



## Organizational Maintenance Performance System


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In recent years, a change in Army training philosophy has resulted in a reduction in the length of initial school-based training for many Military Occupational Specialties (MOSs). Correspondingly, the responsibilities of units to provide on-the-job training (OJT) has increased. While the Army has increased the amount and variety of training material available to units, there is little evidence that the units have been able to use this material efficiently. The General Accounting Office (GAO) concurs in the finding that the management of training at the unit level is deficient.

When the Army Research Institute (ARI) first began to look at ways to increase the skills of Army maintainers, the lack of an overall effective training management system was seen as a hinderance to introducing effective OJT to units. While the recent introduction of the Battalion Training Management System (BTMS) appears to remedy some deficiencies, trainers of maintenance skills still lack the tools that specifically and easily point to the skills that most need training for each individual soldier.

➤ ARI is now performing research to develop computer-based management systems for providing training and other information to managers. One system, for the direct support or intermediate level of maintenance, has been substantially completed and tested. Some of the training-relevant characteristics of this system are expected to be incorporated into the Standard Army Maintenance System (SAMS), which will be a computerized system for managing supply and maintenance operations. When this project is complete, it will be the first example of the inclusion of training information into a computerized Army system. The second system, for organizational maintenance, is still being developed in an armor battalion. The purpose of this report is to discuss the characteristics of that system.



## Background

GAO (1978) has reported that Army maintainers are not receiving adequate on-the-job training at their units. They conclude that the reasons for these maintenance deficiencies are that unit commanders and supervisors are not sufficiently committed to develop OJT programs. The need for these programs should be clear. Dressel and Shields (1979), studying maintenance at the organizational level, found an average rate of unnecessary parts removal of 42%. For one item, relay boxes in the M551 turret, the unnecessary removal rate was 72%. Kern and Hayes (in press) also examined the performance of organizational maintainers. They found that on those tasks requiring an end-of-job checkout, 66% of the checkouts were either not performed or performed incorrectly. Furthermore, on tasks requiring special tools, 71% of the completed work contained uncorrected errors. Reports of deficiencies in maintenance performance are not limited to the Army. Orlansky and String (1981) report unnecessary parts removal rates for the other Services which are comparable to Army rates.

Why are soldiers having such difficulty maintaining their equipment? Before we consider our answer to this question, let us review some of the important characteristics of the Army training system at the unit level.

The current system of Army training places heavy emphasis on both the Soldiers' Manual and the Job Book. The Soldiers' Manual is a list of each task and its standard that soldiers in each MOS should be able to perform. The Soldiers' Manual, therefore, is a statement of overall training requirements. The Job Book, kept by each individual soldier's supervisor, is a record of each soldier's record of performance on each Soldiers' Manual task. The Job Book, therefore, should form the basis of an individualized training plan for each soldier. The problem with this system is that it is extremely rare for a Job Book to be kept accurately.

Although units have received the mission for conducting increased training that was once provided by the schools, the units have not received increased resources to accomplish that mission. Unit commanders are typically rewarded for having vehicles and equipment in good repair, not for training maintainers in how to do the repairs more effectively. When a commander must choose between high operational readiness (OR) rates and more training, he chooses high OR. Even when time is available for training, non-commissioned officers (NCOs), who must conduct the training, are generally not sufficiently trained to perform this job effectively. Also, even with BTMS, too many supervisors still view training as something that occurs behind a lectern or in front of a blackboard and not on the shop floor.

## Description of the Organizational Performance System

ARI and Anacapa Sciences, Inc. are now engaged in research to produce a new approach to the in-unit training of organizational maintenance skills.

The key elements of the approach are an overall model for unit OJT and a computerized information and evaluation system. Together, we refer to these elements as the Maintenance Performance System - Organizational (MPS-O).

In MPS-O, we have attempted to produce a unified system that will improve the current Army training system to more effectively train maintenance skills. One problem that we previously identified was the inaccuracy of Job Books. MPS-O tries to correct this deficiency by more clearly linking the performance of actual day-to-day operational maintenance and the record of that performance in the Job Book. Our electronic Job Book is kept automatically through inputs to the system that are primarily of operational and not of training value. Through an audit of the electronic Job Book, we know that its accuracy is substantially greater than that of the traditional Job Book.

In our experience, we have found that the electronic Job Book serves as the primary system output that controls training of maintenance tasks in the unit. MPS-O, however, contains a number of other outputs which also have the potential to motivate and direct training activities. The success of these outputs will be determined through further research.

Many of the other system outputs utilize the connection between individual maintainers and the vehicles upon which they work. This link permits supervisors to potentially use the vehicle repair history to identify both ineffective repairs and the individual responsible for the repair. These individuals can then be trained in the specific skills that they lack. As an added benefit, MPS-O maintains separate records of the number of preventive maintenance and corrective maintenance man-hours expended per vehicle. It also tracks the average number of man-hours expended for each specific task. This latter information can be used by managers to establish time standards for each task. Specific task repair times could then be compared to the standard with significant deviations possibly indicating a need for further training.

As part of the MPS-O model for the management and conduct of unit OJT, ARI has established a system for establishing and maintaining records on task qualification for each maintenance-related Soldiers' Manual task. The concept of task qualification has often been used informally in Army units over the years. Any system for qualifying maintainers on specific tasks seeks to take advantage of each individual's pride in his own ability and interest in receiving at least symbolic reward for a job well done.

In the MPS-O model, task qualification is awarded by each maintainer's supervisor according to easy to follow standards. In short, qualification indicates an individual's ability to perform the task correctly without supervisory intervention. The record of each maintainer's experience and qualification on each task is kept publicly in the shop area. We expect this to provide incentive both for maintainers who want to be trained and for supervisors by indicating that training is occurring.

One of the key problems previously identified is that commanders have few resources to provide for training activities and that NCOs often lack the ability to conduct formal training. For the MPS-0 model, the solution to this problem is that training should occur, for the most part, as part of the normal operational maintenance responsibilities of the unit and be conducted by NCOs on the shop floor as part of their normal duties.

The structure of MPS-0 is designed specifically to reinforce this concept of unit training. Maintainers are given credit for their performance of maintenance in the electronic Job Book and training requirements are identified by reference to how well normal maintenance activities are performed. Both maintainers and supervisors actively participate in the evaluation of system outputs. Maintainers can see how their record of experience and qualification changes as a function of supervised OJT and their supervisors can readily see their training activities reflected by those same changes. Commanders and higher level supervisors are also involved in the system because they receive summaries of both the training progress of individual companies and MOSs and overall reviews of the skills possessed by unit personnel.

While MPS-0 is currently an experimental system, we are still planning for its future implementation into the Army. One major problem is that at this time, combat battalions do not have ready access to computers capable of supporting MPS-0. Fortunately, ARI is also conducting research with the high-technology division of Ft Lewis where computers are now being introduced at that level. Only after both units have demonstrated their ability to manage computer resources and the computers have demonstrated their ability to survive the battalion environment will MPS-0 be capable of full implementation.

#### References

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