

Hunter Warrior: Equipping the Man, Not Manning the Equipment

By Gen Charles C. Krulak, USMC, Commandant of the Marine Corps

As the Corps approaches the dawn of the 21st century, we face a world that is changing rapidly. You, the Marine warrior, know this better than anyone else. You see it day in and day out, from every corner of the world. In the 21st century, this nation will commit its Marines to battlefields in which they will conduct humanitarian operations in the morning, keep warring tribes from fighting each other at noon and, by nightfall, be involved in a high-technology, high-intensity firefight—all within three city blocks. It is my job as Commandant to ensure that you, the individual Marine, have the doctrine, tactics, equipment and training you need to prevail on this future battlefield.

That is exactly the reason we stood up the Warfighting Laboratory at Quantico, Va. For the last 15 months, this laboratory looked for new technologies and ideas from the fleet, from industry and from the scientific community for the answers to tomorrow's problems. This March, the Marine Corps tested some of these new ideas at Twentynine Palms, Calif., in Exercise Hunter Warrior, the first in a series of advanced warfighting experiments.

In this exercise we pitted an experimental MEU (Marine expeditionary unit)

sized MAGTF (Marine air-ground task force) against a regimental-sized combined arms force. We had several objectives. First, we wanted to look at how we could make small units more effective on a dispersed and extended battlefield. Second, we wanted to see if we could construct a C4I (command, control, communications, computers and intelligence) system in which information could be shared—all the way down to the small-unit level. Third, we wanted to improve how we logistically support front-line tactical units. Fourth, we wanted to improve the way we target and then attack enemy forces. Lastly, we wanted to investigate the training requirements that this type of future battlefield called for.

I went out to see this exercise in progress, and what I saw was absolutely fantastic. Most impressive of all was the tactical excellence, the innovative spirit and the technological savvy of our enlisted Marines. In fact, Hunter Warrior showed the world a couple of things: First, if you give a Marine a new warfighting tool, he will quickly determine if it is "field-worthy," and if it is, he will figure out ways to make it work far better than anyone thought possible. Second, he will take a new warfighting tool

and discover uses for it that the designers never thought of. Third, it proved without a shadow of a doubt that there is absolutely no limit to what individual Marines can accomplish—if we just give them the right tools—and we don't get in their way.

I've talked to and read the after-action reports from a great many of the Marines involved in Hunter Warrior. Each and every Marine—from the experimental forces and their 7th Marines opposition—played a vital role and discovered both new applications and fixes for the technologies we tested. The best way to tell the story of Hunter Warrior is to share some of the experiences and observations of the Marines who were there. We will look at the experiences and, more importantly, the interactions of a random sample of Marines from each element of the experimental MAGTF. This is their story.

The GCE (Ground Combat Element)

Corporal Edward Pollock is a squad leader in Company L, 3d Battalion, Fourth Marine Regiment. His 11-man team was one of 35 squad-sized units, who were equipped with and trained to use new communications and targeting equipment for the Hunter Warrior experiment. Cpl Pollock's squad was inserted by helicopter to man a forward position on a widely dispersed battlefield that extended over several hundred square miles. He was in charge of a squad that for the next six days and nights would have to locate, identify and help defeat a conventional force many times its size. Cpl Pollock and his 10 Marines controlled an awesome array of firepower: naval surface fire support, night attack Harriers, Cobra gunships equipped with Night Targeting Systems and experimental "box" mortars.

Cpl Pollock was armed with two primary weapons during Hunter Warrior: One was his M16 rifle, and the other was a computer called the Newton. The New-

Cpl Edward Pollock (center, first row) posed with his squad, one of 35 squad-sized units, who were equipped with and trained to use new communications and targeting equipment for the Hunter Warrior experiment.





Cpl Javed R. Baloch, operations chief, was responsible for the smooth running of the Forward Operations Center at Twentynine Palms.

ton is a small, personal, digital computer that, when connected to a hand-held Ericsson digital radio, allows small units to stay "connected" to their adjacent units, and to higher headquarters—electronically. At first the squad was skeptical about the new technology; they thought it needed to be more rugged and its light and noise signature needed to be reduced. But in spite of those limitations, in very short order, the entire squad became believers in the new technology. With very little training Cpl Pollock was able to pass target information, calls for fire, request logistics resupply and tell his superiors when and where he wanted a helicopter extract—in seconds vice minutes. Additionally, the imbedded GPS (Global Positioning System) allowed higher headquarters to monitor the position and movement of the squad at all times.

On the third day of the experiment, Cpl Pollock was informed that his squad would be in the field for an additional three days. He wasn't informed via conventional voice channels either. This time his Newton/Ericsson told him. He would need resupply in order to stay the additional three days so he simply picked up his Newton, called up the "request for support page" and typed out what he needed. Within a matter of minutes his request was acknowledged, and he was told when and where he could pick up the supplies that were on their way via a Marine CH-46 helicopter. An hour later, Cpl Pollock's Marines went to the location specified on the Newton for their supply pick-up and retrieved their supplies. As luck would have it, they were going to need them that night.

The CSSE (Combat Service Support Element)

In many ways, the greatest innovations and progress during Hunter Warrior were made by the enlisted Marines

associated with CSSE. To ready themselves mentally for the experiment they gave their unit a new name, *CSS Enterprise*. The workhorse of *CSS Enterprise* was the Forward Operations Center (FOC) at Twentynine Palms. The FOC was an integrated computer and communications bank that allowed two CSS Marines to do the work that 10 did previously. The Marine responsible for building and maintaining this computer bank was Cpl Christopher Harrington. He knew how important logistics resupply would be for the widely distributed tactical units and built a computer system that would hold up—even under the worst conditions.

The Marine responsible for the smooth function of the FOC was Cpl Javed R. Baloch, the operations chief. Cpl Baloch's FOC had to coordinate the logistics resupply for 35 widely separated squads like Cpl Pollock's. Using off-the-shelf computers, the Joint Maritime Command Information System (JMCIS), the Tactical Level Automated Combat Service Support System (TLACS) and

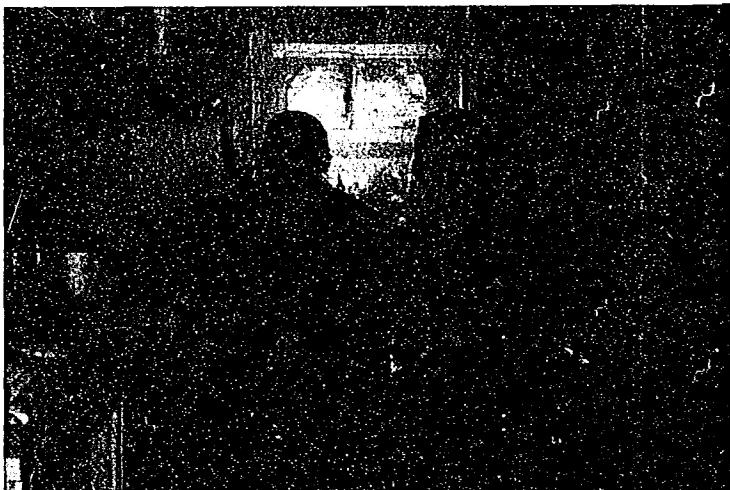
The FOC had an integrated computer and communications bank. Cpl Christopher N. Harrington (left) built and maintained the computer bank. At right is Cpl John E. Davis, a member of Harrington's team during Hunter Warrior.

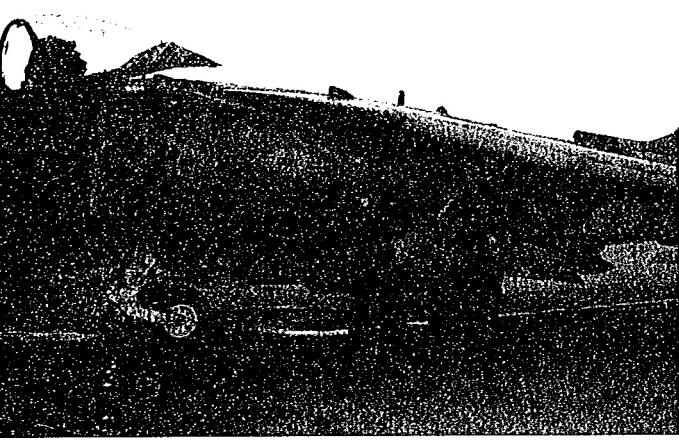
the Remote Maintenance System (RMS), Cpl Baloch was able to monitor the different squads' logistics conditions and service their requests digitally, via their Newton computers. Additionally, he could monitor the maintenance condition and run maintenance health checks on many of the vehicles used during the exercise without the operators even knowing about it. If something needed to be done, Cpl Baloch had the ability to make sure the appropriate maintenance was done. When a logistics request did come in, he could choose one of several different air-delivered, GPS-guided systems, or he could employ a hasty cache team to deliver the supplies to the units that needed them.

On the third day, when Cpl Pollock's squad requested their logistics resupply, Cpl Baloch decided to use a helicopter-delivered hasty cache team. This eight-man team would transit to a forward area via helicopter, then move out in a foot patrol to deliver the supplies to a GPS-designated location, or cache. This cache would then be picked up by Cpl Pollock's squad. Even the hasty cache team came equipped with TLACS laptop computers, allowing it to send and receive the friendly and enemy situations and logistics updates while on its patrols.

The ACE (Aviation Combat Element)

If Cpl Pollock's squad needed heavy resupply, it would be delivered by Marine Corps CH-46, CH-53 or KC-130 aircraft. Several experimental delivery systems were tested during Hunter Warrior, such as the Semi-Rigid Deployable Wing—SRDW (700-pound cargo), the Guided Parafoil Air Delivery System—





Sgt Marc Johnson (left) installed ATHS sets in VMFA-214's night attack Harriers, while Cpl John Higgins' main job was loading the aircraft for the missions and ensuring that the IR Mavericks and GP bombs were ready to go.

GPADS (2,500 pounds), and the Skyhook (able to carry and deliver three separate loads from one cargo point). Two of the Marines central to these tests were Sergeants David Foster and James Hardacker of Marine Medium Helicopter Squadron 364.

The Skyhook is a three-hook delivery system that attaches to a CH-46's or CH-53's external point, allowing one helicopter to deliver three separate external loads to three different locations. It was designed for use by the Army, but when Sgt Foster looked at it in preparation for Hunter Warrior, he felt that it needed to be modified to meet the Corps' needs. Sgt Foster felt that the crew chief, not the pilot, needed to control the external cargo, so he helped the contractors develop a small, computerized control device that allowed the crew chief to designate what load went to what unit. In two weeks, Sgt Foster's idea became a reality that proved itself time and time again during the experiment. The Skyhook worked exceptionally well during Hunter Warrior, and Sergeants Foster and Hardacker hope that the fleet gets it as soon as possible.

Sgt Hardacker worked extensively with the GPADS and the SRDW. The GPADS is a parafoil that can be deployed from an altitude up to 25,000 feet, and it can glide a 2,500-pound payload to a 10-digit GPS grid. While Hardacker believed that the GPADS had great potential from an aircraft such as the V-22, its employment was limited from a CH-46 or a CH-53 due to the flight profiles they had to fly to employ it. Sgt Hardacker believes that with the

higher cruise altitudes and airspeed of the V-22 the GPADS will offer a tremendous capability. While systems such as the Skyhook and the GPADS showed great promise, other systems proved difficult to employ effectively, but that's exactly what we wanted to find out during the Hunter Warrior experiment.

Marine fixed-wing aviation experimented with several new technologies during Hunter Warrior. Most notable was the Automatic Target Hand-off System (ATHS). This system, optimized for use with the Forward Observation/Forward Air Controller (FOFAC) device system, allowed squads like Cpl Pollock's to accurately locate, fix to GPS accuracy and then designate targets for air attack. More importantly, the target information was automatically passed via digital transmission to the attack aircraft. In preparation for Hunter Warrior, Marine Attack Squadron 214 received permission to install seven ATHS sets in their night attack Harriers, and the responsibility for that job fell to Sgt Marc Johnson. Installing this system involved a major wiring modification that took about two weeks per aircraft to install. The success of the system during the experiment made it all very worthwhile.

Since the Harrier doesn't possess a targeting FLIR (forward looking infrared) system, the ordnance section decided to load a mix of IR (infrared) Mavericks and general purpose (GP) bombs for the Hunter Warrior missions. Cpl John Higgins, an ordnance Marine, was responsible for loading the aircraft for the missions and ensuring that the Mavericks and GP bombs were ready to

go. The general purpose bombs would be the primary ATHS weapon, but Cpl Higgins knew how important it would be for the pilots to have the Maverick IR-search capability to help the experimental squads locate targets. If the Maverick IR seeker failed during the experiment, the pilots would have to rely solely on their NVGs (night vision goggles), and at the altitudes at which the aircraft were operating, they wouldn't be very effective. This poor man's FLIR would pay great dividends during the exercise.

The CE (Command Element)

One of the objectives for the Hunter Warrior experiment was to explore ways to meld the command, control, communications, computers and intelligence into a "single-battle" concept. Central to this single-battle concept was the Enhanced Combat Operations Center (ECOC) located 100 miles from Twentynine Palms. The ECOC tried to create a *picture* of the battlefield by gathering, displaying and processing, and then sharing with the front-line units, real-time information it received from a wide variety of sources including satellites, JSTARS (Joint Surveillance Target Attack Radar System), P-3 Reef Points, Exdrones, ground-based sensors, and aviation or ground combat situation reports.

The ECOC shared this information with USS *Coronado*'s JMCIS. Two of the critical stations in the ECOC were manned by Staff Sergeant Frederick Rott, the fires chief, and Cpl Timothy Williams, a track manager. Cpl Williams was responsible for monitoring the enemy forces via a computer screen that combined information received from remote acoustic and FLIR sensors to provide advance warning of enemy movement. He felt that the system was fairly effective, but would have liked to see the systems be able to integrate more of the other sensors, such as JSTARS and Reef Point data onto the same screen as the remote sensors.

In his role as the fires chief in the Engagement Coordination Section, SSgt Rott was responsible for coordinating and recommending approval for fire support requests from the experimental squads. The tool that SSgt Rott employed to make that job easier was the Automated Deep Operations Coordination System (ADOCS). The ADOCS is a Windows-based computer that allowed SSgt Rott to see the friendly units, the known enemy units and the fire sup-



Cpl Timothy Williams (left), a track manager, and SSgt Frederick Rott, fires chief, manned two of the critical stations in the ECOC.

port assets—real time on one screen.

Although he was able to work with the ADOCS for only a few months before the Hunter Warrior experiment, SSgt Rott had a few ideas for how to improve it. He felt that he needed a better way to prioritize fire missions, and he also felt that it would be better if he could stay in one "window" to process the calls for fire (he had to use several separate screen displays to process fire missions). SSgt Rott also had an idea for improving the Newtons. When a unit called for fire, and they specified that the target was moving, he thought that a screen that asked them which direction should come up automatically. Good idea.

Cpl Pollock's Squad versus the Armor Column

At 0200, on day four of the exercise, 100 miles from Twentynine Palms at the ECOC, Cpl Williams' computer screen indicated that something had tripped one of the remote acoustic sensors near Cpl Pollock's position. A short time later, one of Cpl Pollock's Marines using Leica Vector 1500, day/night high-performance binoculars (with a laser range finder) picked up an enemy armor column of 10 tanks and 20 vehicles moving toward their position. Using his Newton, Cpl Pollock typed out the target data and requested fire support. The call for fire and the track update were correlated by SSgt Rott in the ECOC, and Cpl Pollock was given permission to engage. His squad planned to use their FOFAC to designate the target for an approaching

section of ATHS-equipped Harriers.

The FOFAC/ATHS combination had been working well throughout the experiment, and the confidence in the system was high. Unknown to Cpl Pollock, the antenna had come loose at the bottom of the data transmission radio, and as the attack aircraft approached, they didn't get any automated target information. Cpl Pollock quickly analyzed the situation, grabbed his Newton and typed out a request for a white phosphorous mark from a naval surface fire support ship. In short order, the target was marked, and for the next two hours the aircraft and NSFS attacked the column. Throughout the engagement, Cpl Pollock's squad coordinated the fight—ensuring that all the targets were destroyed.

Once his squad's mission was complete, Cpl Pollock sent a request for extraction via the Newton. It was quickly acknowledged and approved by the ECOC, who gave the squad and the extraction helicopter a time and a location for the pick-up. As the squad assembled and began the transit to the pick-up point, the CH-53 crew took off in time to make the rendezvous. Once the helicopter landed in the zone, it quickly loaded Cpl Pollock's squad and then lifted off for the return to the "ship." Significantly, the coordination for this extraction was done entirely without voice communications.

This story was just one of many told by the participants of the Hunter Warrior experiment. Many of the tactics and technologies we tested showed great promise, and others failed. We should not worry about the failures. Those failures are just part of the price we must

Sergeants James Hardacker and David Foster, attached to HMM-364, worked extensively with experimental delivery systems such as the SRDW, GPADS and the Skyhook.

pay in order to innovate for the future. The real success story of the Hunter Warrior experiment was achieved through the ingenuity, the adaptability and the tenacity of the individual Marine. What we learned from the multitude of stories like the one just told is when our Marines are married with a new piece of gear—they will find out what makes it work, find out what its weaknesses are, find out how to make it work better and then find new uses for it of which someone like me would never even dream possible. Most importantly, the individual Marine never forgot what his mission was. Regardless of tactical setbacks, technology failures or degradation, the NCOs and junior enlisted Marines did what was needed to get the job done. I can't begin to tell you how proud I am of each and every one of the participants and those who made it possible.

What is even more exciting, is that we are now preparing for an entirely new experiment: one that will offer challenges far greater than the ones seen at Hunter Warrior. This one will take place on a battlefield that I believe will be very common in the 21st century—a city. This next experiment is called Urban Warrior, and it will take place on the East Coast during the spring of 1998. With great enthusiasm, I look forward to the Urban Warrior experiment. Just like Hunter Warrior, we will empower the individual Marine and free him to find the solutions for fighting our nation's battles in the 21st century. Put your thinking hats on, leathernecks—your Corps needs your ideas.

