a clean area for complete personnel decontamination and a rest period at a reduced MOPP-level. For continued effectiveness, however, the unit must leave the area, go through a thorough decontamination and set up shop in a clean area.

E-59. Maintenance personnel repairing equipment contaminated with radiation should wear dosimeters and be closely monitored for exposure. They must never exceed exposure levels. When the highest acceptable levels are reached, personnel should be replaced, mission permitting. The amount of radiological contamination that personnel can be exposed to varies. It depends on operational exposure guidance and the tactical situation.
Appendix F

Aviation Support Equipment Section

F-1. Aviation support equipment sections (ASES) consolidates several support functions under one organization increasing performance and readiness. Placing the tool room, HAZMAT, TMDE, GSE, MHE, and DART under the leadership of a single formation, the commander ensures a higher level of training, readiness, performance, and regulatory compliance. ASES preserves combat power by allowing the HQ, ARP, and CRP to focus exclusively on aviation maintenance. ASES provides routine aviation maintenance support to the AMC/AMT under the direction of the PC section to ensure accomplishment of the AMC/AMT customer support goals. To function effectively, ASES at the AMC/AMT level usually consists of six to twelve Soldiers including an NCOIC appointed on orders by the commander. Due to its rotational nature, this is a non-MTOE section built from Soldiers within the unit. Soldiers are rotated into the ASES from the platoons within the company/troop and returned after serving approximately one year. This time line can be shorter in the focused mission saturation environment of unaccompanied short tours or combat. Commanders and first sergeants should time rotations to ensure a majority of experienced ASES Soldiers remain in the section to train newly assigned Soldiers. ASES Soldiers in the AMC/AMT perform six functions:

- Tool room operations.
- GSE maintenance and support.
- TMDE coordination management.
- MHE operations.
- Package POL and HAZMAT operations and planning.
- Deliberate recovery DART support (unit maintenance aircraft recovery kit operations) and training.

F-2. ASES maintains the AMC/AMT compliment of aviation ground power units (AGPUs), generic aviation nitrogen generators, pressure washers, cranes, hoists, tractors, tugs, forklifts, aviation electrical power generators, jacks and recovery assets (unit maintenance aircraft recovery kit, DART trucks), as well as the tool room. ASES coordinates calibrations tracking, as well as equipment turn-in and receipt for the entire company/troop. ASES also maintains the AMC/AMT spill contingency plan and manages the company/troop HAZMAT storage and disposal operations.

F-3. At the ASC/aviation support troop (AST) level, large quantities of aviation support equipment and DART responsibilities mandates an ASES with 15 to 35 Soldiers including an OIC and NCOIC (both appointed on orders by the commander) to function efficiently and effectively. As in the AMC/AMT, Soldiers are rotated into the ASES from the platoons within the company/troop and returned after serving approximately one year. This time line can be shorter in the focused mission saturation environment of unaccompanied short tours or combat. Commanders and first sergeants should time rotations to ensure a majority of experienced ASES Soldiers remain in the section to train new Soldiers before their subsequent replacement.

F-4. The ASC/AST ASES is a combination of the tool crib section and the fuel service and POL section, augmented with aviation Soldiers from within the company/troop to perform six functions:

- Tool room operations.
- GSE maintenance and support.
- TMDE coordination management.
- MHE operations.
- Deliberate air and ground DART operations.
- Aircraft fueling/defueling operations, package POL support, and HAZMAT operations and planning.
F-5. ASES provides routine aviation maintenance support to the ASC/AST under the guidance of the PC section to ensure accomplishment of the ASC/AST customer support goals. However, because of its combat DART responsibilities to the entire CAB/ACS and diverse capabilities, the ASC/AST ASES reports directly to the commander. ASES maintains the ASC/AST compliment of AGPs, generic aviation nitrogen generators, pressure washers, cranes, hoists, tractors, tugs, forklifts, aviation electrical power generators, jacks and recovery assets (prime movers and trailers), as well as the tool crib shelter. ASES leads and executes ASC/AST aircraft recovery operations, and coordinates calibrations tracking, turn-in, and receipt of equipment for the entire company/troop. ASES also maintains the ASC/AST spill contingency plan and manages the company/troop HAZMAT storage and disposal. Using its cranes, forklift, trailers, and prime movers, ASES can perform MHE missions in support of the ASC/AST, ASB, or the CAB/ACS.
Appendix G

Care of Supplies in Storage SOP

GENERAL

G-1. This standing operating procedure (SOP) applies to all unit personnel (including maintenance and supply) who routinely work with Class IX (repair parts). This SOP establishes local procedures for organizational (unit) level care of supplies in storage (COSIS) processes (steps) to ensure stock readiness (SR). Close coordination of supply and maintenance personnel is required to ensure COSIS steps are completed on ready-for-issue and retro-grade turn-in parts. COSIS supports the CSDP according to AR 710-2; steps will be fully implemented at the organizational level.

G-2. COSIS is a program comprised of a set of processes (steps) whose purpose is to ensure that materiel in storage is maintained in ready-for-issue condition and to prevent uneconomic deterioration of materiel. COSIS steps taken ensure that supplies and equipment in storage will be preserved and maintained in an issueable condition through inspection and actions taken to correct any forms of deterioration and to restore packaging to ready-for-issue (RFI) condition. COSIS includes the in-storage visual inspection, minor repair, preservation, and packing of materiel, and all intra-unit materiel movement to perform those tasks.

CORROSION, PACKAGING, AND STORAGE

G-3. Corrosion of supplies causes serviceable parts to become unusable. Corrosion also causes losses of Condition Code (CC) “F” repairable/recoverable Turn-in parts when they corrode beyond repairable limits. The Army designs and designates packaging and storage requirements to prevent deterioration (including corrosion) in order to sustain repair parts. This is true for new “ready-for-issue” AND recoverable/repairable “turn-in” parts. Opened or damaged packaging exposes Class IX supply parts to humidity/moisture and leads directly to corrosion. Additionally, incorrect (outside) storage of Class IX supply parts (engine, transmission, and rotor-hub “cans”, wooden crates) exposes them to the weather (rain and sun damage) and results in corrosion of Class IX supplies.

G-4. Army personnel (Soldiers and civilians) have a vital role in preventing the loss of Class IX repair parts. Perform surveillance of parts (including their containers) to identify packaging and storage problems immediately. Remediate opened/damaged packaging and move Class IX inside under covered storage before these discrepancies lead to corrosion.

RESPONSIBILITIES

G-5. Leaders are directly responsible for safeguarding all supplies under their control.

COMMANDERS

G-6. Commanders are directly responsible for safeguarding all supplies under their control according to AR 710-2. Commanders will ensure the following:

- Develop and sustain a high degree of maintenance discipline within their commands, including management of repair parts according to AR 710-2 and AR 750-1.
- Ensure that materiel is stored consistent with the NIIN-specific item type of storage (TOS) code listed in FEDLOG/FLIS unless a deviation is approved in writing by the individual item manager (IMM), according to AR 740-3.
- Ensure property is on-hand, serviceable and safeguarded according to AR 710-2.
- Adequately address care of supplies in storage (COSIS), including preservation, packaging, and exercising requirements according to AR 750-59.
Evaluate all supply operations (including COSIS) using the standards of the CSDP as outlined in AR 710-2.

**UNIT CPC MONITOR**

G-7. Unit corrosion prevention and control (CPC) monitors will ensure—

- The unit SOP contains detailed procedures to be followed that address COSIS, Stock Readiness and the care of LLRC according to AR 750-1.
- LLRC receive routine care and surveillance and that containers equipped with humidity indicators are monitored for appropriate humidity levels per TM 1-1500-328-23, TM 38-400, AR 710-2, and AR 740-3.
- Technical supply maintains an on-hand supply of MIL-D-3463, Type I-desiccant bags, and humidity indicator cards.
- COSIS Inspections are being conducted by both Supply personnel to ensure supplies, aviation components/repair parts, and LLRC are examined for proper storage, serviceable condition, and packaging discrepancies AR 750-59.
- Documentation of COSIS inspections conducted, discrepancies are identified and corrective actions are taken for all on-hand LLRC according to AR 750-59.
- MIL-STD-2073-1E packaging, preserving, and marking of aviation Class IX repair parts (including LLRC), which are in storage or being shipped (Retro-Grade Turn-ins), per the NIIN-specific Army packaging information listed on FEDLOG/FLIS packaging file (tab) according to AR 700-15, AR 740-3, and AR 750-59.
- Storage space is adequate for on-hand supplies and that all Class IX repair parts are stored in their NIIN-specific Type of Storage (TOS) as identified on FEDLOG/FLIS according to AR 740-3, AR 750-59, TM 1-1500-328-23, and TM 38-400.
- LLRC are oriented to allow easy access to Humidity Indicators and Pressure relief valves according to AR 740-3, AR 750-59, TM 1-1500-328-23, and TM 38-400.
- Findings of noncompliance for Storage, which are beyond the organizational level control, are elevated to the appropriate level capable of resolving the discrepancy according to AR 710-2.

**MAINTENANCE PERSONNEL**

G-8. Maintenance personnel will ensure the following:

- For long life re-usable containers (LLRC), maintenance personnel will follow procedures listed in their mission design series (MDS) aircraft technical manual (TM).
- Serviceability inspections are performed on LLRC (“can”) prior to component installation into its storage and shipping container (LLRC). Only those LLRC that are in condition code (CC) “A” may be used to store or transport Class IX items. According to AR 750-1, if economical repair is not available at the organizational level, notify technical supply and/or SSA for disposition instructions on a replacement LLRC or request a packaging deviation from AMCOM packaging/item manager.

**QUALITY CONTROL TECHNICAL INSPECTOR**

G-9. Quality control technical inspectors will ensure the following:

- Class IX repair parts are properly preserved with contact preservative per the appropriate aircraft IETM prior to LLRC lid closure and prior to turn-in to technical supply according to AR 750-1.
- The proper amount of fresh activated (dried) desiccant bags have been loaded into desiccant baskets of LLRC. Additional desiccant bags are not placed on the floor of the “can” as this allows residual POL to be absorbed instead of humidity/moisture. Desiccant bags with tie strings may be hung from cradle/mounts. Do not hang desiccant bags from the Class IX part. Desiccant bags with POL stains are not to be used per and according to AR 750-1.
- LLRC lids are secured (latched) and that humidity indicator (HI) shows “blue” PRIOR TO turn-in to technical supply according to AR 750-1.
• Packaging deviations are requested from the AMCOM packaging/item manager for all packaging (for storage and/or shipment) that does not meet the NIIN-specific (FEDLOG/FLIS listed) Army packaging requirements; this includes all LLRC not in condition code (CC) “A” that cannot be repaired at the organizational level.

SUPPLY PERSONNEL

G-10. Supply personnel (92A) assigned to packaging duties will complete PACK-1A and Pack-1B within 2 years of assignment to their packaging position according to AR 700-37. PACK-1A (online ALMS) should be completed as soon as possible after being assigned to packaging duties. Supply Personnel assigned to Receiving and/or Turn-in will perform inspections of each Class IX item handled to determine if packaging meets MIL-STD-2073-1E according to AR 700-15. Packaging requirements are NIIN-specific and may be found in FEDLOG/FLIS.

SUPPLY SUPPORT ACTIVITY

G-11. Storage activities are responsible for providing protection from the elements and environmental conditions by providing proper storage facilities, preservation, packing, marking, or a combination of those measures and for the execution of the COSIS program according to DOD 4140.1. To accomplish these, ensure—

• Materials and tools are on-hand to complete DOD MIL-STD-2073-1E packaging according to AR 700-15.
• Assigned personnel who perform packaging or perform packaging inspections receive packaging training according to AR 700-37.
• Packaging inspections are performed at time of receipt, turn-in and for all on-hand shop stock/ASL (90-day) and document according to AR 710-2.
• Implementation of a system to ensure corrective actions for discrepancies uncovered during inspections are done to restore the items to serviceable condition or protect unserviceable items from deterioration according to DOD 4140.1. As an example, notify Maintenance Activity with work order requests (DA Form 2407/5990E Maintenance Request) for packaging discrepancies that require condition code (CC) verification and/or item serviceability check (includes replacement of humidity indicator).
• Evaluate unit-level storage capability and elevate all instances of non-compliance that are beyond the control of the evaluated organization to the appropriate level capable of resolving the discrepancy according to AR 710-2.

G-12. All supported DODAACs are registered on WEBSDR to allow for timely submission of SF 364 (Report of Discrepancy [ROD]) according to DLM 4000.25 at https://www.transactionservices.dla.mil/daashome/websdr.asp

• Supply discrepancy reports (SDRs)-SF 364 are submitted in a timely manner (see DLM 4000.25, C17.3.13.1) for supply discrepancies to support the DOD and Army goals for the SDR Program. These goals include determination of cause, effect corrective action, and prevent recurrence according to DLM 4000.25. Corrective action taken at the organizational level for all discrepancies still require an “Information Only” (action code 1H). “Typical Shipping and Packaging Discrepancy Codes” are found in AR 740-3.
• Supply personnel are trained in supply discrepancy reporting and familiar with DOD Logistics Agency (DLA) WEBSDR website: https://www.transactionservices.dla.mil/daashome/websdr.asp, according to DLM 4000.25.

TRAINING REQUIREMENTS

G-13. Maintenance and supply personnel should undergo the following for COSIS familiarization:

• Complete initial COSIS familiarization training by reviewing the COSIS Corrosion Training video to familiarize themselves with long life re-usable containers (LLRCs) used to transport and store Class IX aviation components. The COSIS Corrosion Training video is available on the AMCOM

G-15. All supply personnel assigned to packaging duties–Complete Military Preservation and Packaging for Storage and Shipment (Phase 2) course in residence at McAlester, OK (80-hours). To register, visit the Defense Ammunition Center (DAC) website http://www.dactces.org/. Select “Classroom Training”, then select PACK-1B to see course times and availability for this 80-hour (2 week) course.

SUPPLEMENTAL PACKAGING TRAINING

G-16. Additional packaging training is listed in AR 700-37, including the following:

- Defense Acquisition University (DAU) computer-based shelf-life training (CLL 120)- http://www.dau.mil.
- For a complete list of courses available and eligibility criteria, review AR 700-37.

COSIS INSPECTION STEPS

G-17. 92A-For all supply personnel who perform packaging and/or perform packaging inspections, use MIL-STD-2073-1E to decipher the NIIN-specific packaging requirements listed in FEDLOG/FLIS. Packaging discrepancies lead to deterioration and eventual loss of the Class IX supply part. For ESDS items, poor packaging and/or packaging defects lead to possible item compromise through handling and the resultant electro-static shock.

Note. For ESDS (MOP code “GX”) items: Ensure all items are handled using electro-static discharge (ESD) precautions. When ESD items (all serviceable AND unserviceable) are handled outside of ESD protective packaging, personnel will use a grounded wrist strap. ESD field service kits (NSN 5920-01-253-5368) are listed on the packaging starter kit (see enclosure 1, Packaging Starter Kit Info).

G-18. When possible, remediate packaging at the unit-level with available resources. Packaging discrepancies that compromise method of preservation (MOP) 40-series or MOP 50-series sealed components require a TI inspection to verify condition code (CC), or require a Class IX supply part serviceability inspection according to AR 750-1 and AR 710-2. Use DA Form 2407/DA Form 5990E (Maintenance Request [EGA]) to notify PC office of packaging discrepancies that require maintenance and/or TI involvement according to AR 750-59. Once the scope of the packaging and/or Class IX discrepancies are known, Supply personnel submit a supply discrepancy report (SDR) on WEBSDR at https://www.transactionservices.dla.mil/daashome/websdr.asp according to AR 710-2 and DLM 4000.25.

RECEIPT PACKAGING INSPECTIONS

G-19. 92A-When packaged parts arrive at the SSA or technical supply, inspect Class IX aviation parts packaging for defects. Packaging is NIIN-specific and may be found on the Army FEDLOG/FLIS under the Army packaging tab (file). Packaging file-This file provides the details of cleaning, preserving, and packaging an item or will refer to the packaging data sheet, specification, or instructions that contain such data. Refer to the special packaging instruction (SPI) listed if the method of preservation (MOP) is not listed (blank or “ZZ”). The most current SPI can be retrieved by contacting AMCOM packaging.
90 DAY ASL PACKAGING INSPECTIONS

G-20. 92A-Perform quarterly inventory of stock shop and authorized stockage list (ASL) property per AR 710-2, Table 2-2. Table 2-2, (l). Ensure that the KCC rule is followed. Conduct a review to verify authorized stockage levels are on hand or on request. Inspect on-hand supplies to ensure items are stored in their designated location and appear to be in serviceable condition. Do not open item packaging until ready for use, inspect ONLY the item packaging for discrepancies according to AR 700-15. Use NIIN-specific packaging information on FEDLOG/FLIS and MIL-STD-2073-1E to determine minimum packaging and Type of Storage (TOS) requirements.

TURN-IN PACKAGING INSPECTIONS

G-21. 92A-Turn-in items require the same packaging as new “ready-for-issue” parts. For Turn-in packaging inspections follow the same process as receipt inspections, see COSIS SOP para 4.1.1 Receipt Inspections (Packaging) listed above.

AD HOC PACKAGING INSPECTIONS

G-22. All organizational level personnel are encouraged to perform “walk-by” surveillance of Class IX. Report packaging and/or storage problems; this includes Humidity Indicator color observations. Use AMCOM CPOL LLRC Inspection Guide (Enclosure 3) to report LLRC storage and/or packaging problems to Technical Supply or SSA.

HUMIDITY INDICATOR SURVEILLANCE

G-23. At a minimum, inspections of humidity indicators (HIs) are performed at three distinct times: receipt, turn-in, and 90-day stock shop/ASL inspection intervals. Check HI for a “blue” color. This blue color indicates low (acceptable) humidity level inside container. Indicators will turn violet, then pink when humidity (water vapor) is present inside packaging and/or LLRC. White colored HIs indicate extremely high humidity (water is present in LLRC) or that HIs are non-functional due to prolonged exposure to water. Take action by adding and/or replacing desiccant when HIs show violet or pink color (water vapor present). After adding and/or replacing desiccant, re-inspect after 24 hours to confirm HI has returned to “blue”. If HIs are white, notify maintenance personnel to replace the non-functional (white) HIs. Keep a ready supply of HIs on hand to allow for replacement of expired (HIs that have turned white) according to AR 750-59. Table G-1 provides NSN.

Table G-1. Humidity indicator card and disc NSNs

<table>
<thead>
<tr>
<th>(6685) NIIN</th>
<th>P/N</th>
<th>Nomenclature</th>
<th>Description</th>
<th>U/I</th>
</tr>
</thead>
<tbody>
<tr>
<td>6685-01-591-2831</td>
<td>TA396-HC-2345S</td>
<td>Card (disc)</td>
<td>20/30/40/50% Humidity</td>
<td></td>
</tr>
<tr>
<td>6685-00-052-1865</td>
<td>TA356-HC-2345S</td>
<td>Card (disc)</td>
<td>20/30/40% Humidity</td>
<td>HD</td>
</tr>
<tr>
<td>6685-01-523-0700</td>
<td>TA356-HC-2345P</td>
<td>Card (disc)</td>
<td>Chemical paper</td>
<td></td>
</tr>
<tr>
<td>6685-00-464-4660</td>
<td>MS18013-3</td>
<td>Plug</td>
<td>20/30/40% Humidity</td>
<td>EA</td>
</tr>
<tr>
<td>6685-00-526-8526</td>
<td>826004</td>
<td>Card (flat)</td>
<td>10/20/30/40/50/60% Humidity</td>
<td>EA</td>
</tr>
</tbody>
</table>

DESICCANT

G-24. MIL-D-3464, Type I (General Purpose) is used inside MOP 50-series packaging. This type of desiccant is made from clay particles that are contained in bags that have been dried (activated) to remove moisture. Activated (dry) desiccant, MIL-D-3464, Type I (bags) absorb moisture inside the package in which it is placed. Each container must have the proper amount of desiccant installed. If MDS-specific technical manuals (TMs) do not specify the proper amount of desiccant to install, use the appropriate formula (depends on sealed container type) per MIL-STD-2073-1E, method 50-water-vapor-proof protection with desiccant (see formulas below). Some desiccant can be re-activated (dried) and therefore re-used. For those bags of desiccant that may be reactivated, instructions are located on the front of the desiccant bag. Never re-use
desiccant bags that have POL stains. Discard POL stained bags according to local Class 3 Hazmat regulations. Keep a ready supply of desiccant bags on hand. Table G-2 provides NSN info.

Table G-2. MIL-D-3464, Type I, desiccant activated, bag NSNs

<table>
<thead>
<tr>
<th>NIIN</th>
<th>U/I</th>
<th># of Bags</th>
<th>Unit Size (ounces)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6850-00-264-6571</td>
<td>Drum</td>
<td>300</td>
<td>8</td>
</tr>
<tr>
<td>6850-00-264-6572</td>
<td>Drum</td>
<td>150</td>
<td>16</td>
</tr>
<tr>
<td>6850-00-264-6573</td>
<td>Can</td>
<td>130</td>
<td>2</td>
</tr>
<tr>
<td>6850-00-264-6574</td>
<td>Drum</td>
<td>500</td>
<td>4</td>
</tr>
<tr>
<td>6850-00-264-6562</td>
<td>Can</td>
<td>250</td>
<td>1</td>
</tr>
</tbody>
</table>

For some method of protection (MOP) 50-series rigid containers (both metal and non-metal), externally mounted HIs can be seen through 1/2-inch to 1-inch round inspection windows (ports). Desiccant installed into any container should be dry (activated) when installed. Do not re-use desiccant backs with POL staining.

PROTECTION OF SUPPLIES FROM ELEMENTS

G-25. Storage is a continuation of receiving and is preliminary to shipping or issuing operations (AR 710-2). Unless otherwise directed by the inventory control point (ICP) packaging office, materiel will be stored in the packaging prescribed by FLIS. New/overhauled materiel will be stored in the unopened vendor pack. Commanders will ensure that materiel is stored consistent with the item type storage code (ITSC)/type of storage (TOS) Code in FLIS unless a deviation is approved in writing by the ICP according to AR 740-3.

G-26. Commander and Accountable Officer (Stock Record Officer)-When facilities are inadequate to properly store on-hand supplies (not enough covered storage), corrective action needs to be taken. This action includes notification of the discrepancy to the appropriate level able to solve problem. A Command Supply Discipline Program (CSDP) review will include an evaluation of storage space, including covered storage. Each command level is required to evaluate the immediate lower level of operations. Notify parent organization of storage problems beyond the supervisor’s ability to control (additional warehouse space needed) according to AR 710-2.

G-27. Army space utilization goals include the efficient use of covered storage by maximizing vertical space with racking and shelving. Forklift use for vertical shelving/racking units is necessary for efficient storage and handling operations per TM 38-400. Shelving units can be a mixture of permanent racking and deployable shelving inserts (VIDMAR® units that slide into BOH® containers). Deployment goals are when selecting racking/shelving. See TM 38-400 for storage and handling operations.

RESTORE ITEMS TO SERVICEABLE CONDITION

G-28. The following section provides guidance to restoring items to serviceable condition.

REPAIR OF CLASS IX PARTS

G-29. Technical inspectors will—

- Verify serviceability.
- Determine economic reparability of the item.
- Determine the extent of maintenance effort and repair parts required to restore the prescribed serviceable condition.
- Determine if the unserviceable item a rendered unserviceable due to other than fair wear and tear.
- Determine the estimated cost of damage (ECOD).
- Determine if all applicable MWOs have been applied according to AR 750-1.
PACKAGING REPAIR

G-30. All packaging discrepancies will be reported to SSA and Technical Supply supervisors; packaging remediation will include Aviation TI CC verification and/or serviceability inspection prior to packaging repair according to AR 750-1 and AR 710-2. All packaging performed (including packaging remediation) will be performed according to MIL-STD-2073-1E. Army assigned packaging is NIIN-specific and is listed on Army FEDLOG/FLIS on the Army packaging tab. Use MIL-STD-2073-1E to decipher the packaging codes listed on FEDLOG /FLIS.

LLRC REPAIR (UNIT MAINTENANCE)

G-31. Aviation-specific (special design) long life re-usable container (LLRC) are designated as direct support (DS) level of repair by their specific source, maintenance, and recoverability (SMR) code; “PAOFD” SMR code is listed for these special design LLRCs. The fourth alphanumeric “F” designates the lowest maintenance level capable of complete repair of the support item is DS level. Aircraft TIs will apply the same standards for serviceability and/or repair as all other Class IX aviation supply parts according to AR 750-1.

WOOD PACKAGING MATERIAL

G-32. The United Nations guidelines protecting forests worldwide against pest infestations have imposed phytosanitary measures for all WPM shipped between nations. WPM includes pallets, crates, boxes, reels, and dunnage composed of non-manufactured wood. Manufactured wood products are not affected—for example, plywood, particleboard, oriented strand board, and finished woods used in furniture. Army activities engaged in packaging of materiel for transnational shipments will comply with the procedures contained within DA PAM 700-32 and DOD 4140.1 in order to gain access to aerial and water ports. Failure to follow these procedures creates a strong risk that uncertified, unmarked, or improperly marked materiel will become frustrated cargo and destroyed at the port of debarkation, or will be required to be repacked at the port or consolidation and containerization point, causing increased cost and time delays to the Army.

PEST DAMAGE DETECTION

G-33. Any pest damage detected will be reported to the SSA or Technical Supply supervisor. Determination of requirement for an SDR will be made and submitted as determined by the supply accountable officer and aircraft TI. Contact AMCOM Packaging for WPM disposition instructions.

G-34. Solid wood pieces (non-manufactured) of a thickness greater than 6mm require ISPM-15 (International Standard for Phytosanitary Measures) compliant stamps for trans-national shipments. ISPM-15 stamps indicate the WPM has been heat treated or fumigated to kill all insects/pests. ISPM-15 stamps in the United States are controlled and issued by the United States Department of Agriculture (USDA). Only licensed facilities are allowed to stamp WPM that has been ISPM-15 treated.

G-35. Units located on Army installations will contact their Installation Logistics Readiness Center (LRC) for WPM needing repair or replacement. Solid (non-manufactured) wood pieces will comply with ISPM-15 and be marked with the same according to AR 700-37. All other Army units that are non-collocated with their supporting LRC will contact AMCOM Packaging for disposition instructions.

WORK ORDER REQUESTS

G-36. For all Class IX supply parts with packaging discrepancies, the supply activity (SSA) and/or technical supply will submit a work order request to the unit PC office to request aircraft TI assistance in the form of a condition code (CC) verification and/or serviceability inspection according to AR 750-1.

G-37. Reporting and processing of SDRs will be performed according to DLM 4000.25, Volume 2. Once the scope of the packaging and/or Class IX discrepancy is known (verified by an aircraft TI), supply personnel will submit a SDR on WEBSDR at https://www.transactionservices.dla.mil/daashome/websdr.asp according to AR 710-2 and DLM 4000.25, Volume 2. Types of discrepancy reports and reporting timeline requirements are listed in chapter 17 of DLM 4000.25, Volume 2.
PACKAGING

G-38. Maintenance personnel–Military preservation is the application of materials and/or methods designed to protect and item during shipment, handling, storage and distribution worldwide. For turn-in items, maintenance activities will—

- Apply contact preservatives (corrosion preventive compounds) per the aircraft specific technical manual (TM) according to AR 750-1. Use MIL-STD-2073-1E to decipher the packaging codes listed on FEDLOG/FLIS.
- Ensure complete preservation (adding fresh desiccant packs/bags, latching and sealing containers) is accomplished per the specific aircraft TM.

G-39. Supply personnel will ensure all packing is accomplished per the instructions provided on the Army FEDLOG (Army Packaging tab) and MIL-STD-2073-1E.

G-40. Supply and maintenance personnel–MIL-STD-129P provides the minimum requirements for uniform military marking and procedures for their application. The publication is intended for use only for the application of military specific markings to items intended for transportation and storage within the military distribution system, such as for marking of materiel not intended for immediate use and material that is stored and/or moved within or between DOD facilities. MIL-STD-129P should be readily available to all personnel performing packaging operations. Common rules for marking and labeling include the following:

- Marking must be legible and contrasting.
- Making surface must be clean and dry.
- Old markings must be obliterated.
- Use approved marking materials.

G-41. Table G-3 provides AMCOM hotline information. Table G-4, page G-9, provides packaging-starter kit information.

<table>
<thead>
<tr>
<th>Table G-3. AMCOM corrosion hotline/email/website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toll Free: (866) 222-2364</td>
</tr>
<tr>
<td>Email: <a href="mailto:ucat@amrdec.army.mil">ucat@amrdec.army.mil</a></td>
</tr>
<tr>
<td>AMCOM Corrosion Website:</td>
</tr>
<tr>
<td><a href="https://amcomcorrosion.army.mil">https://amcomcorrosion.army.mil</a></td>
</tr>
<tr>
<td>AMCOM COSIS Webpage:</td>
</tr>
</tbody>
</table>
Table G-4. Packaging-starter kit info

<table>
<thead>
<tr>
<th>NOMENCLATURE</th>
<th>SPEC/PN</th>
<th>NSN</th>
<th>U/I</th>
<th>SOS</th>
<th>SCMC</th>
<th>Unit Price</th>
<th>QTY</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOOLS</strong></td>
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<td></td>
<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>1 Sealing Machine</td>
<td>DOBOY HS-BII</td>
<td>3540-01-456-4286</td>
<td>EA</td>
<td>GSA</td>
<td>CL2</td>
<td>$3,540.47</td>
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<td>Heat Sealer, Rotary</td>
</tr>
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<td>2 Vacuum Cleaner</td>
<td>MARK225-7910</td>
<td>7910-01-423-9525</td>
<td>EA</td>
<td>GSA</td>
<td>CL2</td>
<td>$72.27</td>
<td>1</td>
<td>.75 HP VAC w/ 19’ flex hose</td>
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<tr>
<td>3 ESD Field Service Kit</td>
<td>WS-9015-1 or ASGK-MIL</td>
<td>5920-01-253-5368</td>
<td>KT</td>
<td>SMS</td>
<td>CL9</td>
<td>$83.51</td>
<td>1</td>
<td>Grounding mat with wrist strap</td>
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<tr>
<td><strong>WRAPS</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Paper, Wrapping, Chem Neutral, Crepe</td>
<td>MIL-DTL-17667, Type II</td>
<td>8135-00-558-1245</td>
<td>RO</td>
<td>GSA</td>
<td>CL2</td>
<td>$109.58</td>
<td>1</td>
<td>36” Width X 600’ Length Roll</td>
</tr>
<tr>
<td>5 Barrier Matl, Greaseproof, Waterproof, Flexible, Heat-Seal</td>
<td>MIL-PRF-121, Type I Medium Duty</td>
<td>8135-00-233-3871</td>
<td>RO</td>
<td>GSA</td>
<td>CL2</td>
<td>$176.05</td>
<td>1</td>
<td>36” Width X 600’ Length Roll</td>
</tr>
<tr>
<td>6 Barrier Matl, Waterproof, Greaseproof, Flexible, Heat-Seal</td>
<td>MIL-PRF-131, CL 1</td>
<td>8135-00-282-0565</td>
<td>RO</td>
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<td>CL2</td>
<td>$221.16</td>
<td>1</td>
<td>36” Width X 600’ Length Roll</td>
</tr>
<tr>
<td>7 Barrier Matl, Water/vapor proof, Flexible, Heat, Electro Static Discharge (ESD)</td>
<td>MIL-PRF-18705, Type I</td>
<td>8135-01-185-6816</td>
<td>RO</td>
<td>GSA</td>
<td>CL2</td>
<td>$121.55</td>
<td>1</td>
<td>36” Width X 150’ length Roll</td>
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<tr>
<td><strong>CUSHIONING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Cushioning, antistatic bubble wrap</td>
<td>PPP-C-795D, CL 2</td>
<td>8135-01-235-8057</td>
<td>?</td>
<td>GSA</td>
<td>CL?</td>
<td>$59.95</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>9 Cushioning, anti-static open cell</td>
<td>A-A-3129, Type I, Grd B</td>
<td>8135-01-088-3946</td>
<td>BD</td>
<td>GSA</td>
<td>CL2</td>
<td>$620.16</td>
<td>1</td>
<td>1250’ Length Bundle</td>
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<tr>
<td>10 Cushioning Material, Low Density, Foam</td>
<td>PPP-C-1797, Type I</td>
<td>8135-00-300-4905</td>
<td>BD</td>
<td>GSA</td>
<td>CL4</td>
<td>$277.73</td>
<td>1</td>
<td>30” Width X 225’ Length Roll</td>
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<td><strong>TAPE</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Tape, Pressure-Sensitive</td>
<td>ASTM-D-5466 Type I, CL 2</td>
<td>7510-00-266-6715</td>
<td>RO</td>
<td>GSA</td>
<td>CL2</td>
<td>$2.97</td>
<td>4</td>
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<td><strong>DESSICANTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Desiccant, Activated (CN contains 250ea)</td>
<td>MIL-D-3464E, Type I</td>
<td>6850-00-264-6562</td>
<td>CN</td>
<td>SMS</td>
<td>CL3</td>
<td>$57.00</td>
<td>1</td>
<td>1 Oz/Unit bags</td>
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</table>
### Table G-4. Packaging-starter kit info cont’d

<table>
<thead>
<tr>
<th>NOMENCLATURE</th>
<th>SPEC/PN</th>
<th>NSN</th>
<th>U/I</th>
<th>SOS</th>
<th>SCMC</th>
<th>Unit Price</th>
<th>QTY</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Desiccant, Activated (DR contains 150ea)</td>
<td>MIL-D-3464E, Type I</td>
<td>6850-00-264-6572</td>
<td>DR</td>
<td>SMS</td>
<td>CL3</td>
<td>$178.20</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>Indicator, Humidity (CN contains 125ea)</td>
<td>MS20003-2</td>
<td>6685-00-752-8240</td>
<td>CN</td>
<td>SMS</td>
<td>CL9</td>
<td>$11.69</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>Indicator, Humidity (HD contains 100ea)</td>
<td>TA356-HC-2345S</td>
<td>6685-00-052-1865</td>
<td>HD</td>
<td>SMS</td>
<td>CL9</td>
<td>$300.09</td>
<td>1</td>
</tr>
</tbody>
</table>

| Total Costs | $5901.24 |
Appendix H

Bench Stock Management

This appendix addresses bench stock specific procedures. Bench stock items are authorized for all aviation maintenance activities. Aviation maintenance officers/technicians establish a level of bench stock availability based on unit requirements and usage; ensuring maintenance procedures are not interrupted due to a lack of bench stock items.

GENERAL

H-1. According to AR 710-2, bench stocks are authorized at AMC/AMT- and ASC-level units. These items are stored near the work area providing maintenance personnel with direct access to supplies. Management of bench stock items is a maintenance team effort, beginning with aviation unit maintainers /crew chiefs, ending with the maintenance officer/technician.

Note. AR 710-2, DA PAM 710-2-2, and DA PAM 738-751 contain additional regulatory management policy on bench stock items.

H-2. Bench stocks are composed of low-cost, high-use; consumable Classes II, III (packaged), IV, and IX (Air) (less components) items used by maintenance personnel at an unpredictable rate. Examples of these items are common hardware, resistors, transistors, wire, tubing, hose, thread, welding rods, sandpaper, sheet metal, rivets, seals, oils, grease, and repair kits.

H-3. Two records are required for bench stock management: a bench stock list and bench stock replenishment tags.

PREPARING A BENCH STOCK LIST

H-4. Aviation maintenance officers/technicians establish a level of bench stock availability based on unit requirements and usage; ensuring maintenance procedures are not interrupted due to a lack of bench stock items.

MANUALLY

H-5. Manually prepare the bench stock list on a memorandum or plain bond paper and include the date prepared, unit/activity, and UIC. The essential data elements are provided in table H-1 (page H-2) according to AR 710-2. The person preparing the list signs it and sends it to the unit commander or unit/installation maintenance officer for approval and signature.

ELECTRONICALLY

H-1. Change minimum and maximum stockage levels using ULLS-A (E) by accessing the supply module within ULLS-A (E), clicking on the bench stock icon, and selecting change min/max stock levels. When quantities have been adjusted, print a bench stock report. At the end of the printed report, the technical supply manager can indicate who prepared the list and who authorized the list.
Table H-1. Sample of a bench stock list

<table>
<thead>
<tr>
<th>Shop Code</th>
<th>NIIN</th>
<th>Noun</th>
<th>Location</th>
<th>Quantity</th>
<th>Price</th>
<th>Unit of Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>*A</td>
<td>000344641</td>
<td>Circuit</td>
<td>A0001</td>
<td>4</td>
<td>$262.00</td>
<td>EA</td>
</tr>
<tr>
<td>E</td>
<td>000364197</td>
<td>Light, in</td>
<td>E0001</td>
<td>50</td>
<td>$1.20</td>
<td>EA</td>
</tr>
<tr>
<td>M</td>
<td>000366967</td>
<td>Screw, as</td>
<td>M0001</td>
<td>20</td>
<td>$2.39</td>
<td>HD</td>
</tr>
<tr>
<td>G</td>
<td>000366995</td>
<td>Seal, non</td>
<td>G0001</td>
<td>100</td>
<td>$0.59</td>
<td>FT</td>
</tr>
<tr>
<td>C</td>
<td>001255256</td>
<td>Battery</td>
<td>C0001</td>
<td>2</td>
<td>$12.48</td>
<td>EA</td>
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<tr>
<td>K</td>
<td>001433115</td>
<td>Lamp, inc</td>
<td>K0003</td>
<td>50</td>
<td>$1.12</td>
<td>EA</td>
</tr>
<tr>
<td>G</td>
<td>001436234</td>
<td>Rivet, bl</td>
<td>G0003</td>
<td>100</td>
<td>$0.99</td>
<td>EA</td>
</tr>
<tr>
<td>*A</td>
<td>002542199</td>
<td>Connection</td>
<td>A0005</td>
<td>2</td>
<td>$278.23</td>
<td>EA</td>
</tr>
<tr>
<td>D</td>
<td>010102536</td>
<td>Chain, as</td>
<td>D0007</td>
<td>5</td>
<td>$109.29</td>
<td>EA</td>
</tr>
</tbody>
</table>

Prepared by: Stephen Jones, CW4, AV Shops Officer
Approved by: James Smith, CW5, AV Maintenance Officer (or CDR)

BENCH STOCK REPLENISHMENT TAGS

H-2. Technical supply personnel provide instructions to maintenance personnel on how to use DA Form 1300-4 (Reorder Point Record) as a bench stock replenishment tag. Place the tag in or near the location of each bench stock item or in a consolidated file collocated with the items. Essential data elements of the bench stock replenishment tag are stock number, unit of issue, item noun, basic stockage level (BSL), minimum stockage level (MSL), location, Julian date ordered, and quantity ordered.

H-3. When a replenishment request for a bench stock item is submitted, enter the date and quantity from the request on the tag. Use of an alternate form is authorized when conditions such as bin size preclude the use of DA Form 1300-4; however, all data elements must be used to ensure continuity if an alternative or locally prepared form is used.

H-4. The bench stock replenishment tag captures usage of bench stock at the user level. This information is necessary to establish a 30-day stock and an MSL (reorder point). Units should establish a method to determine actual usage for two review periods, and divide this quantity by 12 (12 months, two review periods) to determine an average 30-day stock.

H-5. For example, during the first review period, 50 nuts were used and during the second review period, 40 of the same nuts were used. During the two review periods (12 months), 90 nuts were used. Dividing this by 12, the requirement for 30 days would be 7.5, rounded to 8 each. If the nut comes in an issue of each, then 8 would be the maximum stock level and the minimum would be the established MSL. For items with an issue of one hundred, then one hundred (or 1) would be the maximum stockage level and the minimum would be the established MSL.

H-6. To establish an MSL, technical supply personnel determine the order-to-ship time and how many bench stock items are used during the order-to-ship time; that number would be the reorder point. To effectively manage the unit bench stock, eliminate excess, and establish a go-to-war bench stock, the user must first identify actual usage of this class of supply.
H-7. The authorized stock level or BSL is the maximum level authorized by the maintenance officer. When the MSL level is reached, it is time to reorder the amount sufficient to return the stock level to the maximum or BSL.

REPLENISHMENT OF BENCH STOCK ITEMS

H-8. ULLS-A (E) users will use the MSL method of replenishing bench stock as the LIS is defaulted to this method. Manual users can use replenish as used, replenish on a schedule, a combination of as used or schedule, or the MSL system.

H-9. The MSL system is preferable because it is easier to manage and track usage of bench stock items. Tracking usage via the MSL facilitates technical supply personnel conducting semiannual reviews. The MSL replenishment system parallels the reorder point philosophy.

H-10. The recommended procedure for processing the replenishment is for technical supply to have the mechanics or crew chiefs pull the DA Form 1300-4 from the item location bin when the stockage level reaches the MSL. Technical supply personnel would then run the replenishment process in ULLS-A (E). Once the replenishment screen appears in NIIN sequence, technical supply personnel would tag the item and the system would run the replenishment request. ULLS-A (E) will use the difference between the maximum level and minimum level to order the shortages.

H-11. The minimum and maximum stockage levels should match the numbers reported on the corresponding DA Form 1300-4.

BENCH STOCK REVIEW PROCESS

H-12. The commander or maintenance officer/technician is required to conduct a semiannual review of the bench stock according to AR 710-2 (table H-2). This process is accomplished by reviewing the bench stock list and the usage/replenishment data on the DA Form 1300-4. The using unit should ensure all replenishment requests are recorded on the replenishment tag.

Table H-2. ULLS-A (E) example of a bench stock replenishment review list

<table>
<thead>
<tr>
<th>Shop Code</th>
<th>LOC</th>
<th>NIIN</th>
<th>Noun</th>
<th>Min Stock Level</th>
<th>Date Last Replenish</th>
<th>Date Last Reviewed</th>
<th>Repl Dsg</th>
<th>Repl Rev</th>
<th>Qty Rev</th>
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<td>002542199</td>
<td>Connecti</td>
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<td>20006023</td>
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<td>3</td>
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# Glossary

## SECTION I – ACRONYMS AND ABBREVIATIONS

<table>
<thead>
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<th>Acronym</th>
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<td>ACO</td>
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<td>ACS</td>
<td>air calvary squadron</td>
</tr>
<tr>
<td>AFMD</td>
<td>Aviation Field Maintenance Directorate</td>
</tr>
<tr>
<td>AFSB</td>
<td>Army field support brigade</td>
</tr>
<tr>
<td>AGPU</td>
<td>aviation ground power unit</td>
</tr>
<tr>
<td>AHB</td>
<td>assault helicopter battalion</td>
</tr>
<tr>
<td>AIT</td>
<td>advanced individual training</td>
</tr>
<tr>
<td>AKO</td>
<td>Army Knowledge Online</td>
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<td>ALSE</td>
<td>aviation life support equipment</td>
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<td>aviation maintenance company</td>
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<td>AMCOM</td>
<td>Aviation and Missile Command</td>
</tr>
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<td>AMDF</td>
<td>Army master data file</td>
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<td>aviation maintenance officer</td>
</tr>
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<td>AMT</td>
<td>aviation maintenance troop</td>
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<td>AO</td>
<td>area of operations</td>
</tr>
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<td>Army oil analysis program</td>
</tr>
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<td>APU</td>
<td>auxiliary power unit</td>
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</tr>
<tr>
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</tr>
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<td>ARC</td>
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</tr>
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<td>ARMS</td>
<td>aviation resource management survey</td>
</tr>
<tr>
<td>ARNG</td>
<td>Army National Guard</td>
</tr>
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<td>ARP</td>
<td>airframe repair platoon</td>
</tr>
<tr>
<td>ARS</td>
<td>attack reconnaissance squadron</td>
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<tr>
<td>ASAM</td>
<td>aviation safety action message</td>
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<td>ASB</td>
<td>aviation support battalion</td>
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<td>ASC</td>
<td>aviation support company</td>
</tr>
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<td>ASCC</td>
<td>ArmyService Component Command</td>
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<td>aviation safety officer</td>
</tr>
<tr>
<td>AST</td>
<td>aviation support troop</td>
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<td>ATST</td>
<td>area test, measurement, and diagnostic equipment support team</td>
</tr>
<tr>
<td>AV</td>
<td>asset visibility</td>
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<tr>
<td>Acronym</td>
<td>Definition</td>
</tr>
<tr>
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<td>------------</td>
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<td>AWR</td>
<td>airworthiness release</td>
</tr>
<tr>
<td>BAMO</td>
<td>brigade aviation materiel officer</td>
</tr>
<tr>
<td>BCS3</td>
<td>Battle Command Sustainment and Support System</td>
</tr>
<tr>
<td>BDAR</td>
<td>battle damage assessment and repair</td>
</tr>
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<td>BII</td>
<td>basic issue item</td>
</tr>
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<td>Brigade logistics support team</td>
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<td>BSL</td>
<td>basic stockage level</td>
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<td>command and control</td>
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<td>CAB</td>
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<td>CBM+</td>
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</table>
Aerial port

(DOD) An airfield that has been designated for the sustained air movement of personnel and materiel as well as an authorized port for entrance into or departure from the country where located. Also called APORT. See also port of debarkation, port of embarkation. (JP 3-17) See FM 4-01, ATP 3-17.2.

Basic load

(DOD) The quantity of supplies required to be on hand within, and which can be moved by, a unit or formation. It is expressed according to the wartime organization of the unit or formation and maintained at the prescribed levels (JP 4-09). See ATP 4-35.

Customer wait time

The total elapsed time between issuance of a customer order and satisfaction of that order. Also called CWT. (JP 4-09)

Port of debarkation

(DOD) The geographic point at which cargo or personnel are discharged. Also called POD. (JP 4-0) See FM 4-01, ATP 4-13.

Port of embarkation

(DOD) The geographic point in a routing scheme from which cargo or personnel depart. Also called POE. See also port of debarkation. (JP 4-01.2) See FM 4-01, ATP 4-13.
Supply support activity
Activities assigned a Department of Defense activity address code and that have a supply support mission. Also called SSA. (JP 4-09)

Tracking
Precise and continuous position-finding of targets by radar, optical, or other means. (JP 3-07.4)
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References

REQUIRED PUBLICATIONS

RELATED PUBLICATIONS

JOINT PUBLICATIONS
Most joint publications are available online: http://www.dtic.mil/doctrine/.
JP 3-17. Air Mobility Operations. 30 September 2013.
JP 4-01.2. Sealift Support to Joint Operations. 29 December 2015.

ARMY PUBLICATIONS
Most Army doctrinal publications are available online: www.apd.army.mil.
ADP 3-0. Operations. 11 November 2016.
ADP 4-0. Sustainment. 31 July 2012.
AR 700-139. Army Warranty Program. 02 February 2015.
AR 750-10. Army Modification Program. 05 August 2013.
ATP 3-04.94. Army Techniques Publication for Forward Arming and Refueling Points. 26 January 2012.
ATP 3-34.5. Environmental Considerations. 10 August 2015.
ATP 3-35. Army Deployment and Redeployment. 23 March 2015.
ATP 3-35.1. Army Pre-Positioned Operations. 27 October 2015.
ATP 4-10/MCRP 4-1H/NTTP 4-09.1/AFMAN 10-409-0. Multi-Service Tactics, Techniques, and Procedures for Operational Contract Support. 18 February 2016.
ATP 4-13. Army Expeditionary Intermodal Operations. 16 April 2014.
ATP 4-16. Movement Control. 05 April 2013.
ATP 4-35. Munitions Operations and Distribution Techniques. 05 September 2014.
ATP 4-43. Petroleum Supply Operations. 06 August 2015.
DA PAM 385-1. Small Unit Safety Officer/Noncommissioned Officer Guide. 23 May 2013
FM 4-01. Army Transportation Operations. 03 April 2014.


AIR FORCE PUBLICATIONS


DEPARTMENT OF DEFENSE PUBLICATIONS

The following publication is available at [http://www.dtic.mil/whs/directives/index.html](http://www.dtic.mil/whs/directives/index.html).


Uniform Code of Military Justice, United States Code Title 10, Chapter 47.
OTHER PUBLICATIONS

The following publication is available at https://amcomcorrosion.army.mil/corrosion/COSIS/
The following publication is available at https://www.fema.gov/media-library/assets/documents/15666.
The following standards are available at https://www.osha.gov/pls/oshaweb/.
OSHA Standard 1910.244. Other Portable Tools and Equipment.
The following publication is available at http://www.ustranscom.mil/dtr/.
The following publication is available at https://www.gpo.gov/fdsys/search/home.action.

PRESCRIBED FORMS

None

REFERENCED FORMS

DEPARTMENT OF THE ARMY FORMS

Unless otherwise indicated, DA forms are available on the Army Publishing Directorate (APD) web site: www.apd.army.mil.
DA Form 1300-4. Reorder Point Record.
DA Form 1352. Army Aircraft Inventory, Status and Flying Time.
DA Form 1352-1. Daily Aircraft Status Record.
DA Form 2028. Recommended Changes to Publications and Blank Forms.
DA Form 2062. Hand Receipt/Annex Number.
DA Form 2064. Document Register for Supply Actions.
DA Form 2404. Equipment Inspection and Maintenance Worksheet.
DA Form 2405. Maintenance Request Register.
DA Form 2407. Maintenance Request.
DA Form 2408-5. Equipment Modification Record.
DA Form 2408-5-1. Equipment Modification Record (Component).
DA Form 2408-13-1. Aircraft Inspection and Maintenance Record.
DA Form 2408-13-2. Related Maintenance Actions Record.
DA Form 2408-15. Historical Record for Aircraft.
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DA Form 2408-17. Aircraft Inventory Record.
DA Form 2408-18. Equipment Inspection List.
DA Form 2765-1. Request for Issue or Turn-in.
DA Form 5988-E. Equipment Maintenance and Inspection Worksheet (EGA).
DA Form 5990-E. *Maintenance Request (EGA).*

**DEPART OF DEFENSE FORMS**

DD Form 314. *Preventive Maintenance Schedule and Record.*
DD Form 365. *Weight and Balance Personnel, Record of.*
DD Form 365-1. *Weight Checklist Record, Chart A-Basic.*
DD Form 365-2. *Weighing Record, Form B-Aircraft.*
DD Form 365-3. *Weight and Balance Record, Chart C-Basic.*
DD Form 365-4. *Weight and Balance Clearance Form F-Transport/Tactical.*
DD Form 1574. *Serviceable Tag-Materiel.*
DD Form 1577. *Unserviceable (Condemned) Tag-Materiel.*
DD Form 1577-2. *Unserviceable (Reparable) Tag-Materiel.*
DD Form 2026. *Oil Analysis Request.*

**STANDARD FORMS**

SF forms are available at [https://www.gsa.gov/portal/forms/type/SF](https://www.gsa.gov/portal/forms/type/SF).
SF 364. *Report of Discrepancy (ROD).*
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By Order of the Secretary of the Army:

MARK A. MILLEY
General, United States Army
Chief of Staff

Official:

GERALD B. O'KEEFE
Administrative Assistant to the Secretary of the Army
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