

NEWS

From GEORGIA TECH'S ENGINEERING EXPERIMENT STATION

Atlanta, Georgia 30332

Contact: Martha Ann Stegar/Ray Moore
(404) 894-3444

GEORGIA TECH HELPS MARINES
WITH PREVENTIVE MAINTENANCE

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Atlanta, Ga. - It's the squeaky wheel that gets the grease. But by the time it gets attention, expensive and time-consuming repairs are often necessary. And if the wheel is on a combat vehicle, the results of a breakdown could be fatal.

That's what led the U.S. Marine Corps to call on Georgia Tech behavioral psychologist Judith L. Komaki to show them how to improve their largely ineffective vehicle preventive maintenance (PM) system. A test group, following her suggestions, was able to improve its performance by more than 300 percent.

Dr. Komaki has just completed a three-year study of the personnel aspects of maintenance, using a heavy artillery battery of the Second Marine Division at Camp Lejeune, N.C. The situation she found was typical of most PM programs: vague inspection and maintenance standards, indistinct lines of communication, and lack of motivation.

"Maintenance is invisible," Komaki points out. "Inspected vehicles generally look exactly the same as uninspected equipment, and undetected deficiencies often don't cause trouble for months or even years. As a result, PM performance is difficult to measure. So I was not surprised when I found no acceptable measures of PM at Camp Lejeune."

Komaki discovered that the Marine Corps, like most organizations, tended to honor PM more in theory than in practice. On-line personnel would be blamed when equipment failed, yet when work schedules got tight, PM assignments would be the first the men were told to drop. Maintenance, in effect, was considered important only after something broke down.

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"But downtime is not a good measure of maintenance performance," says Komaki. "Equipment can go down for several reasons that have nothing to do with maintenance—age or faulty design, for example. I had to design a system to measure how often Marines completed their assigned PM tasks."

Field testing involved approximately 60 Marines working in both ordnance and motor transport. The Georgia Tech consultant first had to clarify the performance desired at every level, from on-line personnel to supervisors, so that each person would know exactly what he was supposed to do, and when. The weekly PM checklists were revised to provide specific, objective criteria for determining when a deficiency existed. For second echelon and supervisory personnel, Komaki outlined procedures for coordinating, monitoring and motivating their workers.

"But it's not enough to know what to do when," Komaki says. "A worker has to have an incentive to do his job well. He has to feel that his job performance matters, that his work is recognized and appreciated. That's why feedback was the key element in the success of the Marine Corps program." Each week, graphs showing the number of deficiencies detected and followup actions taken by each unit were publicly displayed so the men could see how they had done.

Komaki's research also pointed up that it is very difficult to maintain the improvements made by lower echelon workers in preventive maintenance performance without the ongoing active support of supervisory and managerial personnel. The final phase of the program emphasized measures to improve the level of supervisory participation.

Marine Corps leaders have been so pleased with the results achieved at Camp Lejeune that they are recommending that the program be implemented throughout the U.S. Marine Corps.

Komaki says use of these motivational principles should improve performance and productivity in the private business sector as well. For instance, Georgia Tech recently designed a vehicle preventive maintenance management system for Haralson County, Georgia, that also incorporates worker feedback. Performance improvement was so dramatic that the county commissioner expects to save between \$70,000 and \$100,000 a year in repairs on the county's heavy road equipment. This system can be easily modified for use in counties all over Georgia and other states as well, says Dr. Robert L. Collins, who directed the demonstration project.

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