A Marine Corps Maintenance Study for the Year 2000 and Beyond

by Mark B. Geis

The author offers some guiding principles regarding a maintenance strategy for the 21st century.

The Challenges

The Marine Corps maintenance community is currently struggling to address both new and old challenges that affect maintenance support to the fleet. Times are changing. With the dissolution of what was formerly the Soviet Union, pressure has intensified to translate these events into tangible peace dividends. As a result, defense budgets are being cut and force reductions are being implemented that will reduce the Marine Corps base force dramatically. These force reductions will be felt in all Marine Corps communities. This drawdown has significant implications for the way the Corps approaches maintenance. In his White Letter 9-92, the Commandant of the Marine Corps, Gen Carl E. Mundy, Jr., addressed the problems associated with the maintenance of equipment:

> As our resource outlook declines in the future, it should be apparent to leaders at all echelons that the equipment we are driving, shooting, and communicating with today will be the equipment we must train and fight with for many years to come. To maximize our readiness and combat capability, we must preserve our equipment through the prudent management of these scarce and expensive resources with programs such as mileage reduction, administrative deadline, administrative storage, and professional quality maintenance. The essential ingredient to the proper preservation of our assets is a solid and proactive program of preventive and corrective maintenance.

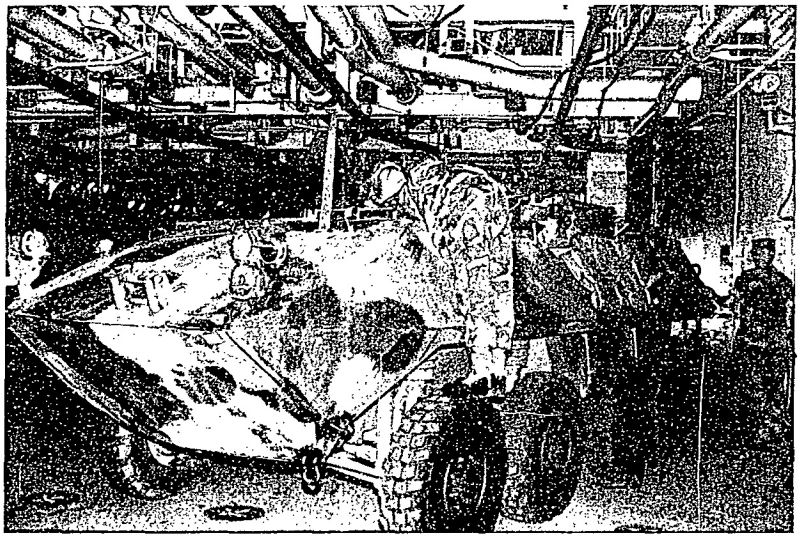
Clearly, the problem of maintaining Marine Corps equipment will be a primary focus of effort in the coming years. But the new challenges facing the maintenance community are only one part of the problem. If you ask any Marine in the maintenance community what its most significant maintenance problems have been in the past, corrosion and moisture intrusion damage will most likely be at or near the top of the list.

Corrosion is one of the primary causes of equipment degradation within the Corps. What is staggering and not often realized is the magnitude of the problem. The Department of Commerce has estimated that over 4 percent of the Gross National Product (about $170 billion in 1988 dollars) results from the cost of metallic corrosion alone. The same research concluded that the cost of corrosion to the U.S. military is anywhere from $6 to $12 billion dollars. Based on these numbers, it is clear that one of the key challenges that the Marine Corps has faced in the past and will continue to face in the future is how to control or eliminate corrosion damage.

Consequently, the Marine Corps must develop a cohesive, forward-thinking strategy for addressing these maintenance challenges. Maintaining the status quo is no longer an acceptable option, especially when the new challenges posed by force reductions and budget cuts are considered. Without such a strategy, it will be impossible for the Marine Corps to maintain current levels of materiel and operational readiness.

The challenges are formidable, but certainly not insurmountable. The strategy proposed here is based on 10 basic principles. These principles can be used as the basis for a Corps-wide solution to maintenance problems in the year 2000 and beyond. Let's take a look at each one in detail:

1. Be proactive, not reactive. One of the most effective ways to address problems is to anticipate them and propose solutions before they occur. I like to equate this idea with the yearly bout we all face with the flu. It does little good to get a flu shot after the virus has been introduced into your community. If you receive the shot before the virus appears, however, you have a much better chance of avoiding it. The same holds true when addressing corrosion and other maintenance problems. If we can identify potential problems and think about them before they occur, their impact is likely to be much less dramatic. We might not be able to avoid all problems, but we can certainly reduce the problems they pose for the Corps. The best way to do



this is to be proactive.

2. Focus on maintenance reduction. The maintenance community is already struggling to keep up with the daily maintenance workload. The competing goals of reducing force levels while maintaining the same readiness levels means that something has to give somewhere. If the status quo is maintained, readiness will eventually be affected.

You can't fit a square peg into a round hole. To make the peg fit into the hole, you can either change the shape of the peg, reduce the size of the peg, or increase the size of the hole. If the hole represents the maintenance community, and the peg represents the maintenance workload, the last solution is clearly not an option. In fact, force reductions will mean that the size of the hole will actually be decreased.

Reducing the size of the peg equates to reducing the maintenance workload or by finding new, more efficient methods of handling the workload. This can be accomplished most effectively by making use of state-of-the-art technology or by improving the process by which maintenance is conducted.

Some examples of this would include incorporating Total Quality Leadership (TQL) more effectively within the maintenance community and streamlining maintenance operations by reducing paperwork, increasing automation, and eliminating redundancy.

3. Make use of state-of-the-art technology. As we mentioned in the last section, a reduction in the maintenance workload can often best be accomplished by using state-of-the-art technology. In the past, most Marine Corps efforts to reduce maintenance workloads have not made use of the latest technology. For example, deferred maintenance programs have been used extensively to reduce maintenance requirements. While successful in reducing actual maintenance requirements, these programs have often proven to be extremely manpower-intensive, and the Corps can no longer afford to limit maintenance reduction programs to efforts such as these. One way industry is attempting to speedup the maintenance workload is through techniques such as dynamic dehumidification, which offers a cheaper, more effective method of combating corrosion than older techniques. Using this method, ambient air is passed over desiccants in order to remove moisture from the air. The desiccants are then regenerated by a heating process. Dehumidification by means of refrigeration is another effective option. Recent advances in dehumidifier design have eliminated many of the drawbacks that once accompanied refrigeration, i.e., high energy costs and large space requirements. When used as standalone systems or in combination with state-of-the-art storage systems, these environmental stabilization techniques can be used to protect equipment from the destructive effects of corrosion and moisture intrusion. Passive dehumidification using the latest airtight bags and covers is also a promising alternative to current corrosion control methods.

4. Emphasize preventive maintenance. This strategy can best be summed as an ounce of prevention is worth a pound of correction. I liken it to the choice a city safety department faces when operating a public beach where shark attacks are a real possibility. The department can either build a medical clinic on the beach to care for victims (emphasis on corrective actions), or it can post signs warning swimmers of the dangers lurking in the water (emphasis on preventive actions). Although this is a somewhat unrealistic representation of the alternatives, I believe the example illustrates the point clearly.

While it is important to address and improve corrective maintenance methods, current and past studies have shown that redistributing and redirecting maintenance efforts toward more preventive maintenance instead of corrective maintenance can result in significant manpower and cost savings. The bottom line is that the Marine Corps must stop focusing attention on the symptoms of current and potential maintenance problems, and instead attack the problems head on. Emphasizing preventive maintenance is one way to accomplish this.

5. Provide cost-effective alternatives to the status quo. It is no longer enough to propose alternatives to the status quo. Those that are adopted must provide a cost-effective means to maintaining the Corps' equipment in terms of both money and manpower. Force reductions and budget cuts make this absolutely necessary.

6. Ensure that all activity is joint in nature. The Marine Corps must maximize the use of the valuable resources available from its sister Services. The most effective approach would be to set up a system whereby new technologies and concepts under consideration by the Air Force and Army can be monitored and shared on a regular basis.

The Corps should also remember the contribution other nations can make to our efforts at improving maintenance. An example is the Israeli Defense Forces, which use a state-of-the-art controlled dry storage system that has been in use since 1978. This system uses protective flexible covers in combination with dynamic dehumidification to protect and store missiles, tanks, trucks, ammunitions, guns, radios, chemical protective gear, medical supplies, tires, and even food and water. The storage of shelf-life items, such as tires and gaskets, has resulted in a two-fold increase in shelf life. Real-world testing of the system during recent military actions in Lebanon has provided further validation of the concept. We should be tracking these efforts and beginning to develop promising technologies and methods or incorporating the ideas and techniques of other nations.

7. Focus on creating and coordinating a Corps-wide strategy. In order for a new maintenance strategy to work, every Marine needs to be singing off the same sheet of music. This will require guidance and oversight from the Corps' senior leadership. It will also re-

quire a large amount of time devoted up front to planning, organizing, and developing the details of the strategy.

Implementation of quick-fix solutions, without considering their role or impact within the framework of a general Marine Corps-wide maintenance strategy, is a recipe for failure. A successful maintenance strategy for the year 2000 and beyond will be one that considers all alternatives, examines the advantages and disadvantages of each alternative, and incorporates specific alternatives within the framework of a coherent, coordinated program.

8. Influence the design process. The Marine Corps must focus its efforts on influencing the design of new systems currently being developed and forcing the design process to address current maintenance problems, such as corrosion. In short, the maintenance community must get involved much earlier and to a much greater degree than it presently does in the design of weapons systems. Specific actions taken early in the acquisition cycle can avoid problems that have plagued certain systems in the past. Establishing a corrosion prevention and control program, increasing emphasis on material selection controls, increased use of composite surfaces, and an increase in exterior finished interior areas are all examples of ways the maintenance community can influence weapons designers.

9. Stress the importance of education and training. The success of any new maintenance strategy is also dependent on the support the strategy has at the unit level. The maintenance personnel who will be responsible for implementing the program must believe in it if it is to be successful. One way to do this is by educating units on the particulars of any new strategy or program. A complete package of briefings, concept papers, and training sessions must accompany the implementation of all new maintenance concepts. Success of a well-developed maintenance strategy is virtually ensured if the using units believe in the program and know that it will make their job easier. This will mean a large commitment of time up front to educate and train units, but it will be time well spent.

10. Draw upon and utilize the wealth of resources within the Corps. One valuable source of ideas and information too often overlooked are those held by the Corps' own enlisted personnel, particularly the noncommissioned officers and staff noncommissioned officers. These Marines possess a wealth of knowledge that can be used in the development and implementation of any new maintenance strategy. These Marines, however, are not being tapped into as well as they should be. One way to conceptualize the problem is by asking a simple question: Would you wash and clean a rental car before returning it to the rental agency? Probably not. Why? Because you don't own the car, and you have no motiviation or incentive to do so. The same concept holds true for a program that is implemented from the top down but, in its development, has received no input from the bottom up. Using a "team management concept," a maintenance depot can go a long way towards ensuring the success of a particular program by making the Marines who are responsible for implementing it, the owners of the program, so to speak.

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The coming years will be challenging ones for the Marine Corps. Force drawdowns and budget cuts will severely test the Corps' capability to provide innovative, effective solutions to the problems these drawdowns and cuts will present. Taking the time to develop and implement a maintenance strategy for the year 2000 and beyond will be time well spent, and will provide significant benefits both now and in the future. Simply put, the Corps has a choice to make: either maintain the status quo or take risks with new, innovative ideas for addressing the maintenance problems of the next century. The choice that is made will determine the future readiness and effectiveness of Marine Corps forces.

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