"Growing Pains"

The Army's Transition to Two-Level Maintenance

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In the 1980s and 90s, executive officers (XOs) with their maintenance officers and technicians constantly struggled to get equipment evacuated, inspected, and accepted by support units. Simultaneously, these leaders managed an enormous organizational workload resulting from scheduled services and command maintenance periods. Maintenance leadership constantly dug for work order and supply status in preparation for the regularly scheduled and lengthy maintenance meetings that occupied the majority of their time and efforts. An abused priority system in both maintenance and supply prevented support from focusing efforts on the most immediate needs, and personal intervention was constantly required. The level of effort required by XOs to manage equipment maintenance in the complex four-level system was certainly excessive when compared to the amount of resources available in the support structure.

Transformed modular forces have been built with a new maintenance system, two-level maintenance, which is designed to address many of these maintenance frustrations. The Army maintenance transformation plan explains the conversion from a four-echeloned maintenance structure to a two-echeloned structure. This article will explain the new concept, the revised processes, and address some of the challenges units are facing in the implementation of this transition.

Why Change?

First, let us examine the reason for change. Our previous maintenance system was characterized by the term "Fix Forward." In this system, support echelons were pushed forward to make repairs and return equipment to the user as close to the point of failure as possible. Maintenance tasks were accomplished at the lowest level possible. If the task exceeded the resources of a particular level, either it was evacuated to a higher level or higher-level assets were sent forward to complete the repair. Specific capabilities existed only at certain levels, which required the Army to deploy three echelons to have the full range of capabilities in a theater of operations when the Army deployed. This resulted in a large maintenance footprint, which required an even larger logistics footprint to support all of the additional maintenance units. The previous system, which was developed during World War II, has served the Army well; however, with new technologies in information, maintainability, diagnostics, and the speed at which we can move personnel, equipment, and parts, we needed to commensurately update our processes.

Why Is This New System Better?

Consider this example of a typical maintenance action. Under the four-level maintenance system, an operator identified a class III leak from a differential output seal. The operator annotated the fault on the DA Form 5988-E (Equipment Maintenance and Inspection Worksheet) during the after operations checks, and the fault was then reported to organizational maintenance by turning in the 5988-E upon closing the dispatch. Receiving a 5988-E with a deficiency, organizational maintenance verified the fault and began the process of evacuating the truck to support. Prior to evacuation, all unit-level faults had to have been corrected. A Unit Level Logistics System (ULLS) generated work request was produced. Since the vehicle had a "not-mission capable" (NMC) fault, the commander had to "Circle X" the fault or tow the truck to support. The support unit's inspection section would then conduct an initial acceptance inspection to verify the

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A mechanic with the Mississippi National Guard works on an RG31 mine protected armored personnel carrier at Camp Liberty, Iraq, October 16, 2008.

	Four-Level	Two-Level
Number of total steps in the process	78	27
Number of steps updating forms and records	47	10
Number of people the evacuation process flowed through	10	4
Number of people that verified the fault existed	5	3
Number of people that validated the work order was filled out correctly	5	2

Figure 1 — Comparison of Four-Level and Two-Level Systems

Action	Four-Level		Two-Level	
Create a unit-level work order number	✓	Unit	✓	Field
Maintenance supervisor verifies fault	✓		✓	
Prep for evacuation	✓			
Transport to support activity location	✓			
Acceptance/rejection inspection by support	✓	DS		
Transport back to unit to work off faults	✓	Unit		
Work off faults from DS initial inspection	✓			
Re-inspect at support	✓	DS		
Create a DS work order number	✓			
Order parts, receive, and issue needed parts	✓		✓	
Assign to shop section, supervisor inspects	✓			
Mechanic repairs	✓		✓	
In process inspection	✓		✓	
Shop section supervisor's final QC inspect	✓		✓	
Inspection section's final inspection	✓	Unit		
Customer inspect/accepts	✓			
Transport to unit	✓			

Figure 2 — Comparison of the Work Flow

fault, but would most certainly identify additional shortcomings for the customer unit to correct. The vehicle would then be taken back to the customer unit's location to correct these faults, then back to support to verify the corrective action, and so on … By following the "by the book" instructions (FM 4-30-3 dated July 2004) to correct this fault, the unit executed 78 total steps — 47 of which were merely updating records — and the vehicle was transported to or from the support shop four times. Figure 1 is a comparison of the steps necessary to complete the evacuation and repair process in the four- and two-level systems.

In an effort to get systems repaired and reduce system down time, critical steps were often bypassed. Figure 2 is a simplified comparison of the steps necessary to complete a repair action in the two different systems and shows the reduction in evacuations and redundant inspections by implementing the two-level maintenance (TLM) system. With the merger of unit and direct support (DS) maintenance, the process is much more streamlined; redundancies in paperwork, evacuations, inspections, and verifications are reduced, providing reduced repair cycle time with greater efficiency in all processes.

The TLM system is different in that it introduces a "Replace Forward/Repair Rear" concept rather than the previous "Fix Forward" philosophy. This employs maintainers on the battlefield to identify a faulty component and replace it, thereby returning equipment to the fight more quickly and leaving the lengthy time-consuming repair work to the next echelon.

The new TLM system combines the previous echelons of unit and DS maintenance to form field maintenance (Figure 3). Field maintenance is focused on returning equipment to the battle quickly by troubleshooting a system to isolate and replace the malfunctioning component. This previous system would attempt to repair components as far forward as possible. In the TLM system, replacement will take place within brigade combat teams (BCT) and repairs will generally be done at echelons above brigade (EAB). Field maintenance consists of the tasks necessary to bring the system back to an operational status and return it to the fight.

The previous echelons of general support (GS) and depot maintenance are now combined to form sustainment maintenance (Figure 4). Sustainment maintenance tasks are focused on the overhauling, rebuilding, and repairing of components, assemblies, and modules and then returning them to the supply system. Modular BCTs will have no sustainment maintenance capability. Most repair tasks, previously DS, have been shifted to the sustainment maintenance level. Ideally, sustainment maintenance activities will provide support to the supply system from the continental United States. However, in an effort to return equipment to the supply system as quickly as possible and support surges in demand for critical readiness drivers, sustainment maintenance activities may be located anywhere in the supply chain.

On-System and Off-System

Field maintenance can be categorized by the term "on-system." On-system maintenance focuses on returning end items, systems, or sub-systems to a fully mission capable status. On-system tasks include preventive maintenance services, diagnostics to identify faulty components, replacement of these components, and battle damage assessment and repair (BDAR). All maintenance activities

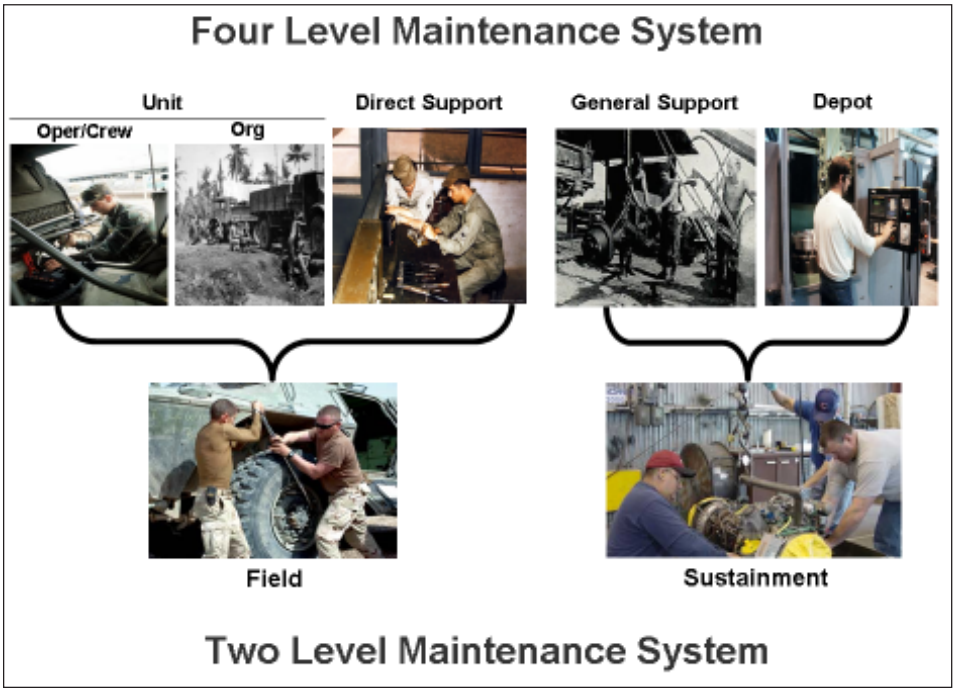

Figure 3 — The New Structure — Field and Sustainment Maintenance

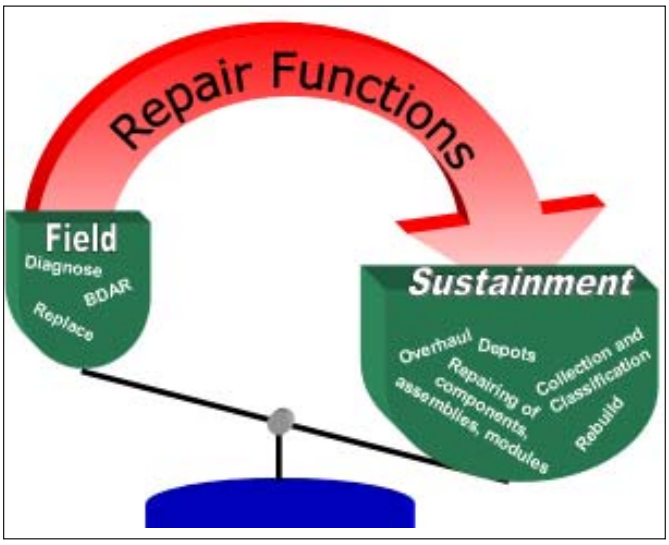

Figure 4 — Shifting Repairs to Sustainment Maintenance

in the Army will do field maintenance, even sustainment activities. Field maintenance is the maintenance a unit does on its own organic equipment. A limited number of our previous DS repair tasks will continue to be performed at the field maintenance level due to their criticality in sustaining equipment readiness. We will refer to those tasks as "near system" and thus field maintenance tasks. A good example of a "near system" task is the repair of line replaceable units (LRUs). This task is technically the repair of a component and would be located in sustainment maintenance. However, due to its criticality in maintaining equipment readiness, the decision was made to keep this "near system" task in the BCT, thus making it a field maintenance task.

Sustainment maintenance tasks can be characterized by the term "off-system." These are the maintenance tasks necessary to return components, modules, assemblies, and end items to the supply system. Sustainment maintenance activities will perform diagnostics and repairs of components, modules, or assemblies.

This segregation of on-system and off-system tasks has transferred the lengthy time-consuming repair work off the battlefield and back to our sustainment echelon, of which Army Materiel Command has responsibility. This allows the maneuver commanders to focus on the fight. Additionally, these improved business processes will reduce the logistics footprint and eliminate redundancies and unnecessary steps.

Implementation

The changes needed to implement two levels of maintenance have stretched across all levels of doctrine, organization, training, material, leadership, personnel, and facilities (DOTMLPF). For example, maintenance doctrinal publications have been updated; unit structure has changed to merge the previous organizational and direct support organizations; and Soldiers have been retrained from organizational or direct support mechanics into multicapable maintainers. However, many units are not sure if they have all the necessary components to operate under the TLM concept, and many are not sure how to tell.

To evaluate an organization's ability to conduct maintenance under the TLM concept, go to the Combined Arms Support Command (CASCOM) Ordnance Concepts, Army Knowledge Online (AKO) collaboration site (https://www.us.army.mil/suite/collaboration/folder_V.do?foid=7515524), and open the TLM Scorecard. The scorecard will provide commanders with a mechanism to evaluate each of the DOTMLPF areas for the essential components necessary to conduct maintenance under the TLM concept and provide a red, amber, green result.

Summary

The Army has provided many new enablers to assist in the performance of maintenance in this new two-tiered system, such as the tools, automation systems, facilities, and training. However, all these things are not necessarily required to implement TLM. To perform the task you only need the tools and the training. TLM is a simpler, more streamlined system that gives commanders more control of their maintenance resources and assets. Leaders at all levels must learn the new system, understand the capabilities, and implement this system.

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