How to Cure the FIST-V Blues

by First Lieutenants Aaron L. Geduldig, Mark S. Kremer, James A. Skelton and Willie R. Witherspoon

Do you have the M981 fire support team vehicle (FIST-V) blues? Bring in that old M981 and drive away in a new Bradley fire support vehicle or FM2. The new FM2 has greater mobility, speed and armament and allows quicker fire mission time. This isn't the fire support vehicle of the future. The FM2 is available now and is the most advanced fire support vehicle on the modern battlefield. This concept is combat tested and proven during Operation Desert Storm—it works. The soldiers who employed it in battle designed this vehicle.

While deployed as part of Operation Desert Shield, FISTs in M981s conducted numerous training exercises with their maneuver units. The current FIST vehicle wasn't doing the job in offensive operations. It had problems with mobility, speed and fire mission times. The smaller engine and track caused the M981 to bog down in the soft sand, and initializing the north-seeking gyro (NSG) increased the time required to process the fire missions.

As the training for war continued, the need for fire support increased. The conventional FIST-V provided a means of fire support, but an improved system was available. With the "rollover" of all M2 Bradley fighting vehicles in the 1st Cavalry Division in December, we had the opportunity to try a FIST-Bradley concept.

M2 Conversion to FM2

The battalion command sergeant major, a group of fire support soldiers, the direct support (DS) contact team and communications specialists went to work. They drafted a plan to allow some of the old Bradleys to stay in the hands of the artillery for testing purposes.

With one Bradley as a prototype, the group transferred the communications system from the FIST-V to the Bradley. But the Bradley only had a two-radio capability for the infantry, and four are required for a FIST. The two radios in the turret of the vehicle remained in place, and the communications team mounted two more in the hull. The team also mounted the FIST digital message device (DMD) in the hull (see Figure 1). This configuration allowed the DMD operator easy access to the two radios in the hull and the DMD. The two men in the turret had easy access to the radios they needed to monitor.

The next step was to mount the ground/vehicular laser locator designator (G/VLLD) on the M2. With the help of the maintenance team, a bracket was designed that would easily mount it on the right front of the turret (see Figure 2). The only temporary glitch in mounting the G/VLLD was running the DMD interface cable to the DMD in the hull. The slip ring in the bottom of the turret was the first option. This didn't work because of the turret's 360-degree traverse capabilities. The communications team reviewed the Bradley schematics and devised a way to run the cable through the communications system by using dead-pins in the communications boxes. This option successfully interfaced the DMD and G/VLLD and worked flawlessly.

Our battalion commander, (3d Battalion, 82d Field Artillery), the 1st Cavalry Division Artillery commander, 2d Brigade commander and, eventually, the division commander reviewed the prototype. They approved our retaining one per task force for the lead company and one for our brigade's combat observation lasing team (COLT). Each team converted its M2 to an FM2, generally a two-day process.

There are several other ways to convert the Bradley into a FIST Bradley. The tube-launched, optically-controlled, wire-guided (TOW) rack can house the G/VLLD. The teams discussed this option, but determined it wasn't feasible with limited time and resources. Another location for the G/VLLD is in the coaxial machinegun slot; it'll fit in this position. From either position, the team can boresight the G/VLLD with the main gun sight. Also, the team can use the Bradley thermal night sight, a better system than the G/VLLD night sight (TAS-4B). Our putting the G/VLLD in front of the Bradley commander's hatch is a method that works effectively but isn't the only solution.

Operational Questions

The FIST Bradley raised many questions. Where was maintenance support going to come from? Would the FIST Bradley change FIST tactics? What about self defense? Do we need the 25-mm gun? How were the FIST teams going to determine accurate target locations without the NSG?

Maintenance. The maintenance support had an easy solution. Each maneuver company had hull and turret mechanics that knew the system—as opposed to

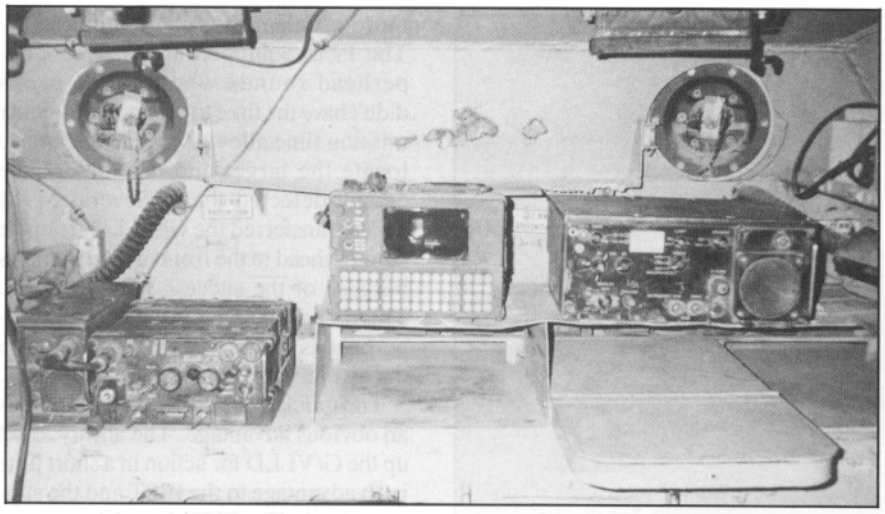

Figure 1: The team mounted the FIST DMD and two radios in the Bradley's hull.

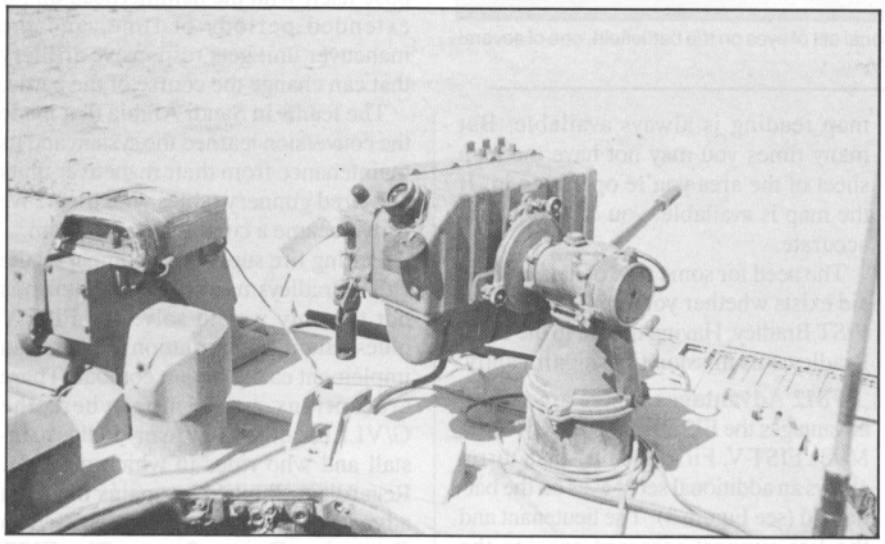

Figure 2: Using a specially designed bracket, the team mounted the G/VLLD on the right front of the M2's turret.

having the FIST-V in a Bradley or tank company without knowledgeable mechanics. The maneuver company mechanics fixed most problems on the spot. Our team drivers studied the operators manual and learned the system quickly. The Bradley needs preventive maintenance each day; done correctly, it performs exceptionally well.

FIST Tactics. The question of employing the FIST Bradley was a little harder. Teams have always moved about the battlefield and gotten into the best position to call for and observe rounds. Each team realized the importance of fire support and chose not to change its employment strategy because of its different vehicle. The ability to move about the battlefield increased, and teams found they could gain better vantage points from which to do their jobs.

The greatest advantage of the FIST Bradley's staying in the maneuver perimeter is its ability to blend in with the other Bradleys. The FIST no longer had a G/VLLD hammerhead and four antennas telling the enemy who and where it was; the FIST Bradley looks like any other Bradley. The teams devised a way to hide the two extra antennas by using the Bradley's gun portholes. Antenna tiedowns ran inside of the vehicle where the DMD operator could raise or lower them. When the particular radio (for example, the digital net) wasn't in use, the operator pulled the antenna down. This method, along with the likeness of vehicles, provided additional "camouflage" not possible with the M981.

Self Defense. The M60 machinegun on the M981 is a good weapon for self defense. Many argue that this is all the FIST needs while in the company perimeter. Although this is true, the 25-mm gun, with a 7.62 coaxial machinegun, provides the same defense with added bonuses. FISTs now can shoot direct and indirect fires simultaneously. When the need for fire support becomes greater, the team must maneuver into the best position to call for fire, possibly exposing itself. With the FIST Bradley, we can better defend ourselves while doing that.

One of the most debated issues has to do with the 25-mm main gun. Some artillerymen felt the FIST would lose perspective by having this weapon system and "fight" instead of call for fires. This wasn't the case. Only the brigade COLT used its main gun as a means of suppressing the enemy while continuing its mission. The ranging data from the G/VLLD determines distance for the 25-mm gun, providing an accurate means of direct fire while also calling for artillery.

As our brigade COLT discovered in combat, the maneuver unit may not always be able to support you while you're supporting them with artillery. The COLT needed to return direct fire while trying to withdraw to another observation location. The FIST Bradley allowed the COLT to return fire at a greater range and with more killing power, thus facilitating its withdrawal and subsequent observation of its fire missions. The M981 doesn't have the firepower we need.

Self-Location for Targeting. The M981 FIST-V has the NSG, which helps locate targets. It takes from eight to 10 minutes to initialize and align it. In addition, the FIST must get into a position on the battlefield where it can raise the hammerhead. As all teams discovered, there isn't time to stop, raise the hammerhead, initialize and align in an offensive battle. By the time these tasks are complete, the enemy has located your position. Also, the maneuver unit doesn't have time to stop and wait for this process.

The FIST Bradley doesn't have an NSG. But, the FM2 is more effective than the FIST-V and warrants some type of self-locating device. Throughout Operation Desert Storm, each team used either the long-range aid to navigation (LORAN) device or the global positioning system (GPS). The LORAN works off radio towers, the GPS works satellites.

Figure 3: The M2's two-man turret allows an additional set of eyes on the battlefield, one of several advantages the FIST Bradley has over the FIST-V.

There are two methods for locating targets that work best when using the FIST Bradley. One is to set the GPS to the azimuth tracking mode in mils. The GPS will continually update your azimuth and location as you maneuver. When the observer discovers the enemy, the G/VLLD operator uses the azimuth adjust knob to set the proper mil reading from the GPS. The other man in the turret tells the DMD operator the GPS grid location (observer), using the DMD's observer-location (OBCO) file. When this is complete, the G/VLLD operator lases the target, directly sending it to the DMD operator. This method is quick, easy and provides accurate target location.

The second method is a little slower but also very accurate. The G/VLLD operator locates a distant aiming point, and the other man shoots an azimuth with a compass. The azimuth is shot from in the turret or from directly in front of the vehicle. From inside the vehicle, you use either a non-magnetic compass or compensate for the magnetic attraction by using the adjusting screw on the M-2 compass. This method works effectively. Both methods provide a much quicker mission response time than using the NSG on the current FIST-V and provide extremely accurate fires.

Even without a navigational device, the Bradley is still a better FIST vehicle. You still have the G/VLLD, and you can shoot an azimuth in the same manner as mentioned. The difference is your ability to determine your own location, a key to accurate, predicted fires. Of course, map reading is always available. But many times you may not have the map sheet of the area you're operating in. If the map is available, you can be just as accurate.

The need for some type of navigational aid exists whether you're in a FIST-V or FIST Bradley. Having the aid in the FIST Bradley cuts mission time significantly.

FM2 Advantages. There are several advantages the FIST Bradley has over the M981 FIST-V. First, the two-man turret allows an additional set of eyes on the battlefield (see Figure 3). The lieutenant and the fire support sergeant can see the whole battlefield. The driver provides an additional set of eyes, giving the team three observers. This allows one man to track the movement on the map, follow the execution matrix and monitor the task force radio. The second man operates the G/VLLD, monitors the company command net and navigates the vehicle. The DMD operator can monitor another net in the hull of the vehicle while maintaining digital communications. This keeps one man from trying to do too many things simultaneously. Each man on the team works together to achieve accurate, predicted fires.

Secondly, the FIST Bradley can easily maneuver with the supported company. The common complaint among FIST-V-equipped teams is the maneuver unit outruns them. This is no longer a concern, and as mentioned, the Bradley also blends in with the rest of the company.

During Operation Desert Storm, the externally mounted G/VLLD proved more efficient than the hammerhead. The FM2-equipped teams fired Copperhead rounds where M981 teams didn't have the time to set up. The quicker mission time allowed the FM2 teams to locate the target and lase before the enemy detected them. Several M981 teams transferred the G/VLLD from the hammerhead to the front of their vehicles because of the success with the FM2. This is an obvious advantage as Copperhead is the most lethal tank killer in the artillery inventory.

The quicker mission response time is an obvious advantage. The ability to set up the G/VLLD for action in a short time is an advantage to the FIST and the supported unit. The FIST doesn't have to expose itself with the hammerhead up for extended periods of time, and the maneuver unit gets responsive artillery that can change the course of the battle.

The teams in Saudi Arabia that made the conversion learned the system and its maintenance from their maneuver units and fired gunnery tables with them. We truly became a combined-arms team.

Putting fire support equipment on the FIST Bradleys used in Desert Storm is not the only way to solve the FIST-V blues. But it's one solution soldiers can implement easily before combat. There are options concerning where the G/VLLD can go, how many radios to install and who rides in which position. Regardless, the FM2 remains the most advanced fire support vehicle used in Operation Desert Storm. The FIST Bradley proved its worth in combat.

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