

The drawer system (pictured at left) can be configured differently depending upon the material to be held within each shelf. (Up to 10 shelves can be housed within each drawer system.) Above right, an overhead view of one shelving unit.

nets also provide full sidewall height drawers, which ensures that nothing is going to fall out. The cabinets' drawer configuration varied according to Marine specifications. Four drawer units were needed for large parts; smaller parts fit nicely in nine-drawer units.

To ensure that the cabinets fitted snugly inside the containers and did not move during transit, EASI fabri-

cated sheet metal casings that wrapped around the entire drawer cabinet. The cabinet is secured inside the casing, which has a pair of hinged doors that allow access to the drawers when inside the casing and the container. Each cabinet has its own locking bar and padlock as a security measure. Two of these drawer units are slid back-to-back inside a Quadcon container.

After EASI put the pieces together, they had to prove that their system could take the beating expected of it. Every drawer of a nine-drawer casing/cabinet unit was filled with 220 pounds of metal. Loaded with almost one ton of metal, the unit was hoisted by crane and dropped from a height of one foot onto a concrete pad. The unit came through with flying colors. All nine drawers worked perfectly—a storage system tough enough even for Marines.

Over the course of a year, EASI filled the contract of 664 storage system (casing/drawer cabinet) amounting to more than \$1.3 million worth of equipment. EASI delivered the entire order 8 months ahead of schedule, making it available just in time for Operation DESERT STORM where it performed well.

Victory in the Gulf took a lot of work from a lot of people. Maybe tough, efficient storage systems helped make the job a little easier.

USMC

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The Next Wartime Showstopper: No Spare Parts on the Shelf

by Maj Paul D. Adams

The Marine Corps, as well as the rest of the Defense Establishment, had better start thinking about what might happen if spare parts don't get the attention they deserve. If we're not careful how we downsize, that could indeed happen.

The scenes of victory will not soon be forgotten. Marines advancing forward into the smoke and din of battle defeating all in their path. It could not help but give one the feeling of power and accomplishment as the long columns of tanks, light armored vehicles, and assault amphibious vehicles streamed forward, propelling beleaguered Iraqis back from whence they came.

But in reality, what enabled all of the implements of war we used in the Gulf to successfully perform? The an-

swer is spare parts. Yes, spare parts. Those diverse pieces of the whole that allow rifles to fire, forklifts to lift, radios to transmit, and battlefield commanders the means to command and control. From the photos and television reports of the sheer magnitude and power of America's military might displayed in Saudi Arabia, one might be miffed at the thought that it could all grind to a halt for want of one widget. But reality is a strong medicine taken only by the brave.

America is about to lose its ability to win future wars. It will be done in the name of peace, on the road called economics. Plainly said, the American military-industrial complex is systematically and rapidly losing the ability to produce the millions of parts that make up weapons systems from the simple to the advanced. Major defense contractors are barely able to produce major end items, let alone keep up with all of the subcontractors who supply much needed expertise and parts to bigger firms and producers.

How have we come to this juncture? Simply put, peace and economics. The fall of the Berlin Wall, the Strategic Army Reduction Talks (START) and the Conventional Forces in Europe (CFE) accord, the collapse of the Warsaw Pact, and many other factors known and unknown have brought the world closer to real peace than many would have ever thought possible. A result of this political transformation is the desire to reduce, dramatically and radically, U.S. military forces. Many of the Nation's civilian leaders

see the reduction of the defense budget as a cure-all for a plethora of national problems. Hatchets and chainsaws are now at work. The only protectors remaining are politicians looking out for pieces of the pie for their districts. But a spinoff from all of these forthcoming cuts is the loss of literally hundreds of "mom and pop" defense subcontractors that are dying on the vine due to a lack of new orders. Many are hanging on only because they diversified their operations into nondefense areas. But for others, in which defense orders are 65 percent or more of their business, the effects of decreased defense spending is immediate and sometimes fatal.

It is sometimes hard to believe that the loss of these small suppliers is a problem until the lack of a part that they previously made becomes known. For anyone who has needed a part and could not get it in a timely manner, reality is clear and brutal. When the HMMWV was initially fielded a wide range of problems were encountered. One significant problem was the protective control box (PCB). This "black box" controls whether the vehicle will start. It is the heart of this rather simple but vital vehicle. Failure of this part early in the HMMWV program left many vehicles deadlined and useless. Efforts to get the vehicle manufacturer to supply replacement PCBs were unsuccessful because, allegedly, all PCBs were being used to make more HMMWVs. Why couldn't the PCB-maker make one extra PCB for every three? The bottom line was that the system was not up to the task. It wasn't the Marine Corps' fault, but the contractor/subcontractor system, the system that supplies us with the

implements of war in all their many forms wasn't up to the task.

The economics of this parts problem are plain and simple. Companies are reducing output or are closing due to the military drawdown. Contractors with a wealth of experience, specialized tools, and production equipment, all geared toward making precision components and elaborate parts for all types of weapons, are closing their doors. Some of these firms will be lost for good. Costs for future systems will rise substantially as fewer companies channel resources into defense-related production. The maintenance of existing systems will become more difficult as lag time in spare parts acquisition becomes longer as more and more manufacturers go out of business.

Unless commitments come into line with resources, whatever forces and associated equipment remain within America's Defense Establishment, must be maintained at the highest levels of readiness and sustainability in order to advance those interests that a larger force once secured. In such an environment the ability of the supply system to procure spare parts will take on greater importance than ever. Accordingly, a number of initiatives, some already in existence, must be carried out aggressively to ensure the maximum chance of mission success for military units dependent on the equipment assigned to them.

Many items now in use by the military are off-the-shelf or have a majority of their parts commonly available commercially. This must continue, not only for reduced costs but for ease of maintenance. Stockpiling of critical spares must continue and increase, even if storage and inventory control

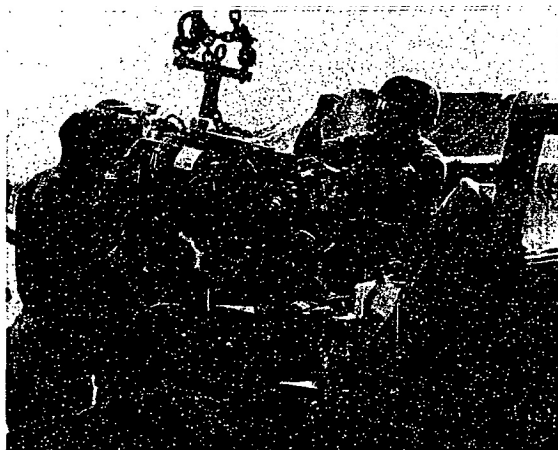
costs rise. The lack of a part needed to keep Marines alive or accomplish the mission is more important. Some thought should be given to acquiring a limited production capability for certain parts. This is not the same as fabrication, as some parts to not lend themselves to fabrication. In other words, the ability, at least at the depot level, of making particular item parts once the original suppliers go out of business must be retained. Repair of components have always been a given. A part of the solution to the PCB dilemma, with regard to the HMMWV, involved the Electronics Maintenance Company, Maintenance Battalion devising a means of repairing and replacing certain electronic components within the PCB, thus returning deadlined vehicles to service faster. But in the stress of extended combat can this always be an answer? Also, you must have more parts to rebuild even some other components if necessary.

The Military Establishment is in for hard times in the coming years as the supply base for parts diminishes at an alarming rate. Short of another Reagan-era military buildup, all of the Services can expect increased competition for fewer parts from a reduced pool of manufacturers. The effect this will have on future operations is unknown, but it should not bring comfort to anyone out on the tip of the spear.

This issue is real and will only get worse. My own experiences with parts, or the lack there of, is legion. A poignant memory I have as a regimental motor transport officer is of giving a battalion motor transport officer three PCBs for his HMMWV fleet just prior to his deployment to the Mediterranean. In a later letter he related how he used all three even before he made his first landing. I doubt that this is the kind of readiness that future, smaller Marine units need as they are placed at the tip of the spear. Action must be taken now to ensure we have more than Stealth fighters and B-52 strikes to ensure mission success. It will take a spare parts production base capable of meeting peacetime replacement rates and surge/wartime combat needs. Anything else is less than conducive to mission success and keeping Marines alive.

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Not having the right spares could mean the difference between vehicles that run and ones that don't. Here, maintenance workers overhaul a HMMWV.